

PRELIMINARY STORMWATER ANALYSIS, DESIGN, AND REPORT

FOR

NORTH POINTE AT HALSTED BAY

ANGEL M CONSULTING
25-103

NOVEMBER 2025
REVISED

PREPARED BY:



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Civil Engineering
Site Planning
Sustainable Design

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.


Wayne C.B. Stark, P.E.
Registration Number 26093

Date: 11/22/25

PROJECT INFORMATION

The project site is located on the south side of County Road 110, also known as Bartlett Boulevard, in Minnetrista, Minnesota. The 14.29-acre site includes a 3.45-acre area within the Mound City limits and is bounded by Cardinal Cove Drive on the west side, Halstead Avenue on the south and residential lots on the east. Existing features on this site include a bituminous paved, rural roadway section that connects Bartlett Boulevard and Halstead Avenue, some small buildings, an old mobile home park and numerous mature trees. This translates into an existing impervious surface area of 13.4%. Also included in this analysis is the offsite drainage from the north side of the County Road 110 that flows thru the project site via an existing 18-inch culvert located in the northwest corner.

According to the Web Soil Survey, the majority of the existing soils on this site are Raspet sandy loam (L3B & L3C), Lester-Malardi complex (L70C2), Tadkee-Tadkee (L64A) and udorthents (U2A) which are classified as hydrologic soil groups A & B.

The proposed improvements include three (3) condominium buildings with basement level parking as well as 15 single-family residential lots on the Minnetrista parcels. One condominium building, a 4-unit townhome building, a 1,682 SF community building and one single family residential lot will be constructed on the Mound parcels. These buildings will be connected by drive aisles and a reconstructed Halstead Avenue. Site grading, City utilities and four infiltration basins will be constructed as well. Permeable pavers will be utilized in some of the private drive aisles, paved drive aisles, and concrete sidewalks complete the proposed improvements. The proposed improvements result in an impervious surface area of 5.15 acres or 35.9%.

RECOMMENDATIONS

The stormwater analysis and design for this site is presented for review and comment along with the preliminary plans. There is no stormwater management for this site to meet the current City of Minnetrista, City of Mound or Minnehaha Creek Watershed District requirements. Therefore, four infiltration basins are proposed to treat and detain the proposed stormwater flows from the improvements on this site.

ANALYSIS AND DESIGN

Procedurally, the surface water hydrological conditions for the existing and proposed conditions on the site were analyzed for each of the statistical rainfall events included. The events analyzed are:

- 1-year, 24-hour rainfall of 2.48 inches
- 2-year, 24-hour rainfall of 2.85 inches

- 10-year, 24-hour rainfall of 4.23 inches
- 100-year, 24-hour rainfall of 7.25 inches

The analysis is accomplished using the HydroCAD, Version 10.20, Stormwater Modeling System software by HydroCAD Software Solutions. Within the software, the user selects certain methods and techniques that are dependent upon the user preferences and the application. For the design of the proposed post-development systems, the following methods and preferences are used:

Site Specific Soil/Surface Cover Conditions:	SCS* TR-20 Methods
Time of Concentration:	SCS TR-55 Methods
Unit Hydrograph:	SCS TR-20 Methods
Reach Routing / Pond Routing:	Storage-Indication Method

*SCS (Soil Conservation Service) is now known as NRCS (Natural Resources Conservation Service).

Each of these methods or techniques is explained in detail in the National Engineering Handbook: Section 4 - Hydrology, as well as several additional references.

EXISTING SITE DRAINAGE

With the existing site conditions, there are six (6) drainage areas defined as follows:

- 1E – This 0.78 acre area overland flows to the west where it connects to an existing ditch along Cardinal Cove Drive which drains to the south and eventually into Lake Minnetonka. It is wooded with an impervious surface area of 14.3% from the existing bituminous pavement.
- 2E – This area overland flows to the south and east to an existing 24" culvert under Halstead Avenue. It is 2.27 acres in size and discharges runoff to drainage area 3E. It is wooded with a minimal impervious surface area of 7.3% from existing bituminous pavement.
- 3E – This offsite area is located on the east and north sides of Halstead Avenue which overland flows to an existing 15" culvert which discharges to drainage area 4E. It is 2.66 acres in size with wooded areas and has an impervious surface area of 10.3% from existing bituminous pavement and building roofs.
- 4E – The drainage from this area flows overland to the south to an existing 24" culvert under Halstead Avenue which discharges eventually into Lake Minnetonka. It includes the majority of the site which has wooded and grass areas, is 5.32 acres in size and has an impervious surface area of 16.1% from some buildings and bituminous pavement.
- 5E – This area overland flows to the south directly to Lake Minnetonka. It is 3.19 acres with woods and grass areas and an impervious surface area of 13.7%

from some existing bituminous pavement, a gravel driveway and existing building roofs.

- 6E – This offsite area is located on the north side of County Road 110 which overland flows to an existing 18" culvert and through this site via drainage area 2E. It is 17.16 acres in size with farm fields, woods and grass areas and an impervious surface area of 6.8% from some existing bituminous pavement, gravel driveways and buildings.

An analysis of the runoff rates and volumes from these drainage areas for the design rainfall events was completed using the HydroCAD model. This analysis indicated that the peak stormwater runoff rates and volumes for this site are as follows:

- 1-year, 24-hour rainfall = 8.39 cfs, 45,036 cubic feet (CF)
- 2-year, 24-hour rainfall = 12.22 cfs, 63,536 CF
- 10-year, 24-hour rainfall = 22.02 cfs, 134,977 CF
- 100-year, 24-hour rainfall = 52.78 cfs, 300,901 CF

A copy of the Existing Summary Output is attached.

POST-DEVELOPMENT SITE DRAINAGE

With the previously described site improvements, the site is divided into seven (7) drainage areas as defined below:

- S1 – This 3.04-acre area includes the 24-unit condominium building roof and the back halves of 2 house roofs as well as a portion of the surrounding bituminous and concrete pavement areas. It flows to Infiltration Basin A overland and via storm sewer and has an impervious surface area of 36.4%.
- S2 – This area consists of the south and west sides of the site that includes part of drainage areas 1E, 2E and 3E which flows to Infiltration Basin B overland and via storm sewer. It is 3.55 acres in size and has an impervious surface area of 36.7% from the remaining house roofs (11.5) on the west side of Halstead Avenue as well as the west half of Cardinal Cove Drive.
- S3 – This area consists of the 12-unit condominium building roof, 3 house roofs and adjacent grass covered areas which overland flows to Infiltration Basin C. It is 3.31 acres in size and has an impervious surface area of 35.9%.
- S4 – This 2.33-acre area consists of both 9-unit condominium building roofs, paved parking and driveway areas with adjacent grass covered areas which flow overland and via storm sewer to Infiltration Basin D. It has an impervious surface area of 46.0%.

S5 – This 1.75-acre area consists of the southeast corner of the site that includes drainage area 5E. It flows directly to Lake Minnetonka and has an impervious surface area of 27.0% from the community building roof, the townhome roof and a house roof as well as the adjacent pavement areas.

S6 – This offsite area consisting of drainage area 6E which now includes portions of the expanded County Road 110. It is 17.16 acres in size with a proposed impervious surface area of 8.6%. Discharge from this area will be piped separately through the site.

S6.1 – This 0.33-acre area consists of a small portion of County Road 110 and green area that overland flows to MH 17 in the northwest corner of the site. This structure will connect the existing 18" culvert with the proposed pipe system thru the site. It has an impervious surface area of 34.4% from the County Road 110 pavement.

All the infiltration basins will have 2:1 side slopes and are 4.0 feet deep with mulch and appropriate infiltration basin plantings to complete the proposed design. The storm sewer manholes upstream from both infiltration basins have 3' sumps for pretreatment. Maintenance access is provided via drainage and utility easements.

Based on the soil borings and the Minnesota Stormwater Manual, the soils in the area of Infiltration Basin A are poorly graded sands (SP) which are in hydrologic soils group A with a design infiltration rate of 0.8 inches per hour. This basin will have a bottom elevation of 954.00, a top elevation of 958.00 and an outflow structure with a 6" diameter orifice at elevation 956.00 and a rim elevation of 957.60. This outflow structure discharges to Infiltration Basin B via a 15" RCP pipe.

The soils in the area of Infiltration Basin B are poorly graded sands (SP) and are in hydrologic soils group A with a design infiltration rate of 0.8 inches per hour. This basin will have a bottom elevation of 945.00, a top elevation of 949.00 and an outflow structure with a 6" diameter orifice at elevation 947.00 and a rim elevation of 948.00. This outflow structure discharges via a 21" RCP pipe into Infiltration Basin C.

The soils in the area of Infiltration Basin C are silty sands (SM) and are in hydrologic soils group B with a design infiltration rate of 0.45 inches per hour.. This basin will have a bottom elevation of 944.00, a top elevation of 948.00 and an outflow structure with a 6" diameter orifice at elevation 946.00 and a rim elevation of 947.50. This outflow structure discharges via a 21" RCP pipe that eventually empties into Lake Minnetonka via a drainage way along an existing lot line. This drainage way is proposed to be improved to have a minimum depth of 2.60 feet, a bottom width of 2.5 feet and lined with MnDOT Class II riprap.

The soils in the area of Infiltration Basin D are silty sands (SM) which are in hydrologic soils group B with a design infiltration rate of 0.45 inches per hour. This basin will have a bottom elevation of 972.00, a top elevation of 976.00 and an outflow structure with a

6" diameter orifice at elevation 974.00 and a rim elevation of 975.30. This outflow structure discharges via storm sewer to Infiltration Basin A.

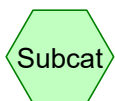
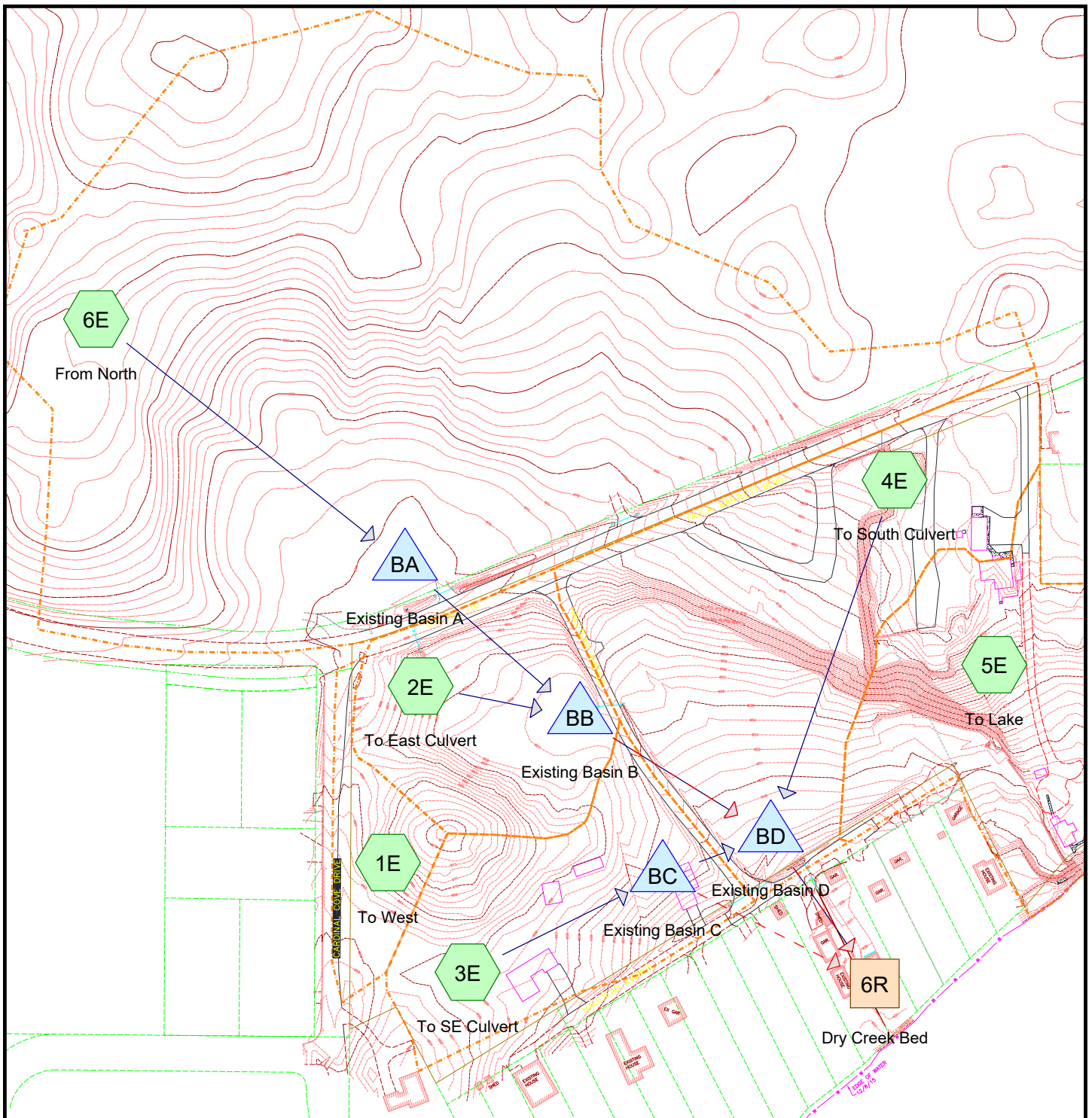
Analysis of the runoff rates and volumes for the design rainfall events were completed using the HydroCAD model. This analysis shows that the peak stormwater runoff rates and volumes from the entire site are as follows:

- 1-year, 24-hour rainfall = 10.90 cfs, 40,511 CF
- 2-year, 24-hour rainfall = 11.72 cfs, 54,800 CF
- 10-year, 24-hour rainfall = 12.75 cfs, 108,971 CF
- 100-year, 24-hour rainfall = 29.26 cfs, 280,795 CF

At a depth of 1.5 feet, the infiltration basins infiltrate a volume of 38,293 CF which is greater than the required treatment volume of 17,859 CF (1-inch over 214,311 SF). The proposed peak stormwater runoff rates are decreased by an average of 4.74 cfs for the four design rainfall events while the runoff volume is reduced by an average of 5,244 CF. The stormwater runoff impacts from the proposed development to Lake Minnetonka are minimized and meet the current City and Minnehaha Creek Watershed District requirements for phosphorus, rate and volume control.

A copy of the Post-Development Summary Output is attached.

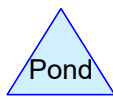
**EXISTING
SUMMARY OUTPUT**



Subcat



Reach



Pond



Link

Routing Diagram for 25-103 Existing 6-26-25
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25-103 Existing 6-26-25

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MSE 24-hr 3 1-Year Rainfall=2.48"

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Summary for Subcatchment 1E: To West

Runoff = 0.05 cfs @ 12.57 hrs, Volume= 417 cf, Depth= 0.15"
 Routed to nonexistent node P1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
* 4,845	98	Pavement
12,502	73	Woods, Fair, HSG C
16,463	36	Woods, Fair, HSG A
33,810	59	Weighted Average
28,965		85.67% Pervious Area
4,845		14.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	150	0.0953	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, SCF to LP
					Short Grass Pasture Kv= 7.0 fps
21.8	350	Total			

Summary for Subcatchment 2E: To East Culvert

Runoff = 0.04 cfs @ 13.19 hrs, Volume= 650 cf, Depth= 0.08"
 Routed to Pond BB : Existing Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
* 7,249	98	Pavements
57,943	60	Woods, Fair, HSG B
33,705	36	Woods, Fair, HSG A
98,897	55	Weighted Average
91,648		92.67% Pervious Area
7,249		7.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4	150	0.0833	0.13		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
5.6	190	0.0126	0.56		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
25.0	340	Total			

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MSE 24-hr 3 1-Year Rainfall=2.48"

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Summary for Subcatchment 3E: To SE Culvert

Runoff = 0.00 cfs @ 3.00 hrs, Volume= 0 cf, Depth= 0.00"
 Routed to Pond BC : Existing Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
* 5,251	98	Building roofs
* 6,682	98	Pavements
1,146	60	Woods, Fair, HSG B
102,603	36	Woods, Fair, HSG A
115,682	43	Weighted Average
103,749		89.68% Pervious Area
11,933		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	150	0.1000	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.3	262	0.0687	1.31		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
21.3	412	Total			

Summary for Subcatchment 4E: To South Culvert

Runoff = 0.73 cfs @ 12.46 hrs, Volume= 4,589 cf, Depth= 0.24"
 Routed to Pond BD : Existing Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
* 1,251	98	Building roofs
* 35,988	98	Pavements
26,202	65	Woods/grass comb., Fair, HSG B
125,821	60	Woods, Fair, HSG B
36,350	43	Woods/grass comb., Fair, HSG A
6,359	36	Woods, Fair, HSG A
231,971	63	Weighted Average
194,732		83.95% Pervious Area
37,239		16.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0120	0.13		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
3.4	350	0.1171	1.71		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
22.6	500	Total			

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MSE 24-hr 3 1-Year Rainfall=2.48"

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Summary for Subcatchment 5E: To Lake

Runoff = 0.35 cfs @ 12.33 hrs, Volume= 2,199 cf, Depth= 0.19"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

	Area (sf)	CN	Description
*	3,336	98	Building roofs
*	15,698	98	Pavement
	2,572	61	>75% Grass cover, Good, HSG B
	2,863	39	>75% Grass cover, Good, HSG A
	114,391	55	Woods, Good, HSG B
	138,860	61	Weighted Average
	119,826		86.29% Pervious Area
	19,034		13.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0600	0.25		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
3.1	368	0.1603	2.00		Shallow Concentrated Flow, SCF to LP Woodland Kv= 5.0 fps
13.2	518	Total			

Summary for Subcatchment 6E: From North

Runoff = 9.81 cfs @ 12.35 hrs, Volume= 37,182 cf, Depth= 0.60"
 Routed to Pond BA : Existing Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	41,070	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	110,836	76	Woods/grass comb., Fair, HSG C
	368,421	65	Woods/grass comb., Fair, HSG B
	747,327	74	Weighted Average
	696,257		93.17% Pervious Area
	51,070		6.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished

25-103 Existing 6-26-25

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MSE 24-hr 3 1-Year Rainfall=2.48"

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21.5 1,453 Total

Summary for Reach 6R: Dry Creek Bed

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 0.43" for 1-Year event
 Inflow = 8.00 cfs @ 12.52 hrs, Volume= 42,420 cf
 Outflow = 7.99 cfs @ 12.54 hrs, Volume= 42,420 cf, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.35 fps, Min. Travel Time= 1.6 min
 Avg. Velocity = 0.87 fps, Avg. Travel Time= 4.2 min

Peak Storage= 747 cf @ 12.54 hrs
 Average Depth at Peak Storage= 0.88' , Surface Width= 4.75'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 '/' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 '/'
 Inlet Invert= 936.75', Outlet Invert= 933.00'

**Summary for Pond BA: Existing Basin A**

Inflow Area = 747,327 sf, 6.83% Impervious, Inflow Depth = 0.60" for 1-Year event
 Inflow = 9.81 cfs @ 12.35 hrs, Volume= 37,182 cf
 Outflow = 9.68 cfs @ 12.38 hrs, Volume= 37,182 cf, Atten= 1%, Lag= 1.6 min
 Primary = 9.68 cfs @ 12.38 hrs, Volume= 37,182 cf
 Routed to Pond BB : Existing Basin B
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 966.62' @ 12.38 hrs Surf.Area= 208 sf Storage= 123 cf

Plug-Flow detention time= 0.0 min calculated for 37,176 cf (100% of inflow)
 Center-of-Mass det. time= 0.0 min (856.4 - 856.3)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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MSE 24-hr 3 1-Year Rainfall=2.48"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.53' S= 0.0270 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.11'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=9.68 cfs @ 12.38 hrs HW=966.62' TW=956.57' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 9.68 cfs @ 5.48 fps)**Secondary OutFlow** Max=0.00 cfs @ 3.00 hrs HW=964.15' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond BB: Existing Basin B**

Inflow Area = 846,224 sf, 6.89% Impervious, Inflow Depth = 0.54" for 1-Year event
 Inflow = 9.68 cfs @ 12.38 hrs, Volume= 37,831 cf
 Outflow = 7.29 cfs @ 12.52 hrs, Volume= 37,831 cf, Atten= 25%, Lag= 8.7 min
 Primary = 7.29 cfs @ 12.52 hrs, Volume= 37,831 cf
 Routed to Pond BD : Existing Basin D
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 956.71' @ 12.52 hrs Surf.Area= 7,588 sf Storage= 4,489 cf

Plug-Flow detention time= 8.0 min calculated for 37,826 cf (100% of inflow)
 Center-of-Mass det. time= 8.0 min (866.5 - 858.5)

Volume	Invert	Avail.Storage	Storage Description
#1	955.13'	58,906 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
955.13	0	0	0
956.00	2,298	1,000	1,000
957.00	9,791	6,045	7,044
958.00	26,966	18,379	25,423
959.00	40,000	33,483	58,906

Device	Routing	Invert	Outlet Devices
#1	Primary	955.13'	24.0" Round Culvert L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 955.13' / 954.87' S= 0.0072 ' / Cc= 0.900

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MSE 24-hr 3 1-Year Rainfall=2.48"

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#2 Secondary 956.97' n= 0.025 Corrugated metal, Flow Area= 3.14 sf
10.0' long x 10.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=7.29 cfs @ 12.52 hrs HW=956.71' TW=939.66' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 7.29 cfs @ 3.77 fps)

Secondary OutFlow Max=0.00 cfs @ 3.00 hrs HW=955.13' TW=938.40' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond BC: Existing Basin C

Inflow Area = 115,682 sf, 10.32% Impervious, Inflow Depth = 0.00" for 1-Year event
 Inflow = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Outflow = 0.00 cfs @ 3.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 942.74' @ 3.00 hrs Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	942.74'	4,611 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.74	0	0	0
943.00	5	1	1
944.00	206	106	106
945.00	2,046	1,126	1,232
946.00	4,712	3,379	4,611

Device	Routing	Invert	Outlet Devices
#1	Primary	942.74'	15.0" Round Culvert L= 62.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 942.74' / 941.97' S= 0.0124 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Discarded	944.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

Discarded OutFlow Max=0.00 cfs @ 3.00 hrs HW=942.74' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=942.74' TW=938.40' (Dynamic Tailwater)

↑**1=Culvert** (Controls 0.00 cfs)

Summary for Pond BD: Existing Basin D

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 0.43" for 1-Year event
 Inflow = 8.00 cfs @ 12.52 hrs, Volume= 42,420 cf
 Outflow = 8.00 cfs @ 12.52 hrs, Volume= 42,420 cf, Atten= 0%, Lag= 0.1 min
 Primary = 8.00 cfs @ 12.52 hrs, Volume= 42,420 cf
 Routed to Reach 6R : Dry Creek Bed
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Reach 6R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 939.66' @ 12.52 hrs Surf.Area= 71 sf Storage= 33 cf

Plug-Flow detention time= 0.0 min calculated for 42,414 cf (100% of inflow)
 Center-of-Mass det. time= 0.0 min (870.6 - 870.6)

Volume	Invert	Avail.Storage	Storage Description
#1	938.40'	5,193 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.40	0	0	0
939.00	15	5	5
940.00	99	57	62
941.00	449	274	336
942.00	2,133	1,291	1,627
943.00	5,000	3,567	5,193

Device	Routing	Invert	Outlet Devices
#1	Primary	938.40'	24.0" Round Culvert L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.40' / 936.75' S= 0.0367 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Secondary	940.96'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=8.00 cfs @ 12.52 hrs HW=939.66' TW=937.63' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 8.00 cfs @ 3.83 fps)

Secondary OutFlow Max=0.00 cfs @ 3.00 hrs HW=938.40' TW=936.75' (Dynamic Tailwater)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

25-103 Existing 6-26-25

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MSE 24-hr 3 2-Year Rainfall=2.85"

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Summary for Subcatchment 1E: To West

Runoff = 0.11 cfs @ 12.47 hrs, Volume= 714 cf, Depth= 0.25"
 Routed to nonexistent node P1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

Area (sf)	CN	Description
* 4,845	98	Pavement
12,502	73	Woods, Fair, HSG C
16,463	36	Woods, Fair, HSG A
33,810	59	Weighted Average
28,965		85.67% Pervious Area
4,845		14.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	150	0.0953	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, SCF to LP
					Short Grass Pasture Kv= 7.0 fps
21.8	350	Total			

Summary for Subcatchment 2E: To East Culvert

Runoff = 0.13 cfs @ 12.64 hrs, Volume= 1,292 cf, Depth= 0.16"
 Routed to Pond BB : Existing Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

Area (sf)	CN	Description
* 7,249	98	Pavements
57,943	60	Woods, Fair, HSG B
33,705	36	Woods, Fair, HSG A
98,897	55	Weighted Average
91,648		92.67% Pervious Area
7,249		7.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4	150	0.0833	0.13		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
5.6	190	0.0126	0.56		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
25.0	340	Total			

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Summary for Subcatchment 3E: To SE Culvert

Runoff = 0.00 cfs @ 20.66 hrs, Volume= 28 cf, Depth= 0.00"
 Routed to Pond BC : Existing Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

Area (sf)	CN	Description
* 5,251	98	Building roofs
* 6,682	98	Pavements
1,146	60	Woods, Fair, HSG B
102,603	36	Woods, Fair, HSG A
115,682	43	Weighted Average
103,749		89.68% Pervious Area
11,933		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	150	0.1000	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.3	262	0.0687	1.31		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
21.3	412	Total			

Summary for Subcatchment 4E: To South Culvert

Runoff = 1.40 cfs @ 12.43 hrs, Volume= 7,188 cf, Depth= 0.37"
 Routed to Pond BD : Existing Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

Area (sf)	CN	Description
* 1,251	98	Building roofs
* 35,988	98	Pavements
26,202	65	Woods/grass comb., Fair, HSG B
125,821	60	Woods, Fair, HSG B
36,350	43	Woods/grass comb., Fair, HSG A
6,359	36	Woods, Fair, HSG A
231,971	63	Weighted Average
194,732		83.95% Pervious Area
37,239		16.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0120	0.13		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
3.4	350	0.1171	1.71		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
22.6	500	Total			

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MSE 24-hr 3 2-Year Rainfall=2.85"

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Summary for Subcatchment 5E: To Lake

Runoff = 0.80 cfs @ 12.28 hrs, Volume= 3,587 cf, Depth= 0.31"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	3,336	98	Building roofs
*	15,698	98	Pavement
	2,572	61	>75% Grass cover, Good, HSG B
	2,863	39	>75% Grass cover, Good, HSG A
	114,391	55	Woods, Good, HSG B
	138,860	61	Weighted Average
	119,826		86.29% Pervious Area
	19,034		13.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0600	0.25		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
3.1	368	0.1603	2.00		Shallow Concentrated Flow, SCF to LP
					Woodland Kv= 5.0 fps
13.2	518	Total			

Summary for Subcatchment 6E: From North

Runoff = 13.99 cfs @ 12.35 hrs, Volume= 50,727 cf, Depth= 0.81"
 Routed to Pond BA : Existing Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	41,070	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	110,836	76	Woods/grass comb., Fair, HSG C
	368,421	65	Woods/grass comb., Fair, HSG B
	747,327	74	Weighted Average
	696,257		93.17% Pervious Area
	51,070		6.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP
					Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.012 Concrete pipe, finished

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MSE 24-hr 3 2-Year Rainfall=2.85"

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21.5 1,453 Total

Summary for Reach 6R: Dry Creek Bed

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 0.60" for 2-Year event
 Inflow = 11.34 cfs @ 12.59 hrs, Volume= 59,235 cf
 Outflow = 11.31 cfs @ 12.61 hrs, Volume= 59,235 cf, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.60 fps, Min. Travel Time= 1.4 min
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 3.8 min

Peak Storage= 956 cf @ 12.61 hrs
 Average Depth at Peak Storage= 1.07' , Surface Width= 5.14'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 '/' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 '/'
 Inlet Invert= 936.75', Outlet Invert= 933.00'

**Summary for Pond BA: Existing Basin A**

Inflow Area = 747,327 sf, 6.83% Impervious, Inflow Depth = 0.81" for 2-Year event
 Inflow = 13.99 cfs @ 12.35 hrs, Volume= 50,727 cf
 Outflow = 12.48 cfs @ 12.43 hrs, Volume= 50,727 cf, Atten= 11%, Lag= 5.2 min
 Primary = 12.48 cfs @ 12.43 hrs, Volume= 50,727 cf
 Routed to Pond BB : Existing Basin B
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 968.34' @ 12.43 hrs Surf.Area= 2,008 sf Storage= 1,179 cf

Plug-Flow detention time= 0.3 min calculated for 50,719 cf (100% of inflow)
 Center-of-Mass det. time= 0.3 min (848.8 - 848.5)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.53' S= 0.0270 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.11'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=12.48 cfs @ 12.43 hrs HW=968.34' TW=956.88' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 12.48 cfs @ 7.06 fps)**Secondary OutFlow** Max=0.00 cfs @ 3.00 hrs HW=964.15' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond BB: Existing Basin B**

Inflow Area = 846,224 sf, 6.89% Impervious, Inflow Depth = 0.74" for 2-Year event
 Inflow = 12.58 cfs @ 12.44 hrs, Volume= 52,019 cf
 Outflow = 10.22 cfs @ 12.60 hrs, Volume= 52,019 cf, Atten= 19%, Lag= 9.5 min
 Primary = 9.83 cfs @ 12.60 hrs, Volume= 51,876 cf
 Routed to Pond BD : Existing Basin D
 Secondary = 0.38 cfs @ 12.60 hrs, Volume= 142 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 957.03' @ 12.60 hrs Surf.Area= 10,338 sf Storage= 7,365 cf

Plug-Flow detention time= 8.8 min calculated for 52,011 cf (100% of inflow)
 Center-of-Mass det. time= 8.8 min (860.0 - 851.1)

Volume	Invert	Avail.Storage	Storage Description
#1	955.13'	58,906 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
955.13	0	0	0
956.00	2,298	1,000	1,000
957.00	9,791	6,045	7,044
958.00	26,966	18,379	25,423
959.00	40,000	33,483	58,906

Device	Routing	Invert	Outlet Devices
#1	Primary	955.13'	24.0" Round Culvert L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 955.13' / 954.87' S= 0.0072 ' / Cc= 0.900

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#2 Secondary 956.97' n= 0.025 Corrugated metal, Flow Area= 3.14 sf
10.0' long x 10.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.83 cfs @ 12.60 hrs HW=957.03' TW=939.97' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 9.83 cfs @ 4.10 fps)

Secondary OutFlow Max=0.38 cfs @ 12.60 hrs HW=957.03' TW=939.97' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.38 cfs @ 0.62 fps)

Summary for Pond BC: Existing Basin C

Inflow Area = 115,682 sf, 10.32% Impervious, Inflow Depth = 0.00" for 2-Year event
 Inflow = 0.00 cfs @ 20.66 hrs, Volume= 28 cf
 Outflow = 0.00 cfs @ 20.62 hrs, Volume= 28 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 20.62 hrs, Volume= 28 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 942.77' @ 20.62 hrs Surf.Area= 1 sf Storage= 0 cf

Plug-Flow detention time= 0.9 min calculated for 28 cf (100% of inflow)

Center-of-Mass det. time= 0.9 min (1,255.3 - 1,254.4)

Volume	Invert	Avail.Storage	Storage Description
#1	942.74'	4,611 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.74	0	0	0
943.00	5	1	1
944.00	206	106	106
945.00	2,046	1,126	1,232
946.00	4,712	3,379	4,611

Device	Routing	Invert	Outlet Devices
#1	Primary	942.74'	15.0" Round Culvert L= 62.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 942.74' / 941.97' S= 0.0124 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Discarded	944.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

Discarded OutFlow Max=0.00 cfs @ 3.00 hrs HW=942.74' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 20.62 hrs HW=942.77' TW=938.65' (Dynamic Tailwater)

↑**1=Culvert** (Barrel Controls 0.00 cfs @ 0.37 fps)

Summary for Pond BD: Existing Basin D

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 0.60" for 2-Year event
 Inflow = 11.34 cfs @ 12.59 hrs, Volume= 59,235 cf
 Outflow = 11.34 cfs @ 12.59 hrs, Volume= 59,235 cf, Atten= 0%, Lag= 0.2 min
 Primary = 11.34 cfs @ 12.59 hrs, Volume= 59,235 cf
 Routed to Reach 6R : Dry Creek Bed
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Reach 6R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 939.98' @ 12.59 hrs Surf.Area= 97 sf Storage= 59 cf

Plug-Flow detention time= 0.1 min calculated for 59,227 cf (100% of inflow)
 Center-of-Mass det. time= 0.1 min (863.5 - 863.5)

Volume	Invert	Avail.Storage	Storage Description
#1	938.40'	5,193 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.40	0	0	0
939.00	15	5	5
940.00	99	57	62
941.00	449	274	336
942.00	2,133	1,291	1,627
943.00	5,000	3,567	5,193

Device	Routing	Invert	Outlet Devices
#1	Primary	938.40'	24.0" Round Culvert L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.40' / 936.75' S= 0.0367 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Secondary	940.96'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=11.34 cfs @ 12.59 hrs HW=939.98' TW=937.82' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 11.34 cfs @ 4.27 fps)

Secondary OutFlow Max=0.00 cfs @ 3.00 hrs HW=938.40' TW=936.75' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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MSE 24-hr 3 10-Year Rainfall=4.23"

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Summary for Subcatchment 1E: To West

Runoff = 0.56 cfs @ 12.38 hrs, Volume= 2,322 cf, Depth= 0.82"
 Routed to nonexistent node P1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

Area (sf)	CN	Description
* 4,845	98	Pavement
12,502	73	Woods, Fair, HSG C
16,463	36	Woods, Fair, HSG A
33,810	59	Weighted Average
28,965		85.67% Pervious Area
4,845		14.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	150	0.0953	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, SCF to LP
					Short Grass Pasture Kv= 7.0 fps
21.8	350	Total			

Summary for Subcatchment 2E: To East Culvert

Runoff = 1.02 cfs @ 12.45 hrs, Volume= 5,145 cf, Depth= 0.62"
 Routed to Pond BB : Existing Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

Area (sf)	CN	Description
* 7,249	98	Pavements
57,943	60	Woods, Fair, HSG B
33,705	36	Woods, Fair, HSG A
98,897	55	Weighted Average
91,648		92.67% Pervious Area
7,249		7.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4	150	0.0833	0.13		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
5.6	190	0.0126	0.56		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
25.0	340	Total			

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MSE 24-hr 3 10-Year Rainfall=4.23"

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Summary for Subcatchment 3E: To SE Culvert

Runoff = 0.13 cfs @ 12.67 hrs, Volume= 1,620 cf, Depth= 0.17"
 Routed to Pond BC : Existing Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

Area (sf)	CN	Description
* 5,251	98	Building roofs
* 6,682	98	Pavements
1,146	60	Woods, Fair, HSG B
102,603	36	Woods, Fair, HSG A
115,682	43	Weighted Average
103,749		89.68% Pervious Area
11,933		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	150	0.1000	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.3	262	0.0687	1.31		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
21.3	412	Total			

Summary for Subcatchment 4E: To South Culvert

Runoff = 5.23 cfs @ 12.37 hrs, Volume= 20,212 cf, Depth= 1.05"
 Routed to Pond BD : Existing Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

Area (sf)	CN	Description
* 1,251	98	Building roofs
* 35,988	98	Pavements
26,202	65	Woods/grass comb., Fair, HSG B
125,821	60	Woods, Fair, HSG B
36,350	43	Woods/grass comb., Fair, HSG A
6,359	36	Woods, Fair, HSG A
231,971	63	Weighted Average
194,732		83.95% Pervious Area
37,239		16.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0120	0.13		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
3.4	350	0.1171	1.71		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
22.6	500	Total			

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MSE 24-hr 3 10-Year Rainfall=4.23"

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Summary for Subcatchment 5E: To Lake

Runoff = 3.59 cfs @ 12.24 hrs, Volume= 10,786 cf, Depth= 0.93"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	3,336	98	Building roofs
*	15,698	98	Pavement
	2,572	61	>75% Grass cover, Good, HSG B
	2,863	39	>75% Grass cover, Good, HSG A
	114,391	55	Woods, Good, HSG B
	138,860	61	Weighted Average
	119,826		86.29% Pervious Area
	19,034		13.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0600	0.25		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
3.1	368	0.1603	2.00		Shallow Concentrated Flow, SCF to LP Woodland Kv= 5.0 fps
13.2	518	Total			

Summary for Subcatchment 6E: From North

Runoff = 32.20 cfs @ 12.33 hrs, Volume= 110,050 cf, Depth= 1.77"
 Routed to Pond BA : Existing Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	41,070	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	110,836	76	Woods/grass comb., Fair, HSG C
	368,421	65	Woods/grass comb., Fair, HSG B
	747,327	74	Weighted Average
	696,257		93.17% Pervious Area
	51,070		6.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished

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MSE 24-hr 3 10-Year Rainfall=4.23"

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21.5 1,453 Total

Summary for Reach 6R: Dry Creek Bed

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 1.22" for 10-Year event
 Inflow = 17.88 cfs @ 12.54 hrs, Volume= 121,869 cf
 Outflow = 17.87 cfs @ 12.56 hrs, Volume= 121,869 cf, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.96 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 1.20 fps, Avg. Travel Time= 3.1 min

Peak Storage= 1,329 cf @ 12.56 hrs
 Average Depth at Peak Storage= 1.38' , Surface Width= 5.76'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 '/' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 '/'
 Inlet Invert= 936.75', Outlet Invert= 933.00'

**Summary for Pond BA: Existing Basin A**

Inflow Area = 747,327 sf, 6.83% Impervious, Inflow Depth = 1.77" for 10-Year event
 Inflow = 32.20 cfs @ 12.33 hrs, Volume= 110,050 cf
 Outflow = 27.12 cfs @ 12.44 hrs, Volume= 110,050 cf, Atten= 16%, Lag= 6.8 min
 Primary = 14.17 cfs @ 12.44 hrs, Volume= 94,892 cf
 Routed to Pond BB : Existing Basin B
 Secondary = 12.95 cfs @ 12.44 hrs, Volume= 15,158 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 969.58' @ 12.44 hrs Surf.Area= 17,756 sf Storage= 9,795 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 2.7 min (833.7 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.53' S= 0.0270 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.11'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=14.17 cfs @ 12.44 hrs HW=969.58' TW=957.15' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 14.17 cfs @ 8.02 fps)**Secondary OutFlow** Max=12.95 cfs @ 12.44 hrs HW=969.58' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 12.95 cfs @ 1.85 fps)**Summary for Pond BB: Existing Basin B**

Inflow Area = 846,224 sf, 6.89% Impervious, Inflow Depth = 1.42" for 10-Year event
 Inflow = 15.19 cfs @ 12.44 hrs, Volume= 100,037 cf
 Outflow = 14.48 cfs @ 12.72 hrs, Volume= 100,037 cf, Atten= 5%, Lag= 16.6 min
 Primary = 11.27 cfs @ 12.72 hrs, Volume= 92,996 cf
 Routed to Pond BD : Existing Basin D
 Secondary = 3.20 cfs @ 12.72 hrs, Volume= 7,041 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 957.22' @ 12.72 hrs Surf.Area= 13,631 sf Storage= 9,662 cf

Plug-Flow detention time= 9.3 min calculated for 100,023 cf (100% of inflow)
 Center-of-Mass det. time= 9.3 min (858.4 - 849.0)

Volume	Invert	Avail.Storage	Storage Description
#1	955.13'	58,906 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
955.13	0	0	0
956.00	2,298	1,000	1,000
957.00	9,791	6,045	7,044
958.00	26,966	18,379	25,423
959.00	40,000	33,483	58,906

Device	Routing	Invert	Outlet Devices
#1	Primary	955.13'	24.0" Round Culvert L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 955.13' / 954.87' S= 0.0072 ' / Cc= 0.900

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MSE 24-hr 3 10-Year Rainfall=4.23"

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#2 Secondary 956.97' n= 0.025 Corrugated metal, Flow Area= 3.14 sf
10.0' long x 10.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=11.27 cfs @ 12.72 hrs HW=957.22' TW=940.69' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 11.27 cfs @ 4.26 fps)

Secondary OutFlow Max=3.20 cfs @ 12.72 hrs HW=957.22' TW=940.69' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 3.20 cfs @ 1.26 fps)

Summary for Pond BC: Existing Basin C

Inflow Area = 115,682 sf, 10.32% Impervious, Inflow Depth = 0.17" for 10-Year event
 Inflow = 0.13 cfs @ 12.67 hrs, Volume= 1,620 cf
 Outflow = 0.13 cfs @ 12.67 hrs, Volume= 1,620 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Primary = 0.13 cfs @ 12.67 hrs, Volume= 1,620 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 942.95' @ 12.67 hrs Surf.Area= 4 sf Storage= 1 cf

Plug-Flow detention time= 0.1 min calculated for 1,620 cf (100% of inflow)
 Center-of-Mass det. time= 0.1 min (960.9 - 960.8)

Volume	Invert	Avail.Storage	Storage Description
#1	942.74'	4,611 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.74	0	0	0
943.00	5	1	1
944.00	206	106	106
945.00	2,046	1,126	1,232
946.00	4,712	3,379	4,611

Device	Routing	Invert	Outlet Devices
#1	Primary	942.74'	15.0" Round Culvert L= 62.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 942.74' / 941.97' S= 0.0124 '/ S= 0.0124' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Discarded	944.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

Discarded OutFlow Max=0.00 cfs @ 3.00 hrs HW=942.74' (Free Discharge)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Primary OutFlow Max=0.13 cfs @ 12.67 hrs HW=942.95' TW=940.74' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 0.13 cfs @ 1.44 fps)

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MSE 24-hr 3 10-Year Rainfall=4.23"

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Summary for Pond BD: Existing Basin D

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 1.22" for 10-Year event
 Inflow = 17.88 cfs @ 12.52 hrs, Volume= 121,869 cf
 Outflow = 17.88 cfs @ 12.54 hrs, Volume= 121,869 cf, Atten= 0%, Lag= 1.1 min
 Primary = 17.88 cfs @ 12.54 hrs, Volume= 121,869 cf
 Routed to Reach 6R : Dry Creek Bed
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Reach 6R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 940.80' @ 12.54 hrs Surf.Area= 378 sf Storage= 251 cf

Plug-Flow detention time= 0.1 min calculated for 121,852 cf (100% of inflow)
 Center-of-Mass det. time= 0.1 min (859.5 - 859.3)

Volume	Invert	Avail.Storage	Storage Description
#1	938.40'	5,193 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.40	0	0	0
939.00	15	5	5
940.00	99	57	62
941.00	449	274	336
942.00	2,133	1,291	1,627
943.00	5,000	3,567	5,193

Device	Routing	Invert	Outlet Devices
#1	Primary	938.40'	24.0" Round Culvert L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.40' / 936.75' S= 0.0367 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Secondary	940.96'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=17.88 cfs @ 12.54 hrs HW=940.80' TW=938.13' (Dynamic Tailwater)
 ↑**1=Culvert** (Inlet Controls 17.88 cfs @ 5.69 fps)

Secondary OutFlow Max=0.00 cfs @ 3.00 hrs HW=938.40' TW=936.75' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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MSE 24-hr 3 100-Year Rainfall=7.25"

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Summary for Subcatchment 1E: To West

Runoff = 2.17 cfs @ 12.33 hrs, Volume= 7,554 cf, Depth= 2.68"
 Routed to nonexistent node P1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

Area (sf)	CN	Description
* 4,845	98	Pavement
12,502	73	Woods, Fair, HSG C
16,463	36	Woods, Fair, HSG A
33,810	59	Weighted Average
28,965		85.67% Pervious Area
4,845		14.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	150	0.0953	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, SCF to LP
					Short Grass Pasture Kv= 7.0 fps
21.8	350	Total			

Summary for Subcatchment 2E: To East Culvert

Runoff = 4.87 cfs @ 12.39 hrs, Volume= 18,826 cf, Depth= 2.28"
 Routed to Pond BB : Existing Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

Area (sf)	CN	Description
* 7,249	98	Pavements
57,943	60	Woods, Fair, HSG B
33,705	36	Woods, Fair, HSG A
98,897	55	Weighted Average
91,648		92.67% Pervious Area
7,249		7.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.4	150	0.0833	0.13		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
5.6	190	0.0126	0.56		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
25.0	340	Total			

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MSE 24-hr 3 100-Year Rainfall=7.25"

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Summary for Subcatchment 3E: To SE Culvert

Runoff = 2.60 cfs @ 12.38 hrs, Volume= 11,419 cf, Depth= 1.18"
 Routed to Pond BC : Existing Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

Area (sf)	CN	Description
* 5,251	98	Building roofs
* 6,682	98	Pavements
1,146	60	Woods, Fair, HSG B
102,603	36	Woods, Fair, HSG A
115,682	43	Weighted Average
103,749		89.68% Pervious Area
11,933		10.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	150	0.1000	0.14		Sheet Flow, HP to SCF
					Woods: Light underbrush n= 0.400 P2= 2.40"
3.3	262	0.0687	1.31		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
21.3	412	Total			

Summary for Subcatchment 4E: To South Culvert

Runoff = 17.15 cfs @ 12.33 hrs, Volume= 59,716 cf, Depth= 3.09"
 Routed to Pond BD : Existing Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

Area (sf)	CN	Description
* 1,251	98	Building roofs
* 35,988	98	Pavements
26,202	65	Woods/grass comb., Fair, HSG B
125,821	60	Woods, Fair, HSG B
36,350	43	Woods/grass comb., Fair, HSG A
6,359	36	Woods, Fair, HSG A
231,971	63	Weighted Average
194,732		83.95% Pervious Area
37,239		16.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.2	150	0.0120	0.13		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
3.4	350	0.1171	1.71		Shallow Concentrated Flow, SF to LP
					Woodland Kv= 5.0 fps
22.6	500	Total			

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MSE 24-hr 3 100-Year Rainfall=7.25"

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Summary for Subcatchment 5E: To Lake

Runoff = 12.51 cfs @ 12.22 hrs, Volume= 33,370 cf, Depth= 2.88"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	3,336	98	Building roofs
*	15,698	98	Pavement
	2,572	61	>75% Grass cover, Good, HSG B
	2,863	39	>75% Grass cover, Good, HSG A
	114,391	55	Woods, Good, HSG B
	138,860	61	Weighted Average
	119,826		86.29% Pervious Area
	19,034		13.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	150	0.0600	0.25		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
3.1	368	0.1603	2.00		Shallow Concentrated Flow, SCF to LP
					Woodland Kv= 5.0 fps
13.2	518	Total			

Summary for Subcatchment 6E: From North

Runoff = 78.79 cfs @ 12.31 hrs, Volume= 265,351 cf, Depth= 4.26"
 Routed to Pond BA : Existing Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	41,070	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	110,836	76	Woods/grass comb., Fair, HSG C
	368,421	65	Woods/grass comb., Fair, HSG B
	747,327	74	Weighted Average
	696,257		93.17% Pervious Area
	51,070		6.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF
					Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP
					Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet
					24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50'
					n= 0.012 Concrete pipe, finished

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MSE 24-hr 3 100-Year Rainfall=7.25"

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21.5 1,453 Total

Summary for Reach 6R: Dry Creek Bed

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 2.61" for 100-Year event
 Inflow = 36.74 cfs @ 12.39 hrs, Volume= 259,977 cf
 Outflow = 36.69 cfs @ 12.40 hrs, Volume= 259,977 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 3.59 fps, Min. Travel Time= 1.0 min
 Avg. Velocity = 1.48 fps, Avg. Travel Time= 2.5 min

Peak Storage= 2,250 cf @ 12.40 hrs
 Average Depth at Peak Storage= 2.03' , Surface Width= 7.06'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 '/' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 '/'
 Inlet Invert= 936.75', Outlet Invert= 933.00'

**Summary for Pond BA: Existing Basin A**

Inflow Area = 747,327 sf, 6.83% Impervious, Inflow Depth = 4.26" for 100-Year event
 Inflow = 78.79 cfs @ 12.31 hrs, Volume= 265,351 cf
 Outflow = 66.64 cfs @ 12.42 hrs, Volume= 265,351 cf, Atten= 15%, Lag= 6.9 min
 Primary = 15.07 cfs @ 12.42 hrs, Volume= 170,016 cf
 Routed to Pond BB : Existing Basin B
 Secondary = 51.58 cfs @ 12.42 hrs, Volume= 95,335 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 970.30' @ 12.42 hrs Surf.Area= 30,827 sf Storage= 28,147 cf

Plug-Flow detention time= 4.0 min calculated for 265,312 cf (100% of inflow)
 Center-of-Mass det. time= 4.0 min (817.0 - 813.0)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

25-103 Existing 6-26-25

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.53' S= 0.0270 ' /' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.11'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=15.07 cfs @ 12.42 hrs HW=970.30' TW=957.35' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 15.07 cfs @ 8.53 fps)**Secondary OutFlow** Max=51.56 cfs @ 12.42 hrs HW=970.30' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 51.56 cfs @ 2.88 fps)**Summary for Pond BB: Existing Basin B**

Inflow Area = 846,224 sf, 6.89% Impervious, Inflow Depth = 2.68" for 100-Year event
 Inflow = 19.92 cfs @ 12.39 hrs, Volume= 188,842 cf
 Outflow = 18.82 cfs @ 12.54 hrs, Volume= 188,842 cf, Atten= 6%, Lag= 8.9 min
 Primary = 12.29 cfs @ 12.54 hrs, Volume= 165,528 cf
 Routed to Pond BD : Existing Basin D
 Secondary = 6.53 cfs @ 12.54 hrs, Volume= 23,314 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 957.37' @ 12.54 hrs Surf.Area= 16,178 sf Storage= 11,873 cf

Plug-Flow detention time= 9.4 min calculated for 188,815 cf (100% of inflow)
 Center-of-Mass det. time= 9.4 min (863.0 - 853.6)

Volume	Invert	Avail.Storage	Storage Description
#1	955.13'	58,906 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
955.13	0	0	0
956.00	2,298	1,000	1,000
957.00	9,791	6,045	7,044
958.00	26,966	18,379	25,423
959.00	40,000	33,483	58,906

Device	Routing	Invert	Outlet Devices
#1	Primary	955.13'	24.0" Round Culvert L= 36.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 955.13' / 954.87' S= 0.0072 ' /' Cc= 0.900

25-103 Existing 6-26-25

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#2 Secondary 956.97' n= 0.025 Corrugated metal, Flow Area= 3.14 sf
10.0' long x 10.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=12.29 cfs @ 12.54 hrs HW=957.37' TW=941.50' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 12.29 cfs @ 4.36 fps)

Secondary OutFlow Max=6.52 cfs @ 12.54 hrs HW=957.37' TW=941.50' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 6.52 cfs @ 1.62 fps)

Summary for Pond BC: Existing Basin C

Inflow Area = 115,682 sf, 10.32% Impervious, Inflow Depth = 1.18" for 100-Year event
 Inflow = 2.60 cfs @ 12.38 hrs, Volume= 11,419 cf
 Outflow = 2.60 cfs @ 12.39 hrs, Volume= 11,419 cf, Atten= 0%, Lag= 0.4 min
 Discarded = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Primary = 2.60 cfs @ 12.39 hrs, Volume= 11,419 cf
 Routed to Pond BD : Existing Basin D

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 943.76' @ 12.39 hrs Surf.Area= 158 sf Storage= 81 cf

Plug-Flow detention time= 0.4 min calculated for 11,417 cf (100% of inflow)
 Center-of-Mass det. time= 0.4 min (875.0 - 874.6)

Volume	Invert	Avail.Storage	Storage Description
#1	942.74'	4,611 cf	Custom Stage Data (Prismatic) Listed below
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.74	0	0	0
943.00	5	1	1
944.00	206	106	106
945.00	2,046	1,126	1,232
946.00	4,712	3,379	4,611

Device	Routing	Invert	Outlet Devices
#1	Primary	942.74'	15.0" Round Culvert L= 62.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 942.74' / 941.97' S= 0.0124 '/ S= 0.0124' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Discarded	944.90'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

Discarded OutFlow Max=0.00 cfs @ 3.00 hrs HW=942.74' (Free Discharge)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Primary OutFlow Max=2.59 cfs @ 12.39 hrs HW=943.76' TW=941.62' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 2.59 cfs @ 3.29 fps)

Summary for Pond BD: Existing Basin D

Inflow Area = 1,193,877 sf, 9.00% Impervious, Inflow Depth = 2.61" for 100-Year event
 Inflow = 36.82 cfs @ 12.38 hrs, Volume= 259,977 cf
 Outflow = 36.74 cfs @ 12.39 hrs, Volume= 259,977 cf, Atten= 0%, Lag= 0.6 min
 Primary = 22.50 cfs @ 12.37 hrs, Volume= 236,629 cf
 Routed to Reach 6R : Dry Creek Bed
 Secondary = 14.27 cfs @ 12.39 hrs, Volume= 23,348 cf
 Routed to Reach 6R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 941.62' @ 12.39 hrs Surf.Area= 1,487 sf Storage= 932 cf

Plug-Flow detention time= 0.2 min calculated for 259,939 cf (100% of inflow)
 Center-of-Mass det. time= 0.2 min (856.3 - 856.2)

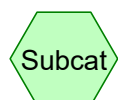
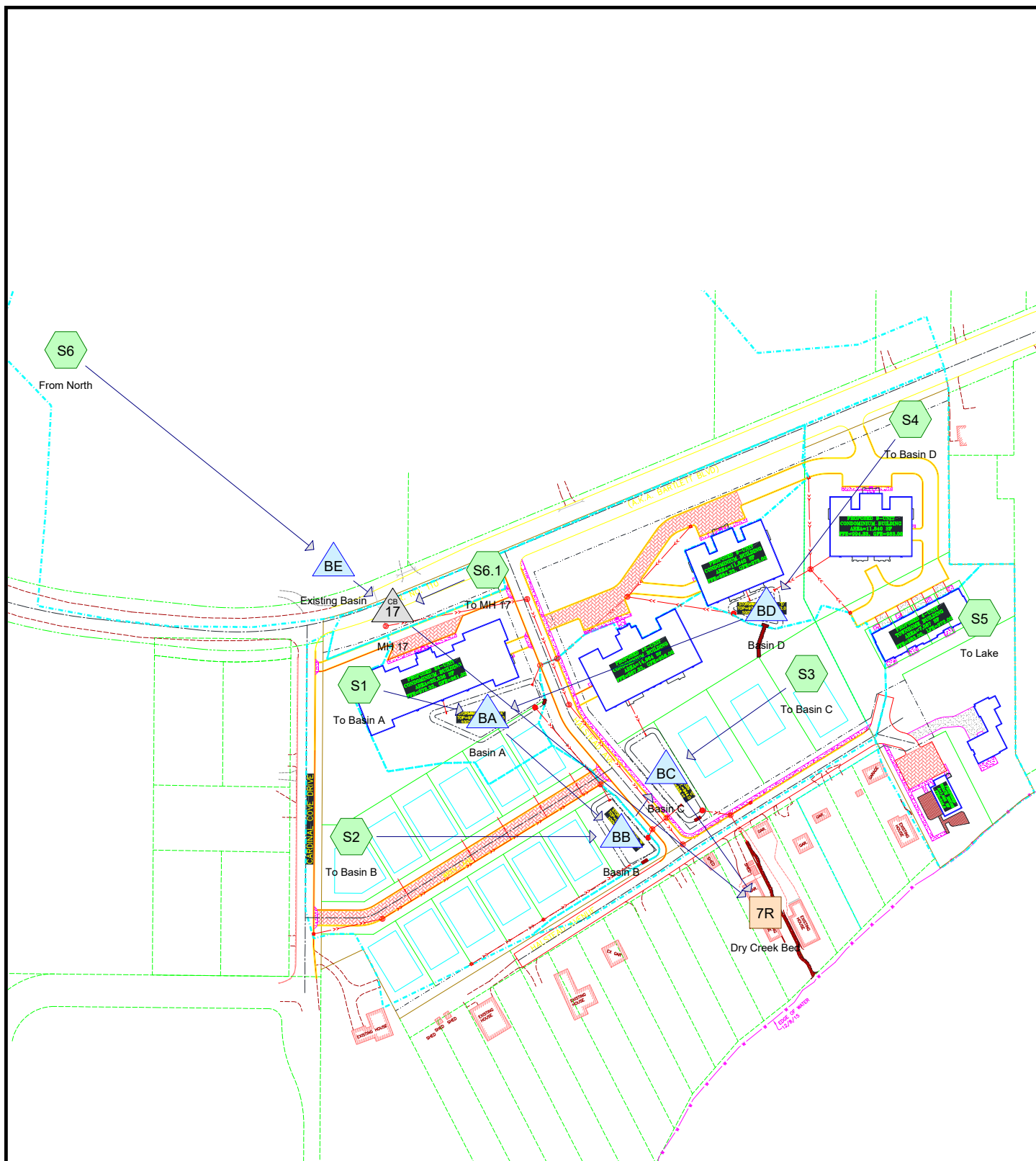
Volume	Invert	Avail.Storage	Storage Description
#1	938.40'	5,193 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.40	0	0	0
939.00	15	5	5
940.00	99	57	62
941.00	449	274	336
942.00	2,133	1,291	1,627
943.00	5,000	3,567	5,193

Device	Routing	Invert	Outlet Devices
#1	Primary	938.40'	24.0" Round Culvert L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.40' / 936.75' S= 0.0367 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf
#2	Secondary	940.96'	10.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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=22.47 cfs @ 12.37 hrs HW=941.61' TW=938.77' (Dynamic Tailwater)
 ↑**1=Culvert** (Outlet Controls 22.47 cfs @ 7.15 fps)

Secondary OutFlow Max=14.27 cfs @ 12.39 hrs HW=941.62' TW=938.78' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Weir Controls 14.27 cfs @ 2.17 fps)

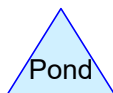
**POST-DEVELOPMENT
SUMMARY OUTPUT**



Subcat



Reach



Pond



Link

Routing Diagram for 25-103 Proposed 11-22-25
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Summary for Subcatchment S1: To Basin A

Runoff = 1.96 cfs @ 12.19 hrs, Volume= 5,351 cf, Depth= 0.48"
 Routed to Pond BA : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

	Area (sf)	CN	Description
*	24,236	98	Building Roofs
*	24,264	98	Pavements
	65,618	61	>75% Grass cover, Good, HSG B
	19,307	39	>75% Grass cover, Good, HSG A
	133,425	71	Weighted Average
	84,925		63.65% Pervious Area
	48,500		36.35% Impervious Area

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

Summary for Subcatchment S2: To Basin B

Runoff = 0.68 cfs @ 12.23 hrs, Volume= 3,060 cf, Depth= 0.24"
 Routed to Pond BB : Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

	Area (sf)	CN	Description
*	44,000	98	Building Roofs
*	12,810	98	Pavement
	8,537	74	>75% Grass cover, Good, HSG C
	89,339	39	>75% Grass cover, Good, HSG A
	154,686	63	Weighted Average
	97,876		63.27% Pervious Area
	56,810		36.73% Impervious Area

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

Summary for Subcatchment S3: To Basin C

Runoff = 2.34 cfs @ 12.19 hrs, Volume= 6,224 cf, Depth= 0.52"
 Routed to Pond BC : Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

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	Area (sf)	CN	Description
*	26,964	98	Building Roofs
*	24,706	98	Pavement
	77,850	61	>75% Grass cover, Good, HSG B
	14,608	39	>75% Grass cover, Good, HSG A
	144,128	72	Weighted Average
	92,458		64.15% Pervious Area
	51,670		35.85% Impervious Area

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

Summary for Subcatchment S4: To Basin D

Runoff = 1.99 cfs @ 12.19 hrs, Volume= 5,048 cf, Depth= 0.60"
 Routed to Pond BD : Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

	Area (sf)	CN	Description
*	23,680	98	Building roofs
*	22,987	98	Pavements
	35,400	61	>75% Grass cover, Good, HSG B
	19,403	39	>75% Grass cover, Good, HSG A
	101,470	74	Weighted Average
	54,803		54.01% Pervious Area
	46,667		45.99% Impervious Area

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

Summary for Subcatchment S5: To Lake

Runoff = 0.67 cfs @ 12.31 hrs, Volume= 2,618 cf, Depth= 0.41"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 1-Year Rainfall=2.48"

	Area (sf)	CN	Description
*	13,408	98	Building roofs
*	7,165	98	Pavement
	51,076	58	Woods/grass comb., Good, HSG B
	4,655	61	>75% Grass cover, Good, HSG B
	76,304	69	Weighted Average
	55,731		73.04% Pervious Area
	20,573		26.96% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	150	0.1467	0.16		Sheet Flow, HP to SCF Woods: Light underbrush n= 0.400 P2= 2.40"
1.9	235	0.1617	2.01		Shallow Concentrated Flow, SCF to LP Woodland Kv= 5.0 fps
17.4	385	Total			

Summary for Subcatchment S6: From North

Runoff = 10.70 cfs @ 12.35 hrs, Volume= 39,787 cf, Depth= 0.64"
Routed to Pond BE : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
* 10,000	98	Building Roofs
* 54,457	98	Pavements
42,650	88	Row crops, straight row, Poor, HSG C
174,350	81	Row crops, straight row, Poor, HSG B
113,391	76	Woods/grass comb., Fair, HSG C
352,448	65	Woods/grass comb., Fair, HSG B
747,296	75	Weighted Average
682,839		91.37% Pervious Area
64,457		8.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.5	1,453	Total			

Summary for Subcatchment S6.1: To MH 17

Runoff = 0.28 cfs @ 12.19 hrs, Volume= 724 cf, Depth= 0.60"
Routed to Pond 17 : MH 17

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-Year Rainfall=2.48"

Area (sf)	CN	Description
* 5,011	98	Pavements
9,546	61	>75% Grass cover, Good, HSG B
14,557	74	Weighted Average
9,546		65.58% Pervious Area
5,011		34.42% Impervious Area

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

Summary for Reach 7R: Dry Creek Bed

Inflow Area = 1,295,562 sf, 21.08% Impervious, Inflow Depth = 0.38" for 1-Year event
 Inflow = 10.25 cfs @ 12.41 hrs, Volume= 40,511 cf
 Outflow = 10.23 cfs @ 12.42 hrs, Volume= 40,511 cf, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Max. Velocity= 2.53 fps, Min. Travel Time= 1.5 min

Avg. Velocity = 0.85 fps, Avg. Travel Time= 4.3 min

Peak Storage= 891 cf @ 12.42 hrs

Average Depth at Peak Storage= 1.01' , Surface Width= 5.02'

Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060

Side Slope Z-value= 1.0 ' / ' Top Width= 8.20'

Length= 220.0' Slope= 0.0170 ' / '

Inlet Invert= 936.75', Outlet Invert= 933.00'

**Summary for Pond 17: MH 17**

[57] Hint: Peaked at 964.70' (Flood elevation advised)

Inflow Area = 761,853 sf, 9.12% Impervious, Inflow Depth = 0.64" for 1-Year event
 Inflow = 10.25 cfs @ 12.41 hrs, Volume= 40,511 cf
 Outflow = 10.25 cfs @ 12.41 hrs, Volume= 40,511 cf, Atten= 0%, Lag= 0.0 min
 Primary = 10.25 cfs @ 12.41 hrs, Volume= 40,511 cf

Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 964.70' @ 12.41 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	936.95'	30.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 936.95' / 936.75' S= 0.0040 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	938.60'	24.0" Round Culvert L= 89.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.60' / 936.95' S= 0.0185 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#3	Device 2	962.50'	18.0" Round Culvert L= 673.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 962.50' / 938.60' S= 0.0355 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.25 cfs @ 12.41 hrs HW=964.70' TW=937.76' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 10.25 cfs of 121.68 cfs potential flow)
 ↑ **2=Culvert** (Passes 10.25 cfs of 75.79 cfs potential flow)
 ↑ **3=Culvert** (Inlet Controls 10.25 cfs @ 5.80 fps)

Summary for Pond BA: Basin A

Inflow Area = 234,895 sf, 40.51% Impervious, Inflow Depth = 0.27" for 1-Year event
 Inflow = 1.96 cfs @ 12.19 hrs, Volume= 5,351 cf
 Outflow = 0.12 cfs @ 14.49 hrs, Volume= 5,352 cf, Atten= 94%, Lag= 137.6 min
 Discarded = 0.12 cfs @ 14.49 hrs, Volume= 5,352 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Pond BB : Basin B

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 954.43' @ 14.49 hrs Surf.Area= 6,330 sf Storage= 2,677 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 246.1 min (1,101.9 - 855.8)

Volume	Invert	Avail.Storage	Storage Description
#1	954.00'	30,256 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
954.00	6,000	0	0
955.00	6,760	6,380	6,380
956.00	7,545	7,153	13,533
957.00	8,355	7,950	21,483
958.00	9,191	8,773	30,256

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	15.0" Round Culvert L= 184.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 952.00' / 946.00' S= 0.0326 ' / ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	956.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	957.60'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	954.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.12 cfs @ 14.49 hrs HW=954.43' (Free Discharge)
 ↑ **4=Infiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=954.00' TW=945.00' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.00 cfs of 6.93 cfs potential flow)
 ↑ **2=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond BB: Basin B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=33)

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Inflow Area = 389,581 sf, 39.01% Impervious, Inflow Depth = 0.09" for 1-Year event
 Inflow = 0.68 cfs @ 12.23 hrs, Volume= 3,060 cf
 Outflow = 0.07 cfs @ 15.10 hrs, Volume= 3,060 cf, Atten= 89%, Lag= 171.9 min
 Discarded = 0.07 cfs @ 15.10 hrs, Volume= 3,060 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routed to Pond BC : Basin C

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 945.31' @ 15.10 hrs Surf.Area= 4,010 sf Storage= 1,235 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 179.0 min (1,071.8 - 892.8)

Volume	Invert	Avail.Storage	Storage Description
#1	945.00'	19,986 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
945.00	3,834	0	0
946.00	4,393	4,114	4,114
947.00	4,978	4,686	8,799
948.00	5,587	5,283	14,082
949.00	6,222	5,905	19,986

Device	Routing	Invert	Outlet Devices
#1	Primary	944.30'	21.0" Round Culvert L= 73.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 944.30' / 944.00' S= 0.0041 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	947.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	948.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	945.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 15.10 hrs HW=945.31' (Free Discharge)

↳4=Infiltration (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=945.00' TW=944.00' (Dynamic Tailwater)

↳1=Culvert (Passes 0.00 cfs of 2.01 cfs potential flow)

↳2=Orifice/Grate (Controls 0.00 cfs)

↳3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond BC: Basin C

Inflow Area = 533,709 sf, 38.16% Impervious, Inflow Depth = 0.14" for 1-Year event
 Inflow = 2.34 cfs @ 12.19 hrs, Volume= 6,224 cf
 Outflow = 0.06 cfs @ 18.31 hrs, Volume= 6,225 cf, Atten= 98%, Lag= 367.3 min
 Discarded = 0.06 cfs @ 18.31 hrs, Volume= 6,225 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 944.80' @ 18.31 hrs Surf.Area= 5,532 sf Storage= 4,177 cf

Plug-Flow detention time= 780.8 min calculated for 6,224 cf (100% of inflow)

Center-of-Mass det. time= 780.9 min (1,633.1 - 852.3)

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Volume	Invert	Avail.Storage	Storage Description
#1	944.00'	25,695 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
944.00	4,972	0	0
945.00	5,676	5,324	5,324
946.00	6,405	6,041	11,365
947.00	7,159	6,782	18,147
948.00	7,938	7,549	25,695

Device	Routing	Invert	Outlet Devices
#1	Primary	939.00'	21.0" Round Culvert L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 939.00' / 937.70' S= 0.0295 ' S= 0.0295 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	946.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	947.50'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	944.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.06 cfs @ 18.31 hrs HW=944.80' (Free Discharge)↑**4=Infiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=0.00 cfs @ 3.00 hrs HW=944.00' TW=936.75' (Dynamic Tailwater)↑**1=Culvert** (Passes 0.00 cfs of 23.52 cfs potential flow)↑**2=Orifice/Grate** (Controls 0.00 cfs)↑**3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond BD: Basin D**

Inflow Area = 101,470 sf, 45.99% Impervious, Inflow Depth = 0.60" for 1-Year event
 Inflow = 1.99 cfs @ 12.19 hrs, Volume= 5,048 cf
 Outflow = 0.03 cfs @ 21.17 hrs, Volume= 5,049 cf, Atten= 99%, Lag= 538.6 min
 Discarded = 0.03 cfs @ 21.17 hrs, Volume= 5,049 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Pond BA : Basin A

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 973.75' @ 21.17 hrs Surf.Area= 2,618 sf Storage= 3,969 cf

Plug-Flow detention time= 1,517.6 min calculated for 5,048 cf (100% of inflow)

Center-of-Mass det. time= 1,517.7 min (2,363.4 - 845.7)

Volume	Invert	Avail.Storage	Storage Description
#1	972.00'	10,952 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
972.00	1,918	0	0
973.00	2,306	2,112	2,112
974.00	2,719	2,513	4,625
975.00	3,157	2,938	7,563
976.00	3,621	3,389	10,952

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Device	Routing	Invert	Outlet Devices
#1	Primary	971.00'	15.0" Round Culvert L= 373.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 971.00' / 955.00' S= 0.0429 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	974.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	975.30'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	972.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 21.17 hrs HW=973.75' (Free Discharge)↳ **4=Infiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=0.00 cfs @ 3.00 hrs HW=972.00' TW=954.00' (Dynamic Tailwater)↳ **1=Culvert** (Passes 0.00 cfs of 3.58 cfs potential flow)↳ **2=Orifice/Grate** (Controls 0.00 cfs)↳ **3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond BE: Existing Basin**

Inflow Area = 747,296 sf, 8.63% Impervious, Inflow Depth = 0.64" for 1-Year event
 Inflow = 10.70 cfs @ 12.35 hrs, Volume= 39,787 cf
 Outflow = 10.13 cfs @ 12.41 hrs, Volume= 39,787 cf, Atten= 5%, Lag= 3.6 min
 Primary = 10.13 cfs @ 12.41 hrs, Volume= 39,787 cf
 Routed to Pond 17 : MH 17
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 967.54' @ 12.41 hrs Surf.Area= 518 sf Storage= 438 cf

Plug-Flow detention time= 0.1 min calculated for 39,784 cf (100% of inflow)

Center-of-Mass det. time= 0.1 min (853.4 - 853.2)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.50' S= 0.0275 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.30'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

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Primary OutFlow Max=10.13 cfs @ 12.41 hrs HW=967.54' TW=964.70' (Dynamic Tailwater)↑**1=Culvert** (Outlet Controls 10.13 cfs @ 5.73 fps)**Secondary OutFlow** Max=0.00 cfs @ 3.00 hrs HW=964.15' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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Summary for Subcatchment S1: To Basin A

Runoff = 2.94 cfs @ 12.19 hrs, Volume= 7,513 cf, Depth= 0.68"
 Routed to Pond BA : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	24,236	98	Building Roofs
*	24,264	98	Pavements
	65,618	61	>75% Grass cover, Good, HSG B
	19,307	39	>75% Grass cover, Good, HSG A
	133,425	71	Weighted Average
	84,925		63.65% Pervious Area
	48,500		36.35% Impervious Area

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

Summary for Subcatchment S2: To Basin B

Runoff = 1.41 cfs @ 12.21 hrs, Volume= 4,793 cf, Depth= 0.37"
 Routed to Pond BB : Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	44,000	98	Building Roofs
*	12,810	98	Pavement
	8,537	74	>75% Grass cover, Good, HSG C
	89,339	39	>75% Grass cover, Good, HSG A
	154,686	63	Weighted Average
	97,876		63.27% Pervious Area
	56,810		36.73% Impervious Area

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

Summary for Subcatchment S3: To Basin C

Runoff = 3.45 cfs @ 12.19 hrs, Volume= 8,652 cf, Depth= 0.72"
 Routed to Pond BC : Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

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MSE 24-hr 3 2-Year Rainfall=2.85"

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	Area (sf)	CN	Description
*	26,964	98	Building Roofs
*	24,706	98	Pavement
	77,850	61	>75% Grass cover, Good, HSG B
	14,608	39	>75% Grass cover, Good, HSG A
	144,128	72	Weighted Average
	92,458		64.15% Pervious Area
	51,670		35.85% Impervious Area

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

Summary for Subcatchment S4: To Basin D

Runoff = 2.82 cfs @ 12.19 hrs, Volume= 6,888 cf, Depth= 0.81"
 Routed to Pond BD : Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	23,680	98	Building roofs
*	22,987	98	Pavements
	35,400	61	>75% Grass cover, Good, HSG B
	19,403	39	>75% Grass cover, Good, HSG A
	101,470	74	Weighted Average
	54,803		54.01% Pervious Area
	46,667		45.99% Impervious Area

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

Summary for Subcatchment S5: To Lake

Runoff = 1.06 cfs @ 12.30 hrs, Volume= 3,758 cf, Depth= 0.59"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	13,408	98	Building roofs
*	7,165	98	Pavement
	51,076	58	Woods/grass comb., Good, HSG B
	4,655	61	>75% Grass cover, Good, HSG B
	76,304	69	Weighted Average
	55,731		73.04% Pervious Area
	20,573		26.96% Impervious Area

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MSE 24-hr 3 2-Year Rainfall=2.85"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	150	0.1467	0.16		Sheet Flow, HP to SCF Woods: Light underbrush n= 0.400 P2= 2.40"
1.9	235	0.1617	2.01		Shallow Concentrated Flow, SCF to LP Woodland Kv= 5.0 fps
17.4	385	Total			

Summary for Subcatchment S6: From North

Runoff = 15.03 cfs @ 12.35 hrs, Volume= 53,811 cf, Depth= 0.86"
Routed to Pond BE : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	54,457	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	113,391	76	Woods/grass comb., Fair, HSG C
	352,448	65	Woods/grass comb., Fair, HSG B
	747,296	75	Weighted Average
	682,839		91.37% Pervious Area
	64,457		8.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.5	1,453	Total			

Summary for Subcatchment S6.1: To MH 17

Runoff = 0.40 cfs @ 12.19 hrs, Volume= 988 cf, Depth= 0.81"
Routed to Pond 17 : MH 17

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.85"

	Area (sf)	CN	Description
*	5,011	98	Pavements
	9,546	61	>75% Grass cover, Good, HSG B
	14,557	74	Weighted Average
	9,546		65.58% Pervious Area
	5,011		34.42% Impervious Area

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

Summary for Reach 7R: Dry Creek Bed

Inflow Area = 1,295,562 sf, 21.08% Impervious, Inflow Depth = 0.51" for 2-Year event
 Inflow = 11.72 cfs @ 12.48 hrs, Volume= 54,800 cf
 Outflow = 11.72 cfs @ 12.49 hrs, Volume= 54,800 cf, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 2.63 fps, Min. Travel Time= 1.4 min
 Avg. Velocity = 0.92 fps, Avg. Travel Time= 4.0 min

Peak Storage= 981 cf @ 12.49 hrs
 Average Depth at Peak Storage= 1.09' , Surface Width= 5.18'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 ' / ' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 ' / '
 Inlet Invert= 936.75', Outlet Invert= 933.00'



Summary for Pond 17: MH 17

[57] Hint: Peaked at 965.15' (Flood elevation advised)

Inflow Area = 761,853 sf, 9.12% Impervious, Inflow Depth = 0.86" for 2-Year event
 Inflow = 11.72 cfs @ 12.48 hrs, Volume= 54,800 cf
 Outflow = 11.72 cfs @ 12.48 hrs, Volume= 54,800 cf, Atten= 0%, Lag= 0.0 min
 Primary = 11.72 cfs @ 12.48 hrs, Volume= 54,800 cf
 Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 965.15' @ 12.48 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	936.95'	30.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 936.95' / 936.75' S= 0.0040 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	938.60'	24.0" Round Culvert L= 89.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.60' / 936.95' S= 0.0185 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#3	Device 2	962.50'	18.0" Round Culvert L= 673.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 962.50' / 938.60' S= 0.0355 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.72 cfs @ 12.48 hrs HW=965.15' TW=937.84' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 11.72 cfs of 122.69 cfs potential flow)
- ↑ **2=Culvert** (Passes 11.72 cfs of 76.46 cfs potential flow)
- ↑ **3=Culvert** (Inlet Controls 11.72 cfs @ 6.63 fps)

Summary for Pond BA: Basin A

Inflow Area = 234,895 sf, 40.51% Impervious, Inflow Depth = 0.43" for 2-Year event
 Inflow = 2.94 cfs @ 12.19 hrs, Volume= 8,459 cf
 Outflow = 0.12 cfs @ 16.91 hrs, Volume= 8,459 cf, Atten= 96%, Lag= 283.0 min
 Discarded = 0.12 cfs @ 16.91 hrs, Volume= 8,459 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf
 Routed to Pond BB : Basin B

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 954.72' @ 16.91 hrs Surf.Area= 6,548 sf Storage= 4,522 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 430.3 min (1,301.5 - 871.2)

Volume	Invert	Avail.Storage	Storage Description
#1	954.00'	30,256 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
954.00	6,000	0	0
955.00	6,760	6,380	6,380
956.00	7,545	7,153	13,533
957.00	8,355	7,950	21,483
958.00	9,191	8,773	30,256

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	15.0" Round Culvert L= 184.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 952.00' / 946.00' S= 0.0326 ' / " Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	956.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	957.60'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	954.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.12 cfs @ 16.91 hrs HW=954.72' (Free Discharge)
 ↑ **4=Infiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=954.00' TW=945.00' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.00 cfs of 6.93 cfs potential flow)
 ↑ **2=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond BB: Basin B

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Inflow Area = 389,581 sf, 39.01% Impervious, Inflow Depth = 0.15" for 2-Year event
 Inflow = 1.41 cfs @ 12.21 hrs, Volume= 4,793 cf
 Outflow = 0.08 cfs @ 15.22 hrs, Volume= 4,795 cf, Atten= 94%, Lag= 180.7 min
 Discarded = 0.08 cfs @ 15.22 hrs, Volume= 4,795 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routed to Pond BC : Basin C

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 945.63' @ 15.22 hrs Surf.Area= 4,187 sf Storage= 2,533 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 370.2 min (1,245.9 - 875.7)

Volume	Invert	Avail.Storage	Storage Description
#1	945.00'	19,986 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
945.00	3,834	0	0
946.00	4,393	4,114	4,114
947.00	4,978	4,686	8,799
948.00	5,587	5,283	14,082
949.00	6,222	5,905	19,986

Device	Routing	Invert	Outlet Devices
#1	Primary	944.30'	21.0" Round Culvert L= 73.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 944.30' / 944.00' S= 0.0041 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	947.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	948.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	945.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.08 cfs @ 15.22 hrs HW=945.63' (Free Discharge)

4=Infiltration (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 3.00 hrs HW=945.00' TW=944.00' (Dynamic Tailwater)

1=Culvert (Passes 0.00 cfs of 2.01 cfs potential flow)

2=Orifice/Grate (Controls 0.00 cfs)

3=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond BC: Basin C

Inflow Area = 533,709 sf, 38.16% Impervious, Inflow Depth = 0.19" for 2-Year event
 Inflow = 3.45 cfs @ 12.19 hrs, Volume= 8,652 cf
 Outflow = 0.06 cfs @ 19.72 hrs, Volume= 8,652 cf, Atten= 98%, Lag= 451.7 min
 Discarded = 0.06 cfs @ 19.72 hrs, Volume= 8,652 cf
 Primary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 945.18' @ 19.72 hrs Surf.Area= 5,807 sf Storage= 6,356 cf

Plug-Flow detention time= 1,096.5 min calculated for 8,652 cf (100% of inflow)

Center-of-Mass det. time= 1,096.5 min (1,940.0 - 843.4)

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Volume	Invert	Avail.Storage	Storage Description
#1	944.00'	25,695 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
944.00	4,972	0	0
945.00	5,676	5,324	5,324
946.00	6,405	6,041	11,365
947.00	7,159	6,782	18,147
948.00	7,938	7,549	25,695

Device	Routing	Invert	Outlet Devices
#1	Primary	939.00'	21.0" Round Culvert L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 939.00' / 937.70' S= 0.0295 ' S= 0.0295 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	946.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	947.50'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	944.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.06 cfs @ 19.72 hrs HW=945.18' (Free Discharge)↑**4=Infiltration** (Exfiltration Controls 0.06 cfs)**Primary OutFlow** Max=0.00 cfs @ 3.00 hrs HW=944.00' TW=936.75' (Dynamic Tailwater)↑**1=Culvert** (Passes 0.00 cfs of 23.52 cfs potential flow)↑**2=Orifice/Grate** (Controls 0.00 cfs)↑**3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond BD: Basin D**

Inflow Area = 101,470 sf, 45.99% Impervious, Inflow Depth = 0.81" for 2-Year event
 Inflow = 2.82 cfs @ 12.19 hrs, Volume= 6,888 cf
 Outflow = 0.08 cfs @ 15.30 hrs, Volume= 6,888 cf, Atten= 97%, Lag= 187.1 min
 Discarded = 0.03 cfs @ 15.30 hrs, Volume= 5,941 cf
 Primary = 0.05 cfs @ 15.30 hrs, Volume= 947 cf
 Routed to Pond BA : Basin A

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 974.13' @ 15.30 hrs Surf.Area= 2,776 sf Storage= 4,982 cf

Plug-Flow detention time= 1,523.4 min calculated for 6,887 cf (100% of inflow)

Center-of-Mass det. time= 1,523.5 min (2,361.3 - 837.8)

Volume	Invert	Avail.Storage	Storage Description
#1	972.00'	10,952 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
972.00	1,918	0	0
973.00	2,306	2,112	2,112
974.00	2,719	2,513	4,625
975.00	3,157	2,938	7,563
976.00	3,621	3,389	10,952

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Device	Routing	Invert	Outlet Devices
#1	Primary	971.00'	15.0" Round Culvert L= 373.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 971.00' / 955.00' S= 0.0429 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	974.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	975.30'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	972.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 15.30 hrs HW=974.13' (Free Discharge)↳ **4=Infiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=0.05 cfs @ 15.30 hrs HW=974.13' TW=954.71' (Dynamic Tailwater)↳ **1=Culvert** (Passes 0.05 cfs of 9.35 cfs potential flow)↳ **2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 1.23 fps)↳ **3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond BE: Existing Basin**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 747,296 sf, 8.63% Impervious, Inflow Depth = 0.86" for 2-Year event
 Inflow = 15.03 cfs @ 12.35 hrs, Volume= 53,811 cf
 Outflow = 11.60 cfs @ 12.49 hrs, Volume= 53,811 cf, Atten= 23%, Lag= 8.7 min
 Primary = 11.60 cfs @ 12.49 hrs, Volume= 53,811 cf
 Routed to Pond 17 : MH 17
 Secondary = 0.00 cfs @ 3.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 968.86' @ 12.49 hrs Surf.Area= 4,030 sf Storage= 2,767 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.0 min (846.8 - 845.8)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.50' S= 0.0275 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.30'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

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Primary OutFlow Max=11.60 cfs @ 12.49 hrs HW=968.86' TW=965.15' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 11.60 cfs @ 6.56 fps)

Secondary OutFlow Max=0.00 cfs @ 3.00 hrs HW=964.15' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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MSE 24-hr 3 10-Year Rainfall=4.23"

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Summary for Subcatchment S1: To Basin A

Runoff = 7.31 cfs @ 12.18 hrs, Volume= 17,276 cf, Depth= 1.55"
 Routed to Pond BA : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	24,236	98	Building Roofs
*	24,264	98	Pavements
	65,618	61	>75% Grass cover, Good, HSG B
	19,307	39	>75% Grass cover, Good, HSG A
	133,425	71	Weighted Average
	84,925		63.65% Pervious Area
	48,500		36.35% Impervious Area

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

Summary for Subcatchment S2: To Basin B

Runoff = 5.34 cfs @ 12.19 hrs, Volume= 13,478 cf, Depth= 1.05"
 Routed to Pond BB : Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	44,000	98	Building Roofs
*	12,810	98	Pavement
	8,537	74	>75% Grass cover, Good, HSG C
	89,339	39	>75% Grass cover, Good, HSG A
	154,686	63	Weighted Average
	97,876		63.27% Pervious Area
	56,810		36.73% Impervious Area

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

Summary for Subcatchment S3: To Basin C

Runoff = 8.28 cfs @ 12.18 hrs, Volume= 19,499 cf, Depth= 1.62"
 Routed to Pond BC : Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 10-Year Rainfall=4.23"

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MSE 24-hr 3 10-Year Rainfall=4.23"

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	Area (sf)	CN	Description
*	26,964	98	Building Roofs
*	24,706	98	Pavement
	77,850	61	>75% Grass cover, Good, HSG B
	14,608	39	>75% Grass cover, Good, HSG A
	144,128	72	Weighted Average
	92,458		64.15% Pervious Area
	51,670		35.85% Impervious Area

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

Summary for Subcatchment S4: To Basin D

Runoff = 6.38 cfs @ 12.18 hrs, Volume= 14,942 cf, Depth= 1.77"
Routed to Pond BD : Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	23,680	98	Building roofs
*	22,987	98	Pavements
	35,400	61	>75% Grass cover, Good, HSG B
	19,403	39	>75% Grass cover, Good, HSG A
	101,470	74	Weighted Average
	54,803		54.01% Pervious Area
	46,667		45.99% Impervious Area

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

Summary for Subcatchment S5: To Lake

Runoff = 2.89 cfs @ 12.28 hrs, Volume= 9,020 cf, Depth= 1.42"
Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	13,408	98	Building roofs
*	7,165	98	Pavement
	51,076	58	Woods/grass comb., Good, HSG B
	4,655	61	>75% Grass cover, Good, HSG B
	76,304	69	Weighted Average
	55,731		73.04% Pervious Area
	20,573		26.96% Impervious Area

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MSE 24-hr 3 10-Year Rainfall=4.23"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	150	0.1467	0.16		Sheet Flow, HP to SCF Woods: Light underbrush n= 0.400 P2= 2.40"
1.9	235	0.1617	2.01		Shallow Concentrated Flow, SCF to LP Woodland Kv= 5.0 fps
17.4	385	Total			

Summary for Subcatchment S6: From North

Runoff = 33.66 cfs @ 12.32 hrs, Volume= 114,653 cf, Depth= 1.84"
Routed to Pond BE : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	54,457	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	113,391	76	Woods/grass comb., Fair, HSG C
	352,448	65	Woods/grass comb., Fair, HSG B
	747,296	75	Weighted Average
	682,839		91.37% Pervious Area
	64,457		8.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.5	1,453	Total			

Summary for Subcatchment S6.1: To MH 17

Runoff = 0.92 cfs @ 12.18 hrs, Volume= 2,144 cf, Depth= 1.77"
Routed to Pond 17 : MH 17

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.23"

	Area (sf)	CN	Description
*	5,011	98	Pavements
	9,546	61	>75% Grass cover, Good, HSG B
	14,557	74	Weighted Average
	9,546		65.58% Pervious Area
	5,011		34.42% Impervious Area

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MSE 24-hr 3 10-Year Rainfall=4.23"

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

Summary for Reach 7R: Dry Creek Bed

Inflow Area = 1,295,562 sf, 21.08% Impervious, Inflow Depth = 1.01" for 10-Year event
 Inflow = 12.75 cfs @ 12.41 hrs, Volume= 108,971 cf
 Outflow = 12.75 cfs @ 12.43 hrs, Volume= 108,971 cf, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 2.69 fps, Min. Travel Time= 1.4 min
 Avg. Velocity = 1.13 fps, Avg. Travel Time= 3.3 min

Peak Storage= 1,042 cf @ 12.43 hrs
 Average Depth at Peak Storage= 1.14' , Surface Width= 5.29'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 '/' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 '/'
 Inlet Invert= 936.75', Outlet Invert= 933.00'

**Summary for Pond 17: MH 17**

[57] Hint: Peaked at 965.50' (Flood elevation advised)

Inflow Area = 761,853 sf, 9.12% Impervious, Inflow Depth = 1.55" for 10-Year event
 Inflow = 12.75 cfs @ 12.41 hrs, Volume= 98,476 cf
 Outflow = 12.75 cfs @ 12.41 hrs, Volume= 98,476 cf, Atten= 0%, Lag= 0.0 min
 Primary = 12.75 cfs @ 12.41 hrs, Volume= 98,476 cf
 Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 965.50' @ 12.41 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	936.95'	30.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 936.95' / 936.75' S= 0.0040 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	938.60'	24.0" Round Culvert L= 89.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.60' / 936.95' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#3	Device 2	962.50'	18.0" Round Culvert L= 673.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 962.50' / 938.60' S= 0.0355 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=12.75 cfs @ 12.41 hrs HW=965.50' TW=937.89' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 12.75 cfs of 123.48 cfs potential flow)
- ↑ **2=Culvert** (Passes 12.75 cfs of 76.98 cfs potential flow)
- ↑ **3=Culvert** (Inlet Controls 12.75 cfs @ 7.22 fps)

Summary for Pond BA: Basin A

Inflow Area = 234,895 sf, 40.51% Impervious, Inflow Depth = 1.33" for 10-Year event
 Inflow = 7.31 cfs @ 12.18 hrs, Volume= 26,069 cf
 Outflow = 0.53 cfs @ 15.12 hrs, Volume= 26,069 cf, Atten= 93%, Lag= 176.4 min
 Discarded = 0.15 cfs @ 15.12 hrs, Volume= 20,156 cf
 Primary = 0.38 cfs @ 15.12 hrs, Volume= 5,913 cf
 Routed to Pond BB : Basin B

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 956.41' @ 15.12 hrs Surf.Area= 7,880 sf Storage= 16,725 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 866.1 min (1,713.9 - 847.8)

Volume	Invert	Avail.Storage	Storage Description
#1	954.00'	30,256 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
954.00	6,000	0	0
955.00	6,760	6,380	6,380
956.00	7,545	7,153	13,533
957.00	8,355	7,950	21,483
958.00	9,191	8,773	30,256

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	15.0" Round Culvert L= 184.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 952.00' / 946.00' S= 0.0326 ' S= 0.0326 ' S= 0.0326 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	956.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	957.60'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	954.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.15 cfs @ 15.12 hrs HW=956.41' (Free Discharge)
 ↑ **4=Infiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=0.38 cfs @ 15.12 hrs HW=956.41' TW=947.32' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.38 cfs of 11.50 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 2.19 fps)
 ↑ **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond BB: Basin B

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Inflow Area = 389,581 sf, 39.01% Impervious, Inflow Depth = 0.60" for 10-Year event
 Inflow = 5.34 cfs @ 12.19 hrs, Volume= 19,391 cf
 Outflow = 0.44 cfs @ 16.23 hrs, Volume= 19,392 cf, Atten= 92%, Lag= 242.4 min
 Discarded = 0.10 cfs @ 16.23 hrs, Volume= 13,159 cf
 Primary = 0.35 cfs @ 16.23 hrs, Volume= 6,233 cf

Routed to Pond BC : Basin C

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 947.39' @ 16.23 hrs Surf.Area= 5,215 sf Storage= 10,780 cf

Plug-Flow detention time= 762.4 min calculated for 19,390 cf (100% of inflow)
 Center-of-Mass det. time= 762.5 min (1,655.6 - 893.2)

Volume	Invert	Avail.Storage	Storage Description
#1	945.00'	19,986 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
945.00	3,834	0	0
946.00	4,393	4,114	4,114
947.00	4,978	4,686	8,799
948.00	5,587	5,283	14,082
949.00	6,222	5,905	19,986

Device	Routing	Invert	Outlet Devices
#1	Primary	944.30'	21.0" Round Culvert L= 73.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 944.30' / 944.00' S= 0.0041 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	947.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	948.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	945.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.10 cfs @ 16.23 hrs HW=947.39' (Free Discharge)
 ↳ **4=Infiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.35 cfs @ 16.23 hrs HW=947.39' TW=946.42' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 0.35 cfs of 11.41 cfs potential flow)
 ↳ **2=Orifice/Grate** (Orifice Controls 0.35 cfs @ 2.12 fps)
 ↳ **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond BC: Basin C

Inflow Area = 533,709 sf, 38.16% Impervious, Inflow Depth = 0.58" for 10-Year event
 Inflow = 8.28 cfs @ 12.18 hrs, Volume= 25,731 cf
 Outflow = 0.48 cfs @ 17.18 hrs, Volume= 25,732 cf, Atten= 94%, Lag= 299.8 min
 Discarded = 0.07 cfs @ 17.18 hrs, Volume= 15,237 cf
 Primary = 0.41 cfs @ 17.18 hrs, Volume= 10,495 cf
 Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 946.44' @ 17.18 hrs Surf.Area= 6,733 sf Storage= 14,225 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1,126.3 min (2,009.0 - 882.6)

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Volume	Invert	Avail.Storage	Storage Description
#1	944.00'	25,695 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
944.00	4,972	0	0
945.00	5,676	5,324	5,324
946.00	6,405	6,041	11,365
947.00	7,159	6,782	18,147
948.00	7,938	7,549	25,695

Device	Routing	Invert	Outlet Devices
#1	Primary	939.00'	21.0" Round Culvert L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 939.00' / 937.70' S= 0.0295 ' S= 0.0295 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	946.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	947.50'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	944.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.07 cfs @ 17.18 hrs HW=946.44' (Free Discharge)↑**4=Infiltration** (Exfiltration Controls 0.07 cfs)**Primary OutFlow** Max=0.41 cfs @ 17.18 hrs HW=946.44' TW=937.06' (Dynamic Tailwater)↑**1=Culvert** (Passes 0.41 cfs of 29.66 cfs potential flow)↑**2=Orifice/Grate** (Orifice Controls 0.41 cfs @ 2.25 fps)↑**3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond BD: Basin D**

Inflow Area = 101,470 sf, 45.99% Impervious, Inflow Depth = 1.77" for 10-Year event
 Inflow = 6.38 cfs @ 12.18 hrs, Volume= 14,942 cf
 Outflow = 0.85 cfs @ 12.75 hrs, Volume= 14,943 cf, Atten= 87%, Lag= 34.2 min
 Discarded = 0.03 cfs @ 12.75 hrs, Volume= 6,149 cf
 Primary = 0.81 cfs @ 12.75 hrs, Volume= 8,793 cf
 Routed to Pond BA : Basin A

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 974.99' @ 12.75 hrs Surf.Area= 3,153 sf Storage= 7,532 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 757.8 min (1,578.1 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	972.00'	10,952 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
972.00	1,918	0	0
973.00	2,306	2,112	2,112
974.00	2,719	2,513	4,625
975.00	3,157	2,938	7,563
976.00	3,621	3,389	10,952

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Device	Routing	Invert	Outlet Devices
#1	Primary	971.00'	15.0" Round Culvert L= 373.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 971.00' / 955.00' S= 0.0429 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	974.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	975.30'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	972.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 12.75 hrs HW=974.99' (Free Discharge)↳ **4=Infiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=0.81 cfs @ 12.75 hrs HW=974.99' TW=955.60' (Dynamic Tailwater)↳ **1=Culvert** (Passes 0.81 cfs of 10.84 cfs potential flow)↳ **2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 4.14 fps)↳ **3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond BE: Existing Basin**

Inflow Area = 747,296 sf, 8.63% Impervious, Inflow Depth = 1.84" for 10-Year event
 Inflow = 33.66 cfs @ 12.32 hrs, Volume= 114,653 cf
 Outflow = 26.13 cfs @ 12.47 hrs, Volume= 114,653 cf, Atten= 22%, Lag= 8.6 min
 Primary = 12.47 cfs @ 12.49 hrs, Volume= 96,332 cf
 Routed to Pond 17 : MH 17
 Secondary = 13.67 cfs @ 12.47 hrs, Volume= 18,321 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 969.78' @ 12.47 hrs Surf.Area= 22,487 sf Storage= 13,960 cf

Plug-Flow detention time= 4.4 min calculated for 114,645 cf (100% of inflow)

Center-of-Mass det. time= 4.4 min (833.4 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.50' S= 0.0275 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.30'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

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Primary OutFlow Max=12.47 cfs @ 12.49 hrs HW=969.78' TW=965.48' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 12.47 cfs @ 7.06 fps)

Secondary OutFlow Max=13.66 cfs @ 12.47 hrs HW=969.78' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 13.66 cfs @ 1.88 fps)

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Summary for Subcatchment S1: To Basin A

Runoff = 18.75 cfs @ 12.18 hrs, Volume= 43,750 cf, Depth= 3.93"
 Routed to Pond BA : Basin A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	24,236	98	Building Roofs
*	24,264	98	Pavements
	65,618	61	>75% Grass cover, Good, HSG B
	19,307	39	>75% Grass cover, Good, HSG A
	133,425	71	Weighted Average
	84,925		63.65% Pervious Area
	48,500		36.35% Impervious Area

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

Summary for Subcatchment S2: To Basin B

Runoff = 17.03 cfs @ 12.18 hrs, Volume= 39,821 cf, Depth= 3.09"
 Routed to Pond BB : Basin B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	44,000	98	Building Roofs
*	12,810	98	Pavement
	8,537	74	>75% Grass cover, Good, HSG C
	89,339	39	>75% Grass cover, Good, HSG A
	154,686	63	Weighted Average
	97,876		63.27% Pervious Area
	56,810		36.73% Impervious Area

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

Summary for Subcatchment S3: To Basin C

Runoff = 20.78 cfs @ 12.18 hrs, Volume= 48,559 cf, Depth= 4.04"
 Routed to Pond BC : Basin C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
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MSE 24-hr 3 100-Year Rainfall=7.25"

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	Area (sf)	CN	Description
*	26,964	98	Building Roofs
*	24,706	98	Pavement
	77,850	61	>75% Grass cover, Good, HSG B
	14,608	39	>75% Grass cover, Good, HSG A
	144,128	72	Weighted Average
	92,458		64.15% Pervious Area
	51,670		35.85% Impervious Area

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

Summary for Subcatchment S4: To Basin D

Runoff = 15.37 cfs @ 12.18 hrs, Volume= 36,029 cf, Depth= 4.26"
 Routed to Pond BD : Basin D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	23,680	98	Building roofs
*	22,987	98	Pavements
	35,400	61	>75% Grass cover, Good, HSG B
	19,403	39	>75% Grass cover, Good, HSG A
	101,470	74	Weighted Average
	54,803		54.01% Pervious Area
	46,667		45.99% Impervious Area

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

Summary for Subcatchment S5: To Lake

Runoff = 7.86 cfs @ 12.27 hrs, Volume= 23,655 cf, Depth= 3.72"
 Routed to nonexistent node D3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	13,408	98	Building roofs
*	7,165	98	Pavement
	51,076	58	Woods/grass comb., Good, HSG B
	4,655	61	>75% Grass cover, Good, HSG B
	76,304	69	Weighted Average
	55,731		73.04% Pervious Area
	20,573		26.96% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	150	0.1467	0.16		Sheet Flow, HP to SCF Woods: Light underbrush n= 0.400 P2= 2.40"
1.9	235	0.1617	2.01		Shallow Concentrated Flow, SCF to LP Woodland Kv= 5.0 fps
17.4	385	Total			

Summary for Subcatchment S6: From North

[47] Hint: Peak is 220% of capacity of segment #3

Runoff = 80.76 cfs @ 12.31 hrs, Volume= 272,168 cf, Depth= 4.37"
Routed to Pond BE : Existing Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	10,000	98	Building Roofs
*	54,457	98	Pavements
	42,650	88	Row crops, straight row, Poor, HSG C
	174,350	81	Row crops, straight row, Poor, HSG B
	113,391	76	Woods/grass comb., Fair, HSG C
	352,448	65	Woods/grass comb., Fair, HSG B
	747,296	75	Weighted Average
	682,839		91.37% Pervious Area
	64,457		8.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	300	0.0733	0.31		Sheet Flow, HP to SCF Grass: Short n= 0.150 P2= 2.40"
4.4	530	0.0811	1.99		Shallow Concentrated Flow, SF to LP Short Grass Pasture Kv= 7.0 fps
0.9	623	0.0225	11.70	36.76	Pipe Channel, SF to Outlet 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.5	1,453	Total			

Summary for Subcatchment S6.1: To MH 17

Runoff = 2.21 cfs @ 12.18 hrs, Volume= 5,169 cf, Depth= 4.26"
Routed to Pond 17 : MH 17

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.25"

	Area (sf)	CN	Description
*	5,011	98	Pavements
	9,546	61	>75% Grass cover, Good, HSG B
	14,557	74	Weighted Average
	9,546		65.58% Pervious Area
	5,011		34.42% Impervious Area

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

Summary for Reach 7R: Dry Creek Bed

Inflow Area = 1,295,562 sf, 21.08% Impervious, Inflow Depth = 2.59" for 100-Year event
 Inflow = 29.28 cfs @ 12.51 hrs, Volume= 280,140 cf
 Outflow = 29.26 cfs @ 12.52 hrs, Volume= 280,140 cf, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 3.38 fps, Min. Travel Time= 1.1 min
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 2.7 min

Peak Storage= 1,904 cf @ 12.52 hrs
 Average Depth at Peak Storage= 1.80', Surface Width= 6.60'
 Bank-Full Depth= 2.60' Flow Area= 14.6 sf, Capacity= 59.09 cfs

3.00' x 2.60' deep channel, n= 0.060
 Side Slope Z-value= 1.0 ' / ' Top Width= 8.20'
 Length= 220.0' Slope= 0.0170 ' / '
 Inlet Invert= 936.75', Outlet Invert= 933.00'



Summary for Pond 17: MH 17

[57] Hint: Peaked at 965.98' (Flood elevation advised)

Inflow Area = 761,853 sf, 9.12% Impervious, Inflow Depth = 2.72" for 100-Year event
 Inflow = 14.05 cfs @ 12.20 hrs, Volume= 172,391 cf
 Outflow = 14.05 cfs @ 12.20 hrs, Volume= 172,391 cf, Atten= 0%, Lag= 0.0 min
 Primary = 14.05 cfs @ 12.20 hrs, Volume= 172,391 cf
 Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 965.98' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	936.95'	30.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 936.95' / 936.75' S= 0.0040 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Device 1	938.60'	24.0" Round Culvert L= 89.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 938.60' / 936.95' S= 0.0185 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#3	Device 2	962.50'	18.0" Round Culvert L= 673.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 962.50' / 938.60' S= 0.0355 ' / ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=14.05 cfs @ 12.20 hrs HW=965.98' TW=937.98' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 14.05 cfs of 124.57 cfs potential flow)
- ↑ **2=Culvert** (Passes 14.05 cfs of 77.69 cfs potential flow)
- ↑ **3=Culvert** (Inlet Controls 14.05 cfs @ 7.95 fps)

Summary for Pond BA: Basin A

Inflow Area = 234,895 sf, 40.51% Impervious, Inflow Depth = 3.75" for 100-Year event
 Inflow = 30.36 cfs @ 12.20 hrs, Volume= 73,357 cf
 Outflow = 10.86 cfs @ 12.45 hrs, Volume= 73,358 cf, Atten= 64%, Lag= 15.1 min
 Discarded = 0.17 cfs @ 12.45 hrs, Volume= 22,326 cf
 Primary = 10.69 cfs @ 12.45 hrs, Volume= 51,031 cf
 Routed to Pond BB : Basin B

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 957.98' @ 12.45 hrs Surf.Area= 9,170 sf Storage= 30,029 cf

Plug-Flow detention time= 402.6 min calculated for 73,352 cf (100% of inflow)
 Center-of-Mass det. time= 402.7 min (1,223.2 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	954.00'	30,256 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
954.00	6,000	0	0
955.00	6,760	6,380	6,380
956.00	7,545	7,153	13,533
957.00	8,355	7,950	21,483
958.00	9,191	8,773	30,256

Device	Routing	Invert	Outlet Devices
#1	Primary	952.00'	15.0" Round Culvert L= 184.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 952.00' / 946.00' S= 0.0326 ' / " Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	956.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	957.60'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	954.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.17 cfs @ 12.45 hrs HW=957.98' (Free Discharge)

- ↑ **4=Infiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=10.68 cfs @ 12.45 hrs HW=957.98' TW=948.75' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 10.68 cfs of 13.67 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 1.24 cfs @ 6.32 fps)
- ↑ **3=Orifice/Grate** (Weir Controls 9.44 cfs @ 2.00 fps)

Summary for Pond BB: Basin B

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Inflow Area = 389,581 sf, 39.01% Impervious, Inflow Depth = 2.80" for 100-Year event
 Inflow = 17.12 cfs @ 12.19 hrs, Volume= 90,852 cf
 Outflow = 11.60 cfs @ 12.60 hrs, Volume= 90,853 cf, Atten= 32%, Lag= 24.6 min
 Discarded = 0.11 cfs @ 12.59 hrs, Volume= 14,701 cf
 Primary = 11.48 cfs @ 12.60 hrs, Volume= 76,152 cf

Routed to Pond BC : Basin C

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 948.98' @ 12.59 hrs Surf.Area= 6,207 sf Storage= 19,841 cf

Plug-Flow detention time= 215.7 min calculated for 90,847 cf (100% of inflow)

Center-of-Mass det. time= 215.8 min (1,089.9 - 874.1)

Volume	Invert	Avail.Storage	Storage Description
#1	945.00'	19,986 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
945.00	3,834	0	0
946.00	4,393	4,114	4,114
947.00	4,978	4,686	8,799
948.00	5,587	5,283	14,082
949.00	6,222	5,905	19,986

Device	Routing	Invert	Outlet Devices
#1	Primary	944.30'	21.0" Round Culvert L= 73.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 944.30' / 944.00' S= 0.0041 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	947.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	948.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	945.00'	0.800 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.11 cfs @ 12.59 hrs HW=948.98' (Free Discharge)

↳ **4=Infiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=11.48 cfs @ 12.60 hrs HW=948.98' TW=947.99' (Dynamic Tailwater)

↳ **1=Culvert** (Inlet Controls 11.48 cfs @ 4.77 fps)↳ **2=Orifice/Grate** (Passes < 0.94 cfs potential flow)↳ **3=Orifice/Grate** (Passes < 39.60 cfs potential flow)**Summary for Pond BC: Basin C**

Inflow Area = 533,709 sf, 38.16% Impervious, Inflow Depth = 2.80" for 100-Year event
 Inflow = 20.94 cfs @ 12.18 hrs, Volume= 124,710 cf
 Outflow = 15.84 cfs @ 12.52 hrs, Volume= 124,711 cf, Atten= 24%, Lag= 20.5 min
 Discarded = 0.08 cfs @ 12.52 hrs, Volume= 16,962 cf
 Primary = 15.76 cfs @ 12.52 hrs, Volume= 107,749 cf

Routed to Reach 7R : Dry Creek Bed

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 948.00' @ 12.52 hrs Surf.Area= 7,938 sf Storage= 25,691 cf

Plug-Flow detention time= 309.6 min calculated for 124,702 cf (100% of inflow)

Center-of-Mass det. time= 309.8 min (1,186.4 - 876.6)

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Volume	Invert	Avail.Storage	Storage Description
#1	944.00'	25,695 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
944.00	4,972	0	0
945.00	5,676	5,324	5,324
946.00	6,405	6,041	11,365
947.00	7,159	6,782	18,147
948.00	7,938	7,549	25,695

Device	Routing	Invert	Outlet Devices
#1	Primary	939.00'	21.0" Round Culvert L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 939.00' / 937.70' S= 0.0295 ' S= 0.0295 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 2.41 sf
#2	Device 1	946.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	947.50'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	944.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.08 cfs @ 12.52 hrs HW=948.00' (Free Discharge)↑**4=Infiltration** (Exfiltration Controls 0.08 cfs)**Primary OutFlow** Max=15.75 cfs @ 12.52 hrs HW=948.00' TW=938.55' (Dynamic Tailwater)↑**1=Culvert** (Passes 15.75 cfs of 33.01 cfs potential flow)↑**2=Orifice/Grate** (Orifice Controls 1.25 cfs @ 6.37 fps)↑**3=Orifice/Grate** (Weir Controls 14.50 cfs @ 2.31 fps)**Summary for Pond BD: Basin D**

Inflow Area = 101,470 sf, 45.99% Impervious, Inflow Depth = 4.26" for 100-Year event
 Inflow = 15.37 cfs @ 12.18 hrs, Volume= 36,029 cf
 Outflow = 12.36 cfs @ 12.24 hrs, Volume= 36,029 cf, Atten= 20%, Lag= 3.8 min
 Discarded = 0.04 cfs @ 12.24 hrs, Volume= 6,422 cf
 Primary = 12.32 cfs @ 12.24 hrs, Volume= 29,607 cf
 Routed to Pond BA : Basin A

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 975.97' @ 12.24 hrs Surf.Area= 3,608 sf Storage= 10,847 cf

Plug-Flow detention time= 338.8 min calculated for 36,026 cf (100% of inflow)

Center-of-Mass det. time= 339.0 min (1,141.3 - 802.3)

Volume	Invert	Avail.Storage	Storage Description
#1	972.00'	10,952 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
972.00	1,918	0	0
973.00	2,306	2,112	2,112
974.00	2,719	2,513	4,625
975.00	3,157	2,938	7,563
976.00	3,621	3,389	10,952

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MSE 24-hr 3 100-Year Rainfall=7.25"

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Device	Routing	Invert	Outlet Devices
#1	Primary	971.00'	15.0" Round Culvert L= 373.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 971.00' / 955.00' S= 0.0429 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf
#2	Device 1	974.00'	6.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	975.30'	27.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Discarded	972.00'	0.450 in/hr Infiltration over Surface area

Discarded OutFlow Max=0.04 cfs @ 12.24 hrs HW=975.97' (Free Discharge)↳ **4=Infiltration** (Exfiltration Controls 0.04 cfs)**Primary OutFlow** Max=12.32 cfs @ 12.24 hrs HW=975.97' TW=956.88' (Dynamic Tailwater)↳ **1=Culvert** (Inlet Controls 12.32 cfs @ 10.04 fps)↳ **2=Orifice/Grate** (Passes < 1.24 cfs potential flow)↳ **3=Orifice/Grate** (Passes < 12.69 cfs potential flow)**Summary for Pond BE: Existing Basin**

Inflow Area = 747,296 sf, 8.63% Impervious, Inflow Depth = 4.37" for 100-Year event
 Inflow = 80.76 cfs @ 12.31 hrs, Volume= 272,168 cf
 Outflow = 66.46 cfs @ 12.43 hrs, Volume= 272,168 cf, Atten= 18%, Lag= 7.5 min
 Primary = 13.03 cfs @ 12.47 hrs, Volume= 167,223 cf
 Routed to Pond 17 : MH 17
 Secondary = 53.44 cfs @ 12.43 hrs, Volume= 104,946 cf

Routing by Dyn-Stor-Ind method, Time Span= 3.00-144.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 970.52' @ 12.43 hrs Surf.Area= 33,295 sf Storage= 35,150 cf

Plug-Flow detention time= 5.8 min calculated for 272,149 cf (100% of inflow)

Center-of-Mass det. time= 5.8 min (817.1 - 811.4)

Volume	Invert	Avail.Storage	Storage Description
#1	964.15'	96,741 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
964.15	0	0	0
965.00	5	2	2
966.00	67	36	38
967.00	294	181	219
968.00	709	502	720
969.00	4,554	2,632	3,352
970.00	27,408	15,981	19,333
972.00	50,000	77,408	96,741

Device	Routing	Invert	Outlet Devices
#1	Primary	964.15'	18.0" Round Culvert L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 964.15' / 962.50' S= 0.0275 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	969.30'	15.0' long x 20.0' breadth Broad-Crested Rectangular Weir 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

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Primary OutFlow Max=13.04 cfs @ 12.47 hrs HW=970.51' TW=965.81' (Dynamic Tailwater)

↑**1=Culvert** (Outlet Controls 13.04 cfs @ 7.38 fps)

Secondary OutFlow Max=53.42 cfs @ 12.43 hrs HW=970.52' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 53.42 cfs @ 2.92 fps)