"Your Project is Our Priority"

PRELIMINARY DRAINAGE REPORT

FOR

SANDSTONE

LOCATED IN

TOWN OF PLAINFIELD
HENDRICKS COUNTY, INDIANA

Prepared for:
Pulte Homes of Indiana, LLC
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Carmel, IN 46032
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Contact: Dave Compton

September 10, 2024

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Job #23313

TABLE OF CONTENTS

APPENDICES

Drainage Narrative for:

Sandstone

I. INTRODUCTION

Sandstone is a 20.1± acre proposed residential development located on the north side of E. County Rd. 350 N. approximately 1.3 miles north of US Highway 40 in the northwest ¼ of Section 28; Township 15 North; Range 1 East; Town of Plainfield; Hendricks County, Indiana. This report includes the result of a preliminary drainage analysis for the project, summarizing the allowable and proposed stormwater discharges and proposed stormwater detention.

II. ADJOINING LAND CONDITIONS

North: Undeveloped and Residential
South: Residential
East: Residential
West: Agricultural

III. EXISTING SOIL TYPES

Symbol	Name	Hydrologic Soil Group
CrA	Crosby silt loam, 0 to 2%	C
MmB2	Miami silt loam, 2 to 6%, eroded	C
MsB3	Miami clay loam, 2 to 6%, severely eroded	C
ThrA	Treaty silty clay loam, 0 to 1%	B
YbvA	Brookston silty clay loam, 0 to 2%	B
YclA	Crosby silt loam, Urban land complex, 0 to 2%	C

IV. SITE DRAINAGE ANALYSIS

a. Stormwater Discharge Requirements

The project is subject to the stormwater discharge requirements found in the Town of Plainfield Stormwater Management Ordinance 17-97. See **TABLE 1** below.

TABLE 1
STORMWATER DISCHARGE REQUIREMENTS
TOWN OF PLAINFIELD

$Q_{100p} \leq Q_{10e}$	Where: Q_{10e} = Existing 10-year peak discharge rate Q_{100p} = Developed 100-year peak discharge rate

b. Drainage Design

i. Existing Site Conditions

The existing site consists primarily of farm field along with a wooded area in the northwest corner. The entire 20.0± acres of the site (EX-1) drain south to a ditch running west along E. County Road 350 S., which then leads to an 18" CMP (BNDY). Seven different offsite basins also drain to the site or BNDY. A 36.5± acres area northwest of the site (OFF-1) drains to the northeastern corner of the site. A 2.4± acres area (OFF-2) and a 1.2± acres area (OFF-3) drain to the center of the western edge of the site. An 18.8± acres area (OFF-4) south of OFF-1 through OFF-3 drains to the southwestern corner of the site. A fifth basin of 17.0± acres (OFF-5) drains to an existing 18" pipe under E. County Road 350 S. directly to BNDY. The ditch directly south of the site consists of 0.4± acres (OFF-6) and drains directly to BNDY along with 4.6± acres (OFF-7) of offsite area near the southeast corner of the site.

ii. Developed Site Conditions

In the developed condition, stormwater will be routed through three detention ponds to reduce the discharge rates. The majority of the site, approximately 16.9± acres (DEV-1), will drain through a proposed storm sewer system to the southeastern developed wet pond (POND-1). POND-1 will drain through a proposed storm sewer system to BNDY. An area of approximately 2.0± acres (DEV-2) of onsite area in the southwest of the site and 2.4± acres (OFF-2), 1.2± acres (OFF-3), and 18.8± acres (OFF-4) of offsite area will drain through a proposed storm sewer system to POND-2. POND-2 will drain through a proposed storm sewer system to POND-1. Approximately 1.2± acres (DEV-3) of onsite area in the northwest of the site and 36.5± acres (OFF-1) of offsite area will drain through a proposed storm sewer system to POND-3, which will then drain to POND-1 through a proposed storm sewer system.

According to the Town of Plainfield Stormwater Ordinance, stormwater from the existing 10-year rainfall event may not discharge at a rate greater than the developed 100-year rainfall event. A preliminary hydrologic/hydraulic model of the developed site was completed to calculate the developed stormwater discharges and stage elevations. **Table 3** below provides a summary of the allowable and developed discharge rates for the project. **Table 4** provides a summary of the developed 100-year detention pond stage elevations which includes offsite areas. Complete calculations can be found in the appendix.

TABLE 3
DEVELOPED SITE STORMWATER DISCHARGE

Discharge Point	Developed Onsite Discharge (CFS)		Allowable Discharge (CFS)	
BNDY	**Q_{100p} = 12.59**	**≤**	**13.53**	**OK**

TABLE 4
DEVELOPED SITE
DETENTION PONDS

Discharge Point	Normal Pool Elevation	100-year Stage Elevation (With Offsite)
POND-1	**790.5**	**793.64**
POND-2	**790.5**	**793.74**
POND-3	**798.0**	**803.51**

Storm sewers will be designed to provide capacity for a 10-year storm event and the wet bottom detention ponds will provide a best management practice (BMP) for stormwater quality. Calculations will be provided with the final design.

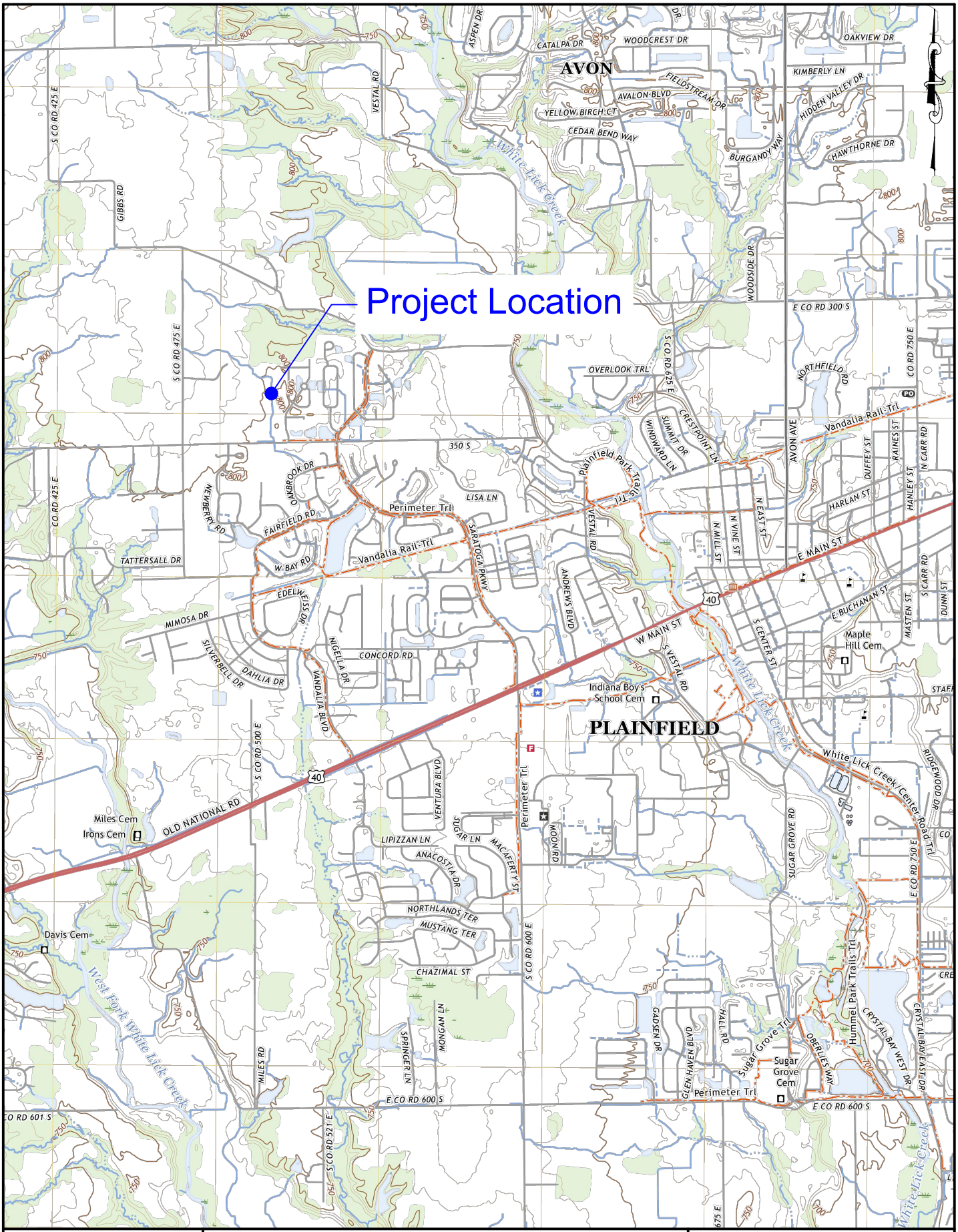
In conclusion, the calculations in this report show that drainage from the project will not cause any adverse impacts to onsite or offsite facilities. We believe the project falls within the requirements of the applicable code of ordinances.

V. REFERENCES

Design data and methods are based on the following reference materials:

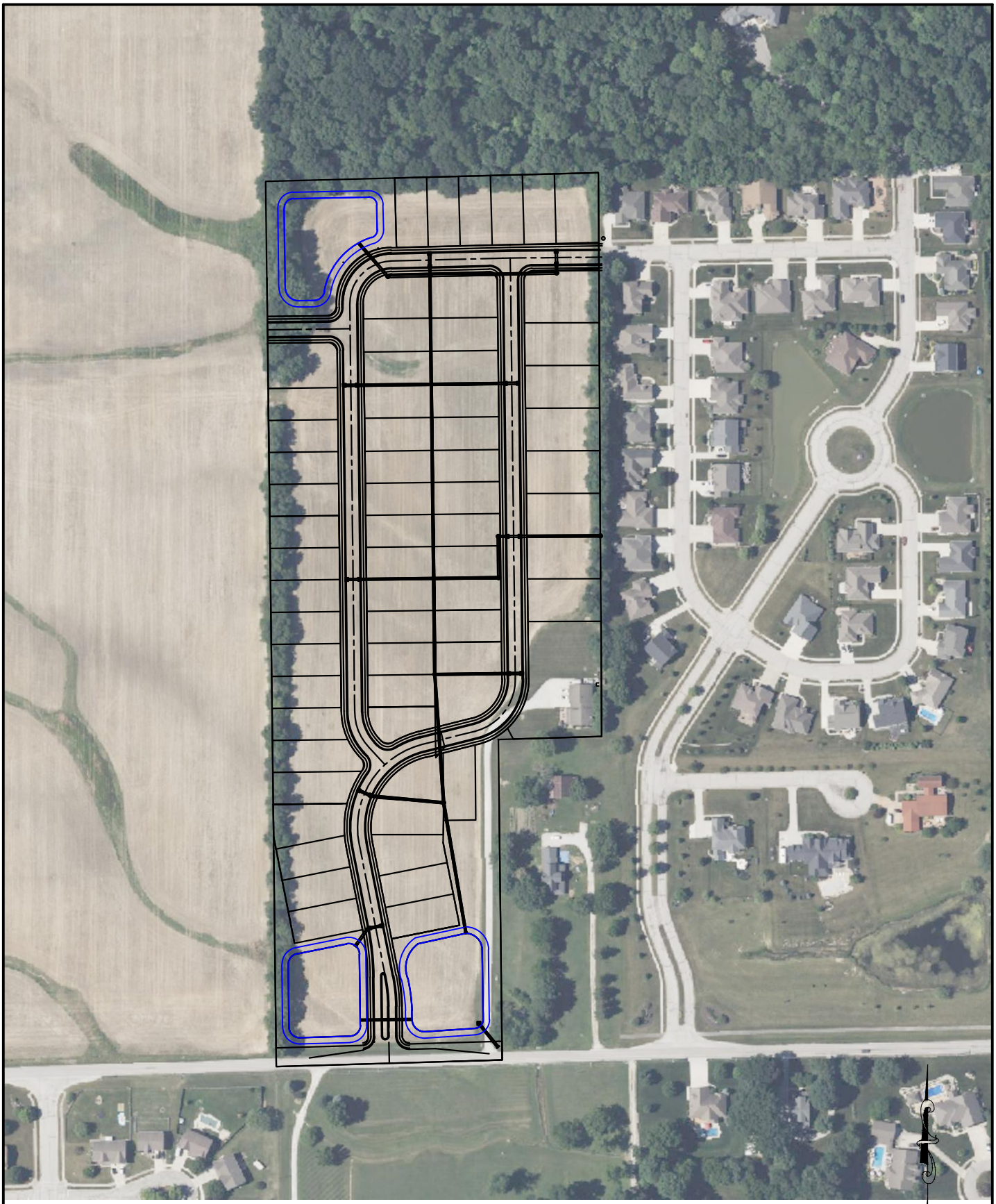
1. NRCS Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2. USGS Mapping
3. FEMA Flood Mapping (https://www.fema.gov/national-flood-hazard-layer-nfhl)
4. Town of Plainfield drainage ordinance
5. Hendricks County Stormwater manual

A. USGS AREA MAP



Drawn By: JAR Date: 08/12/2024 Project No.: 23313 Scale: AS SHOWN Page: 1 of 1	USGS AREA MAP SANDSTONE HENDRICKS COUNTY PLAINFIELD, INDIANA	BANNING ENGINEERING 853 COLUMBIA ROAD, SUITE #101 PLAINFIELD, IN 46168 BUS: (317) 707-3700, FAX: (317) 707-3800 E-MAIL: Banning@BanningEngineering.com WEB: www.BanningEngineering.com

B. SITE MAP



Drawn By: WCZ
Date: 09/04/2024
Project No.: 23313
Scale: AS SHOWN
Page: 1 of 1

SITE MAP
SANDSTONE
HENDRICKS COUNTY
PLAINFIELD, INDIANA

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C. SOILS MAP

Map Scale: 1:6,500 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hendricks County, Indiana
Survey Area Data: Version 27, Sep 1, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2022—Jun 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CrA	Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes	C/D	78.9	62.9%
MmB2	Miami silt loam, 2 to 6 percent slopes, eroded	C	7.8	6.2%
MsB3	Miami clay loam, 2 to 6 percent slopes, severely eroded	C	2.0	1.6%
ThrA	Treaty silty clay loam, 0 to 1 percent slopes	B/D	26.6	21.2%
YbvA	Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes	B/D	3.4	2.7%
YclA	Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes	C/D	6.7	5.4%
YmsB2	Miami silt loam-Urban land complex, 2 to 6 percent slopes, eroded	C	0.0	0.0%
Totals for Area of Interest			**125.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

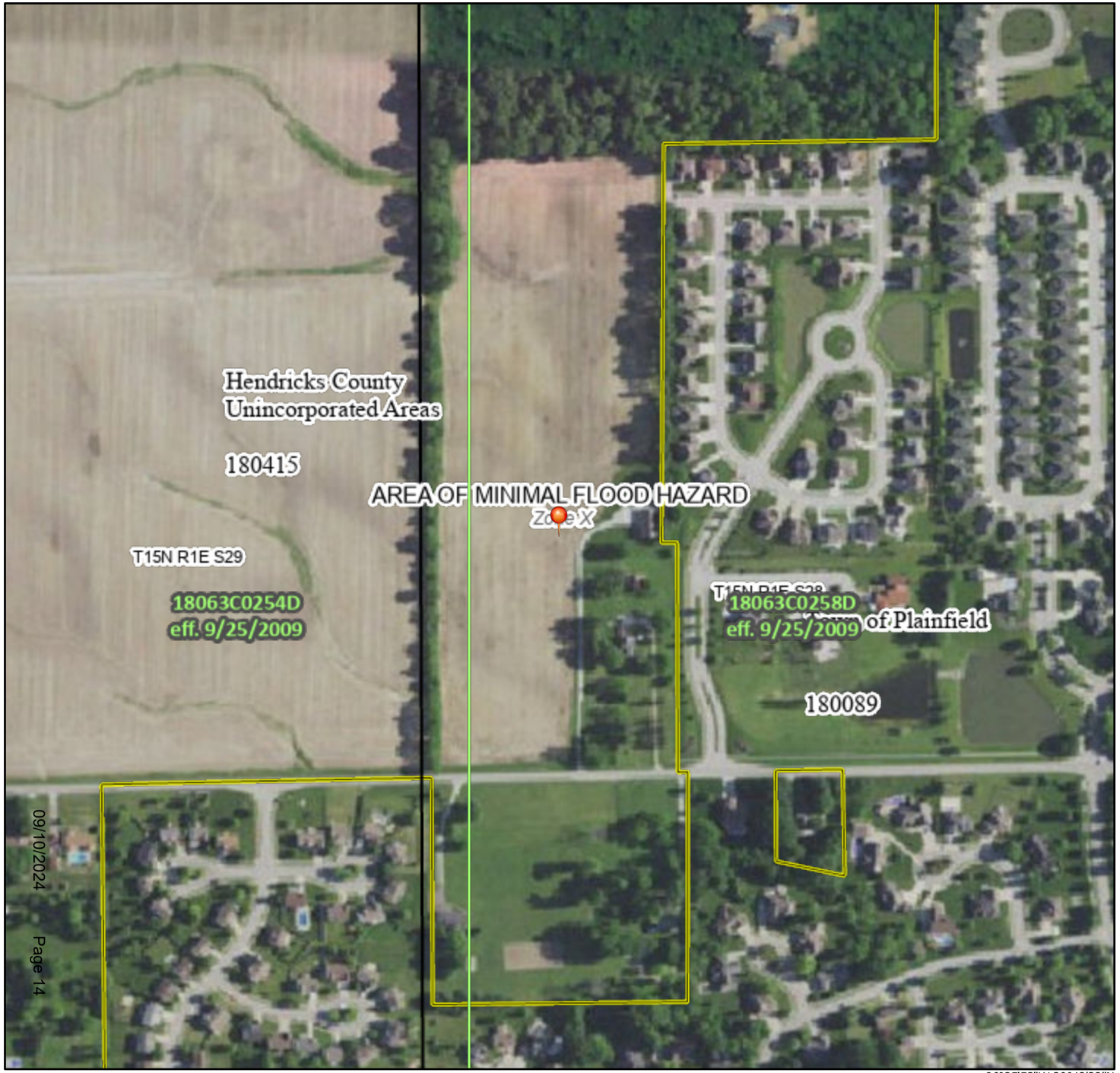
Tie-break Rule: Higher

D. FLOOD MAP

National Flood Hazard Layer FIRMette

FEMA

86°26'31"W 39°42'59"N



86°25'53"W 39°42'32"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

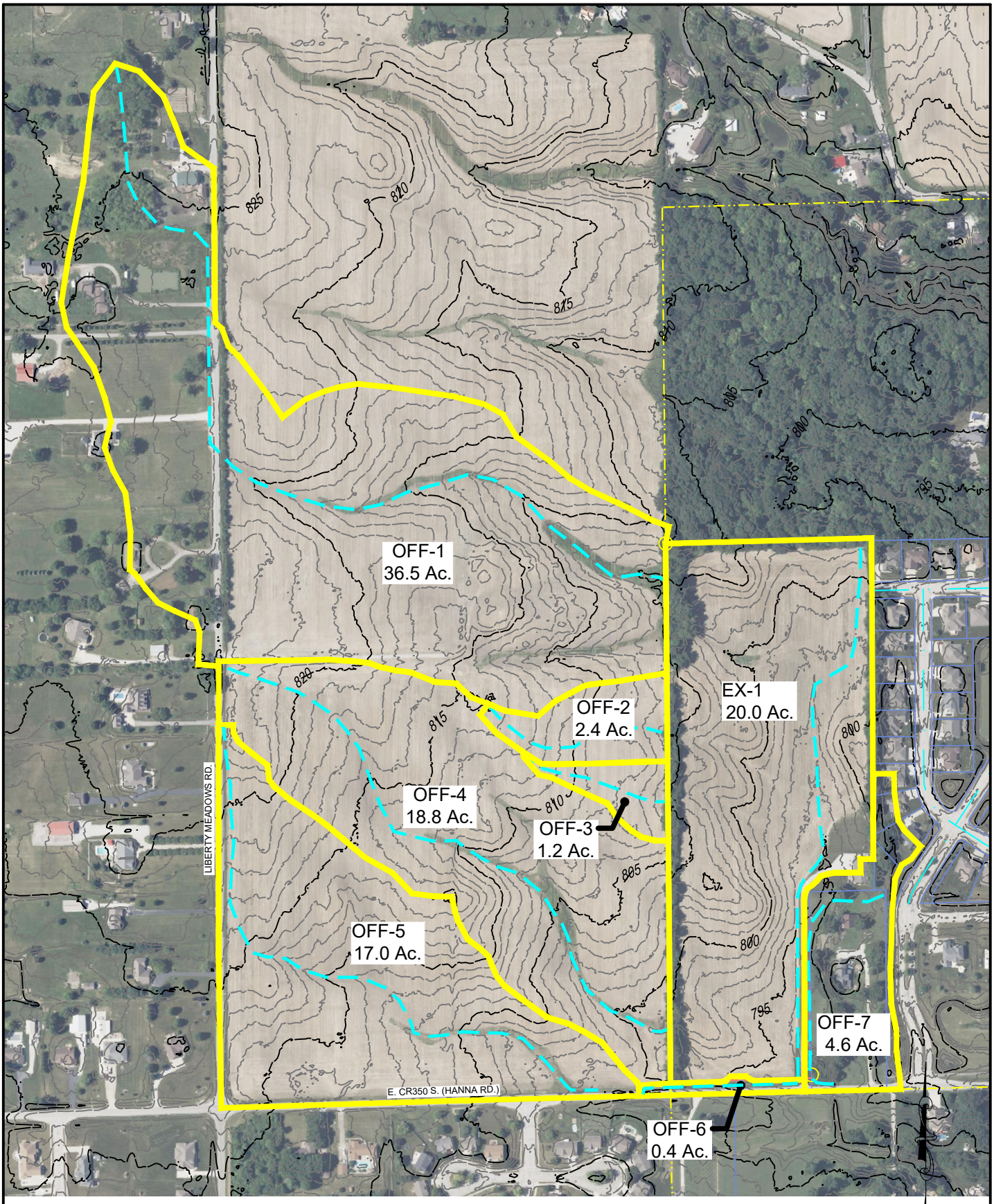
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/12/2024 at 2:04 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

E. DRAINAGE DESIGN

E1. EXISTING CONDITION BASIN MAP



Drawn By: JET
Date: 09/3/2024
Project No.: 23313
Scale: AS SHOWN
Page: 1 of 1

EXISTING BASIN MAP
SANDSTONE
HENDRICKS COUNTY
PLAINFIELD, INDIANA

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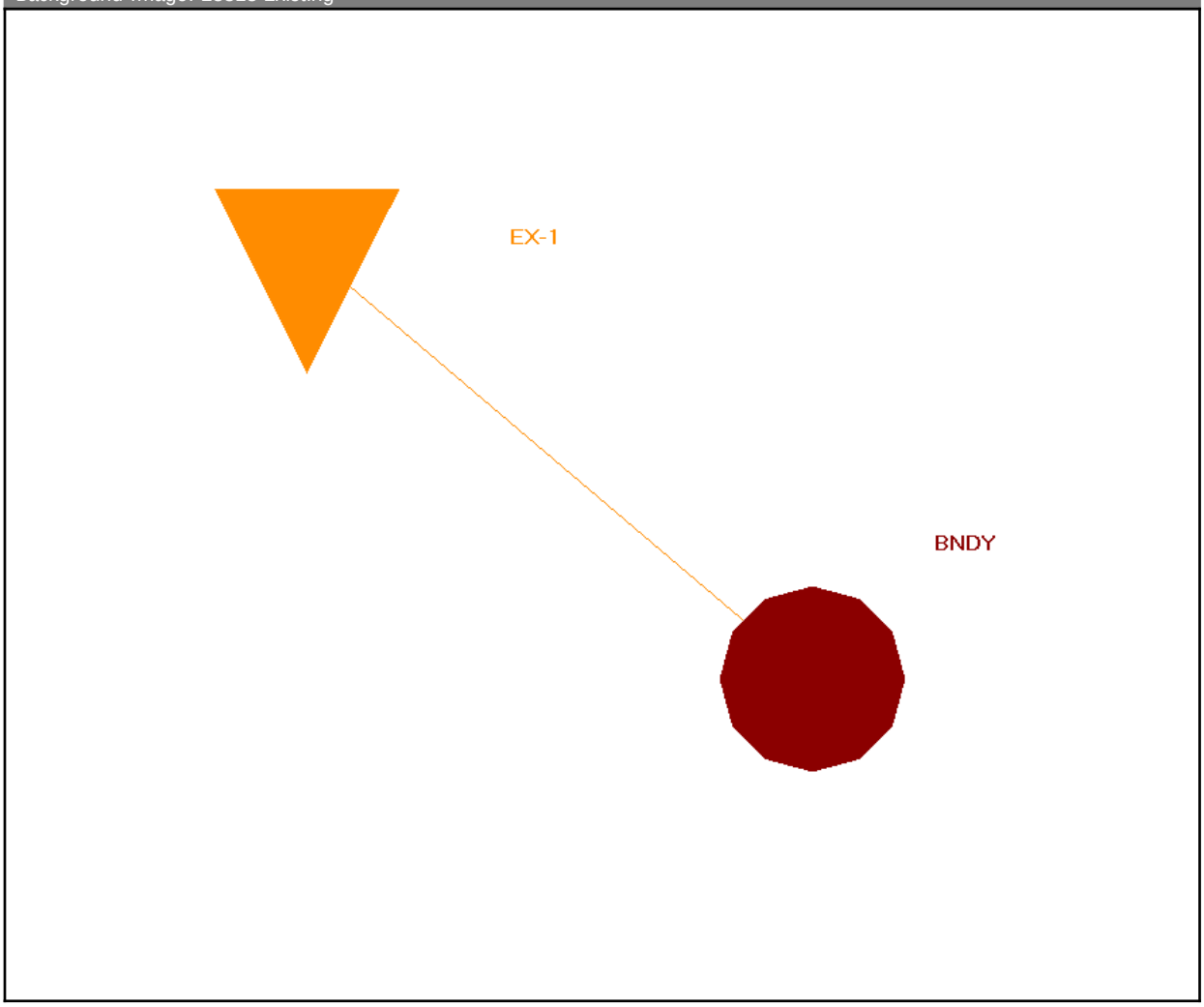
E2. EXISTING CONDITION CALCULATIONS

Background Image: 23313 Existing



Node Max Conditions : Multi Item | (name, sim) [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Alert Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
BNDY	010yr-001hr	0.00	0.00	0.00	0.0000	13.49	0.00	0
BNDY	010yr-002hr	0.00	0.00	0.00	0.0000	13.53	0.00	0
BNDY	010yr-003hr	0.00	0.00	0.00	0.0000	12.26	0.00	0
BNDY	010yr-006hr	0.00	0.00	0.00	0.0000	9.50	0.00	0
BNDY	010yr-012hr	0.00	0.00	0.00	0.0000	8.44	0.00	0
BNDY	010yr-024hr	0.00	0.00	0.00	0.0000	6.54	0.00	0
BNDY	100yr-001hr	0.00	0.00	0.00	0.0000	29.25	0.00	0
BNDY	100yr-002hr	0.00	0.00	0.00	0.0000	27.62	0.00	0
BNDY	100yr-003hr	0.00	0.00	0.00	0.0000	24.74	0.00	0
BNDY	100yr-006hr	0.00	0.00	0.00	0.0000	17.61	0.00	0
BNDY	100yr-012hr	0.00	0.00	0.00	0.0000	14.45	0.00	0
BNDY	100yr-024hr	0.00	0.00	0.00	0.0000	10.96	0.00	0

E3. EXISTING CONDITION TC AND CN VALUES

TR-55
-COMPOSITE CN-VALUES & TIME OF CONCENTRATION-

PROJECT: Sandstone
JOB #: 23313
DATE: 9/4/24
COMPUTED BY: JET

BASINS

BASIN	Composite CN	Area (ft^2)	Area (acres)	Area (miles)	Tc
EX-1	81.00	871200	20.00	0.03	33.2
OFF-1	82.00	1589940	36.50	0.06	42.9
OFF-2	85.00	104544	2.40	0.00	17.3
OFF-3	85.00	52272	1.20	0.00	15.2
OFF-4	84.00	818928	18.80	0.03	28.3
OFF-5	84.00	740520	17.00	0.03	34.3
OFF-6	83.00	17424	0.40	0.00	5.1
OFF-7	71.00	200376	4.60	0.01	27.9

Basin	Cover Description	Soil Group	Area (Acres)	CN	CN * Acres
EX-1	Paved parking lots, roofs, driveways	C	0.3	98	29.4
EX-1	Good condition; grass cover > 75%	B	0.7	61	42.7
EX-1	Good condition; grass cover > 75%	C	1.8	74	133.2
EX-1	Row Crop Straight row (SR) GOOD	B	7.6	78	592.8
EX-1	Row Crop Straight row (SR) GOOD	C	9.6	85	816
OFF-1	Paved parking lots, roofs, driveways	C	2.3	98	225.4
OFF-1	Good condition; grass cover > 75%	B	1	61	61
OFF-1	Good condition; grass cover > 75%	C	10.9	74	806.6
OFF-1	Row Crop Straight row (SR) GOOD	B	1.5	78	117
OFF-1	Row Crop Straight row (SR) GOOD	C	20.8	85	1768
OFF-2	Row Crop Straight row (SR) GOOD	C	2.4	85	204
OFF-3	Row Crop Straight row (SR) GOOD	C	1.2	85	102
OFF-4	Paved parking lots, roofs, driveways	C	0.3	98	29.4
OFF-4	Row Crop Straight row (SR) GOOD	B	4	78	312
OFF-4	Row Crop Straight row (SR) GOOD	C	14.5	85	1232.5
OFF-5	Paved parking lots, roofs, driveways	C	0.6	98	58.8
OFF-5	Row Crop Straight row (SR) GOOD	B	3.5	78	273
OFF-5	Row Crop Straight row (SR) GOOD	C	12.9	85	1096.5
OFF-6	Paved parking lots, roofs, driveways	C	0.2	98	19.6
OFF-6	Good condition; grass cover > 75%	B	0.1	61	6.1
OFF-6	Good condition; grass cover > 75%	C	0.1	74	7.4
OFF-7	Paved parking lots, roofs, driveways	C	0.6	98	58.8
OFF-7	Good condition; grass cover > 75%	B	2	61	122
OFF-7	Good condition; grass cover > 75%	C	2	74	148

Time of Concentration Worksheet
Based on TR-55

PROJECT: Sandstone
JOB #: 23313

Typical values for Manning's n

Overland Flow		Channel Flow	
short grass	0.15	grass	0.03
dense grass	0.24	concrete	0.02
pavement	0.011	rip-rap	0.04
woods light	0.4		
cultivated > 20%	0.17		

2 year, 24 hour rainfall = 2.66 inches
minimum T_c = 5 minutes

	Overland flow				Shallow Concentrated Flow (1)					Shallow Concentrated Flow (2)					Channel Flow								T_c
Basin name	Length (ft)	S %	n	T_t (min)	Length (ft)	S %	Paved/Un (P or U)	Vel. (ft/s)	T_t (min)	Length (ft)	S %	Paved/Un (P or U)	Vel. (ft/s)	T_t (min)	Length (ft)	a (s.f.)	Pw (ft)	r (ft)	S %	n	Vel. (ft/s)	T_t (min)	(min)
				0					0					0								0	
				0					0					0								0	
EX-1	100	2	0.17	12	1600	0.6	U	1.2	21					0								0	33
OFF-1	100	1.87	0.17	12	2728	0.84	U	1.5	31					0								0	43
OFF-2	100	1.47	0.17	13	473	1.6	U	2	4					0								0	17
OFF-3	100	1.88	0.17	12	352	1.44	U	1.9	3					0								0	15
OFF-4	100	1.72	0.17	13	1768	1.36	U	1.9	16					0								0	28
OFF-5	100	1	0.17	16	1800	1	U	1.6	19					0								0	34
OFF-6	20	2	0.01	0	460	1	U	1.6	5					0								0	5
OFF-7	100	1	0.24	21	700	1	U	1.6	7					0								0	28
				0					0					0								0	
				0					0					0								0	

E4. EXISTING CONDITION ICPR INPUT DATA

Simple Basin: EX-1

Scenario:	Scenario1
Node:	BNDY
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	33.2000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	20.0000 ac
Curve Number:	81.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Node: BNDY

Scenario:	Scenario1
Type:	Time/Stage
Base Flow:	0.00 cfs
Initial Stage:	0.00 ft
Warning Stage:	0.00 ft
Alert Stage:	0.00 ft
Boundary Stage:	

Comment:

Simulation: 010yr-001hr

Scenario:	Scenario1
Run Date/Time:	9/3/2024 3:48:19 PM
Program Version:	StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000

End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q1
Rainfall Amount: 1.96 in
Storm Duration: 1.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-002hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:21 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	2.40 in
		Storm Duration:	2.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-003hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:24 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global

Rainfall Name: Huff_Q1
Rainfall Amount: 2.64 in
Storm Duration: 3.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-006hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:25 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	12.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q1
Rainfall Amount: 3.12 in
Storm Duration: 6.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-012hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:28 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec

Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q2
		Rainfall Amount:	3.60 in
		Storm Duration:	12.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-024hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:33 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:	Huff Bulletin 71	Boundary Stage Set:	
		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	

Tolerances & Options			
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q3
		Rainfall Amount:	4.08 in
		Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-001hr

Scenario:	Scenario1
Run Date/Time:	9/3/2024 3:48:40 PM
Program Version:	StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q1
Rainfall Amount: 2.88 in
Storm Duration: 1.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-002hr

Scenario: Scenario1

Run Date/Time: 9/3/2024 3:48:42 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global

Link Optimizer Tol: 0.0001 ft

Rainfall Name:	Huff_Q1
Rainfall Amount:	3.50 in
Storm Duration:	2.0000 hr
Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	100 ft2
Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-003hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:44 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Lookup Tables

Boundary Stage Set:

		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	3.87 in
		Storm Duration:	3.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-006hr

Scenario:	Scenario1
Run Date/Time:	9/3/2024 3:48:45 PM
Program Version:	StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	12.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global

Rainfall Name: Huff_Q1
Rainfall Amount: 4.50 in
Storm Duration: 6.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-012hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:48 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set:

Green-Ampt Set:

Vertical Layers Set:

Impervious Set:

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr

Ia/S: 0.20 dec

Smp/Man Basin Rain Opt: Global

Rainfall Name: Huff_Q2

Rainfall Amount:	5.16 in
Storm Duration:	12.0000 hr
Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	100 ft2
Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-024hr

Scenario: Scenario1
Run Date/Time: 9/3/2024 3:48:53 PM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:

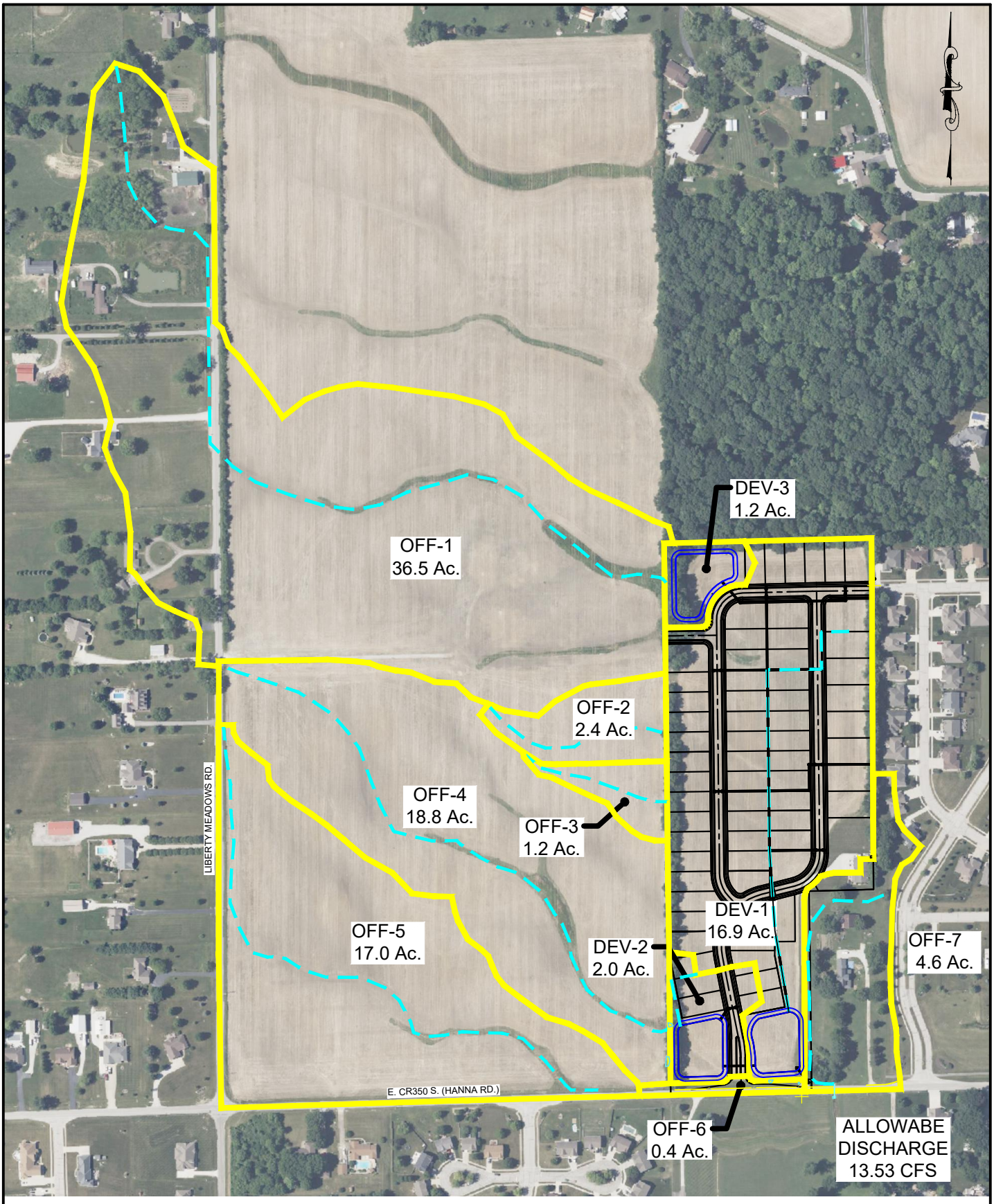
Folder:			
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q3
		Rainfall Amount:	6.00 in
		Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

E5. DEVELOPED CONDITION BASIN MAP



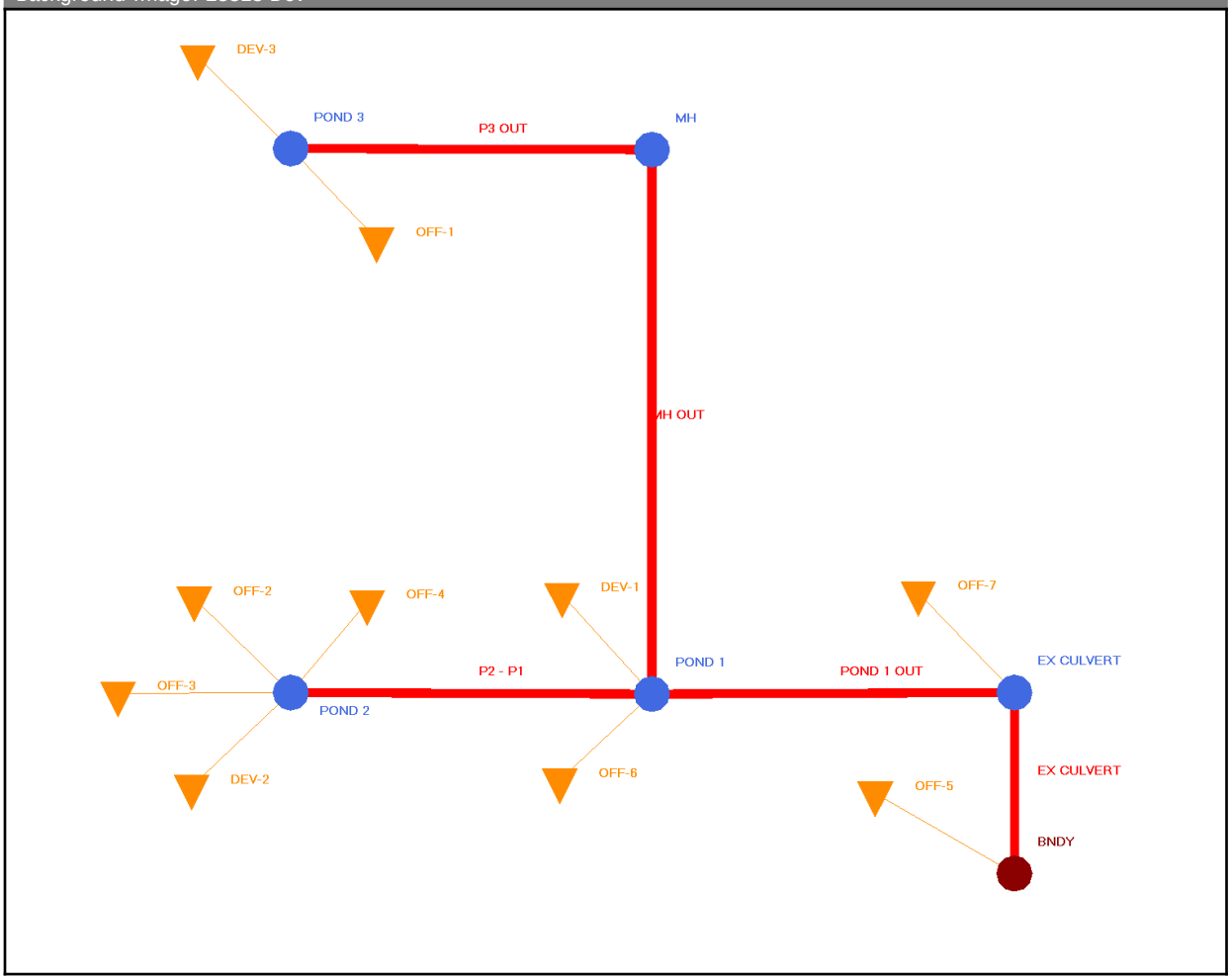
Drawn By: WCZ
Date: 03/25/2024
Project No.: 23313
Scale: AS SHOWN
Page: 1 of 1

DEVELOPED BASIN MAP
SANDSTONE
HENDRICKS COUNTY
PLAINFIELD, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

E6. DEVELOPED CONDITION CALCULATIONS

Background Image: 23313 Dev



Node Max Conditions : Multi Item | (name, sim) [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Alert Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
BNDY	010yr-001hr	0.00	0.00	0.00	0.0000	5.08	0.00	0
BNDY	010yr-002hr	0.00	0.00	0.00	0.0000	5.68	0.00	0
BNDY	010yr-003hr	0.00	0.00	0.00	0.0000	5.37	0.00	0
BNDY	010yr-006hr	0.00	0.00	0.00	0.0000	5.49	0.00	0
BNDY	010yr-012hr	0.00	0.00	0.00	0.0000	5.99	0.00	0
BNDY	010yr-024hr	0.00	0.00	0.00	0.0000	5.71	0.00	0
BNDY	100yr-001hr	0.00	0.00	0.00	0.0000	12.17	0.00	0
BNDY	100yr-002hr	0.00	0.00	0.00	0.0000	12.39	0.00	0
BNDY	100yr-003hr	0.00	0.00	0.00	0.0000	12.59	0.00	0
BNDY	100yr-006hr	0.00	0.00	0.00	0.0000	11.55	0.00	0
BNDY	100yr-012hr	0.00	0.00	0.00	0.0000	11.72	0.00	0
BNDY	100yr-024hr	0.00	0.00	0.00	0.0000	10.17	0.00	0
EX CULVERT	010yr-001hr	793.00	793.00	789.60	0.0010	5.09	5.08	1099
EX CULVERT	010yr-002hr	793.00	793.00	789.65	0.0010	5.68	5.68	1154
EX CULVERT	010yr-003hr	793.00	793.00	789.62	0.0010	5.37	5.37	1126
EX CULVERT	010yr-006hr	793.00	793.00	789.63	0.0010	5.49	5.49	1138
EX CULVERT	010yr-012hr	793.00	793.00	789.67	0.0010	5.99	5.99	1183
EX CULVERT	010yr-024hr	793.00	793.00	789.65	0.0010	5.71	5.71	1158
EX CULVERT	100yr-001hr	793.00	793.00	790.11	0.0010	12.22	12.17	1660
EX CULVERT	100yr-002hr	793.00	793.00	790.13	0.0010	12.42	12.39	1675
EX CULVERT	100yr-003hr	793.00	793.00	790.14	0.0010	12.60	12.59	1689
EX CULVERT	100yr-006hr	793.00	793.00	790.07	0.0010	11.55	11.55	1617
EX CULVERT	100yr-012hr	793.00	793.00	790.09	-0.0010	11.72	11.72	1629
EX CULVERT	100yr-024hr	793.00	793.00	789.98	0.0010	10.17	10.17	1519
MH	010yr-001hr	801.00	801.00	797.28	0.0002	0.15	0.15	922
MH	010yr-002hr	801.00	801.00	797.32	0.0002	0.25	0.25	987
MH	010yr-003hr	801.00	801.00	797.33	-0.0002	0.27	0.26	994
MH	010yr-006hr	801.00	801.00	797.33	0.0003	0.27	0.27	1000
MH	010yr-012hr	801.00	801.00	797.34	-0.0010	0.31	0.30	1017
MH	010yr-024hr	801.00	801.00	797.34	-0.0010	0.31	0.30	1014
MH	100yr-001hr	801.00	801.00	797.38	0.0003	0.40	0.39	1087
MH	100yr-002hr	801.00	801.00	797.41	0.0004	0.51	0.51	1121
MH	100yr-003hr	801.00	801.00	797.41	0.0005	0.52	0.52	1121
MH	100yr-006hr	801.00	801.00	797.41	0.0004	0.52	0.52	1118

Node Name	Sim Name	Warning Stage [ft]	Alert Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
MH	100yr-012hr	801.00	801.00	797.42	-0.0008	0.54	0.54	1125
MH	100yr-024hr	801.00	801.00	797.41	0.0010	0.51	0.50	1111
POND 1	010yr-001hr	794.50	794.50	791.38	0.0010	16.40	8.61	25043
POND 1	010yr-002hr	794.50	794.50	791.43	0.0010	15.11	9.67	25173
POND 1	010yr-003hr	794.50	794.50	791.41	0.0010	13.03	9.13	25108
POND 1	010yr-006hr	794.50	794.50	791.42	-0.0010	9.14	7.78	25144
POND 1	010yr-012hr	794.50	794.50	791.46	0.0010	8.01	6.53	25247
POND 1	010yr-024hr	794.50	794.50	791.44	-0.0010	6.26	5.71	25191
POND 1	100yr-001hr	794.50	794.50	791.89	0.0010	34.43	21.40	26195
POND 1	100yr-002hr	794.50	794.50	791.90	0.0010	30.04	21.79	26220
POND 1	100yr-003hr	794.50	794.50	791.93	0.0010	25.25	20.13	26270
POND 1	100yr-006hr	794.50	794.50	791.85	0.0010	17.52	14.68	26119
POND 1	100yr-012hr	794.50	794.50	791.86	-0.0010	13.36	11.72	26141
POND 1	100yr-024hr	794.50	794.50	791.76	0.0010	10.69	10.17	25940
POND 2	010yr-001hr	794.50	794.50	791.24	-0.0010	4.77	1.17	23514
POND 2	010yr-002hr	794.50	794.50	791.40	-0.0010	5.36	1.63	23873
POND 2	010yr-003hr	794.50	794.50	791.40	0.0010	5.02	1.51	23868
POND 2	010yr-006hr	794.50	794.50	791.42	0.0010	4.31	1.11	23918
POND 2	010yr-012hr	794.50	794.50	791.46	0.0010	3.61	1.03	24011
POND 2	010yr-024hr	794.50	794.50	791.44	0.0010	1.39	1.03	23959
POND 2	100yr-001hr	794.50	794.50	791.82	-0.0010	11.72	3.41	24795
POND 2	100yr-002hr	794.50	794.50	791.90	-0.0010	12.11	3.40	24963
POND 2	100yr-003hr	794.50	794.50	791.93	-0.0010	11.26	2.73	25037
POND 2	100yr-006hr	794.50	794.50	791.85	0.0010	8.38	2.28	24871
POND 2	100yr-012hr	794.50	794.50	791.86	0.0010	4.99	1.89	24895
POND 2	100yr-024hr	794.50	794.50	791.77	0.0010	1.86	1.68	24680
POND 3	010yr-001hr	803.00	803.00	798.15	0.0007	2.00	0.15	22114
POND 3	010yr-002hr	803.00	803.00	798.19	0.0007	1.47	0.25	22183
POND 3	010yr-003hr	803.00	803.00	798.19	0.0007	1.23	0.27	22192
POND 3	010yr-006hr	803.00	803.00	798.19	0.0006	0.97	0.27	22198
POND 3	010yr-012hr	803.00	803.00	798.21	0.0002	0.63	0.31	22223
POND 3	010yr-024hr	803.00	803.00	798.21	0.0003	0.45	0.31	22222
POND 3	100yr-001hr	803.00	803.00	798.27	0.0010	3.89	0.40	22336
POND 3	100yr-002hr	803.00	803.00	798.30	0.0010	2.97	0.51	22402
POND 3	100yr-003hr	803.00	803.00	798.31	0.0010	2.55	0.52	22406
POND 3	100yr-006hr	803.00	803.00	798.30	0.0007	1.87	0.52	22403
POND 3	100yr-012hr	803.00	803.00	798.31	-0.0004	1.03	0.54	22418
POND 3	100yr-024hr	803.00	803.00	798.30	0.0004	0.72	0.51	22397

Node Max Conditions : Multi Item | (name, sim) [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Alert Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
BNDY	010yr-001hr	0.00	0.00	0.00	0.0000	27.00	0.00	0
BNDY	010yr-002hr	0.00	0.00	0.00	0.0000	30.30	0.00	0
BNDY	010yr-003hr	0.00	0.00	0.00	0.0000	30.94	0.00	0
BNDY	010yr-006hr	0.00	0.00	0.00	0.0000	29.58	0.00	0
BNDY	010yr-012hr	0.00	0.00	0.00	0.0000	31.23	0.00	0
BNDY	010yr-024hr	0.00	0.00	0.00	0.0000	28.03	0.00	0
BNDY	100yr-001hr	0.00	0.00	0.00	0.0000	56.39	0.00	0
BNDY	100yr-002hr	0.00	0.00	0.00	0.0000	59.77	0.00	0
BNDY	100yr-003hr	0.00	0.00	0.00	0.0000	58.16	0.00	0
BNDY	100yr-006hr	0.00	0.00	0.00	0.0000	52.32	0.00	0
BNDY	100yr-012hr	0.00	0.00	0.00	0.0000	51.75	0.00	0
BNDY	100yr-024hr	0.00	0.00	0.00	0.0000	44.91	0.00	0
EX CULVERT	010yr-001hr	793.00	793.00	790.55	-0.0010	18.94	18.87	2109
EX CULVERT	010yr-002hr	793.00	793.00	790.96	-0.0010	23.67	23.63	2487
EX CULVERT	010yr-003hr	793.00	793.00	790.94	0.0010	23.45	23.45	2472
EX CULVERT	010yr-006hr	793.00	793.00	790.97	-0.0010	23.92	23.90	2502
EX CULVERT	010yr-012hr	793.00	793.00	791.05	-0.0010	24.99	24.97	2575
EX CULVERT	010yr-024hr	793.00	793.00	790.86	0.0010	22.32	22.33	2396
EX CULVERT	100yr-001hr	793.00	793.00	792.05	-0.0010	39.18	38.82	3759
EX CULVERT	100yr-002hr	793.00	793.00	792.35	-0.0010	42.47	42.39	5342
EX CULVERT	100yr-003hr	793.00	793.00	792.41	0.0010	43.43	43.05	5652
EX CULVERT	100yr-006hr	793.00	793.00	792.18	0.0010	40.50	40.41	4438
EX CULVERT	100yr-012hr	793.00	793.00	792.18	-0.0010	40.54	40.47	4467
EX CULVERT	100yr-024hr	793.00	793.00	791.79	-0.0010	35.64	35.56	3316
MH	010yr-001hr	801.00	801.00	798.24	0.0010	9.71	9.71	1357
MH	010yr-002hr	801.00	801.00	798.33	0.0010	11.18	11.18	1357
MH	010yr-003hr	801.00	801.00	798.33	-0.0010	11.13	11.13	1357
MH	010yr-006hr	801.00	801.00	798.32	0.0010	10.94	10.94	1358
MH	010yr-012hr	801.00	801.00	798.33	-0.0010	11.10	11.10	1359
MH	010yr-024hr	801.00	801.00	798.25	-0.0010	9.78	9.78	1359
MH	100yr-001hr	801.00	801.00	798.73	0.0010	14.79	14.82	1357
MH	100yr-002hr	801.00	801.00	799.37	0.0010	15.78	15.99	1357
MH	100yr-003hr	801.00	801.00	799.40	0.0010	15.85	16.04	1356
MH	100yr-006hr	801.00	801.00	799.01	0.0010	15.62	15.63	1357

Node Name	Sim Name	Warning Stage [ft]	Alert Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
MH	100yr-012hr	801.00	801.00	798.96	-0.0010	15.52	15.52	1357
MH	100yr-024hr	801.00	801.00	798.64	-0.0010	14.37	14.38	1359
POND 1	010yr-001hr	794.50	794.50	792.24	-0.0010	26.89	18.20	26760
POND 1	010yr-002hr	794.50	794.50	792.53	-0.0010	29.01	22.79	26906
POND 1	010yr-003hr	794.50	794.50	792.52	-0.0010	27.68	22.66	26908
POND 1	010yr-006hr	794.50	794.50	792.54	-0.0010	23.96	23.03	26916
POND 1	010yr-012hr	794.50	794.50	792.60	0.0010	24.91	24.01	26952
POND 1	010yr-024hr	794.50	794.50	792.44	0.0010	22.34	21.37	26916
POND 1	100yr-001hr	794.50	794.50	793.41	-0.0010	51.11	36.97	28137
POND 1	100yr-002hr	794.50	794.50	793.61	0.0010	50.52	40.47	28575
POND 1	100yr-003hr	794.50	794.50	793.64	0.0010	47.53	41.12	28655
POND 1	100yr-006hr	794.50	794.50	793.50	-0.0010	41.29	38.53	28334
POND 1	100yr-012hr	794.50	794.50	793.50	0.0010	40.69	38.53	28335
POND 1	100yr-024hr	794.50	794.50	793.22	-0.0010	35.27	33.77	27813
POND 2	010yr-001hr	794.50	794.50	792.28	0.0010	23.15	8.36	25804
POND 2	010yr-002hr	794.50	794.50	792.56	0.0010	21.96	8.47	26405
POND 2	010yr-003hr	794.50	794.50	792.55	0.0010	19.38	8.00	26379
POND 2	010yr-006hr	794.50	794.50	792.58	0.0010	13.98	7.53	26436
POND 2	010yr-012hr	794.50	794.50	792.64	0.0010	11.83	8.13	26567
POND 2	010yr-024hr	794.50	794.50	792.48	0.0010	8.80	7.37	26221
POND 2	100yr-001hr	794.50	794.50	793.49	0.0010	46.53	17.47	28296
POND 2	100yr-002hr	794.50	794.50	793.69	0.0010	42.29	16.99	28736
POND 2	100yr-003hr	794.50	794.50	793.74	0.0010	36.78	16.69	28846
POND 2	100yr-006hr	794.50	794.50	793.57	0.0010	25.52	14.66	28473
POND 2	100yr-012hr	794.50	794.50	793.57	0.0010	19.38	14.61	28470
POND 2	100yr-024hr	794.50	794.50	793.27	0.0010	14.20	12.05	27896
POND 3	010yr-001hr	803.00	803.00	800.15	-0.0010	24.15	9.71	25524
POND 3	010yr-002hr	803.00	803.00	800.63	-0.0010	24.86	11.18	26363
POND 3	010yr-003hr	803.00	803.00	800.61	-0.0010	22.85	11.13	26331
POND 3	010yr-006hr	803.00	803.00	800.55	-0.0010	18.31	10.94	26219
POND 3	010yr-012hr	803.00	803.00	800.60	0.0010	16.21	11.10	26307
POND 3	010yr-024hr	803.00	803.00	800.16	0.0010	12.53	9.78	25548
POND 3	100yr-001hr	803.00	803.00	802.48	-0.0010	50.43	14.79	29591
POND 3	100yr-002hr	803.00	803.00	803.43	0.0010	49.49	15.78	30494
POND 3	100yr-003hr	803.00	803.00	803.51	0.0010	45.13	15.85	30494
POND 3	100yr-006hr	803.00	803.00	803.18	-0.0010	33.78	15.62	30494
POND 3	100yr-012hr	803.00	803.00	803.07	-0.0010	27.66	15.52	30494
POND 3	100yr-024hr	803.00	803.00	802.18	-0.0010	20.85	14.37	29059

E7. DEVELOPED CONDITION Tc AND Cn VALUES

TR-55
-COMPOSITE CN-VALUES & TIME OF CONCENTRATION-

PROJECT: Sandstone
JOB #: 23313
DATE: 9/4/24
COMPUTED BY: JET

BASINS

BASIN	Composite CN	Area (ft^2)	Area (acres)	Area (miles)	Tc
DEV-1	83.00	736164	16.90	0.03	20.0
DEV-2	90.00	87120	2.00	0.00	13.3
DEV-3	86.00	52272	1.20	0.00	5.0
OFF-1	82.00	1589940	36.50	0.06	42.9
OFF-2	85.00	104544	2.40	0.00	17.3
OFF-3	85.00	52272	1.20	0.00	15.2
OFF-4	84.00	818928	18.80	0.03	28.3
OFF-5	84.00	740520	17.00	0.03	34.3
OFF-6	83.00	17424	0.40	0.00	5.1
OFF-7	71.00	200376	4.60	0.01	27.9

Basin	Cover Description	Soil Group	Area (Acres)	CN	CN * Acres
DEV-1	1/4 acre 38% impervious	C	16.9	83	1402.7
DEV-2	Paved parking lots, roofs, driveways	C	1.3	98	127.4
DEV-2	Good condition; grass cover > 75%	C	0.7	74	51.8
DEV-3	Paved parking lots, roofs, driveways	C	0.6	98	58.8
DEV-3	Good condition; grass cover > 75%	C	0.6	74	44.4
OFF-1	Paved parking lots, roofs, driveways	C	2.3	98	225.4
OFF-1	Good condition; grass cover > 75%	B	1	61	61
OFF-1	Good condition; grass cover > 75%	C	10.9	74	806.6
OFF-1	Row Crop Straight row (SR) GOOD	B	1.5	78	117
OFF-1	Row Crop Straight row (SR) GOOD	C	20.8	85	1768
OFF-2	Row Crop Straight row (SR) GOOD	C	2.4	85	204
OFF-3	Row Crop Straight row (SR) GOOD	C	1.2	85	102
OFF-4	Paved parking lots, roofs, driveways	C	0.3	98	29.4
OFF-4	Row Crop Straight row (SR) GOOD	B	4	78	312
OFF-4	Row Crop Straight row (SR) GOOD	C	14.5	85	1232.5
OFF-5	Paved parking lots, roofs, driveways	C	0.6	98	58.8
OFF-5	Row Crop Straight row (SR) GOOD	B	3.5	78	273
OFF-5	Row Crop Straight row (SR) GOOD	C	12.9	85	1096.5
OFF-6	Paved parking lots, roofs, driveways	C	0.2	98	19.6
OFF-6	Good condition; grass cover > 75%	B	0.1	61	6.1
OFF-6	Good condition; grass cover > 75%	C	0.1	74	7.4
OFF-7	Paved parking lots, roofs, driveways	C	0.6	98	58.8
OFF-7	Good condition; grass cover > 75%	B	2	61	122
OFF-7	Good condition; grass cover > 75%	C	2	74	148

Time of Concentration Worksheet
Based on TR-55

PROJECT: Sandstone
JOB #: 23313

Typical values for Manning's n

Overland Flow		Channel Flow	
short grass	0.15	grass	0.03
dense grass	0.24	concrete	0.02
pavement	0.011	rip-rap	0.04
woods light	0.4		
cultivated > 20%	0.17		

2 year, 24 hour rainfall = 2.66 inches
minimum T_c = 5 minutes

	Overland flow				Shallow Concentrated Flow (1)					Shallow Concentrated Flow (2)					Channel Flow								T_c
Basin name	Length (ft)	S %	n	T_t (min)	Length (ft)	S %	Paved/Un (P or U)	Vel. (ft/s)	T_t (min)	Length (ft)	S %	Paved/Un (P or U)	Vel. (ft/s)	T_t (min)	Length (ft)	a (s.f.)	Pw (ft)	r (ft)	S %	n	Vel. (ft/s)	T_t (min)	(min)
				0					0					0								0	
				0					0					0								0	
DEV-1	75	2	0.24	12	115	1	P	2	1					0	1200						3.00	7	20
DEV-2	70	2	0.24	12	150	1	U	1.6	2					0								0	13
DEV-3				0					0					0								0	5
OFF-1	100	1.87	0.17	12	2728	0.84	U	1.5	31					0								0	43
OFF-2	100	1.47	0.17	13	473	1.6	U	2	4					0								0	17
OFF-3	100	1.88	0.17	12	352	1.44	U	1.9	3					0								0	15
OFF-4	100	1.72	0.17	13	1768	1.36	U	1.9	16					0								0	28
OFF-5	100	1	0.17	16	1800	1	U	1.6	19					0								0	34
OFF-6	20	2	0.01	0	460	1	U	1.6	5					0								0	5
OFF-7	100	1	0.24	21	700	1	U	1.6	7					0								0	28
				0					0					0								0	
				0					0					0								0	

E8. DEVELOPED CONDITION ICPR INPUT DATA

Simple Basin: DEV-1

Scenario:	Scenario1
Node:	POND 1
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	20.0000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	16.9000 ac
Curve Number:	83.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: DEV-2

Scenario:	Scenario1
Node:	POND 2
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	13.3000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	2.0000 ac
Curve Number:	90.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: DEV-3

Scenario:	Scenario1
Node:	POND 3
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number

Time of Concentration:	5.0000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.2000 ac
Curve Number:	86.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-1

Scenario:	Scenario1
Node:	POND 3
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	42.9000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	36.5000 ac
Curve Number:	82.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-2

Scenario:	Scenario1
Node:	POND 2
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	17.3000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0

Area:	2.4000 ac
Curve Number:	85.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-3

Scenario:	Scenario1
Node:	POND 2
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	15.2000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	1.2000 ac
Curve Number:	85.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-4

Scenario:	Scenario1
Node:	POND 2
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	28.3000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	18.8000 ac
Curve Number:	84.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00

% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-5

Scenario:	Scenario1
Node:	BNDY
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	34.3000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	17.0000 ac
Curve Number:	84.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-6

Scenario:	Scenario1
Node:	POND 1
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	5.1000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	0.4000 ac
Curve Number:	83.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Simple Basin: OFF-7

Scenario:	Scenario1
Node:	EX CULVERT
Hydrograph Method:	NRCS Unit Hydrograph
Infiltration Method:	Curve Number
Time of Concentration:	27.9000 min
Max Allowable Q:	9999.00 cfs
Time Shift:	0.0000 hr
Unit Hydrograph:	UH484
Peaking Factor:	484.0
Area:	4.6000 ac
Curve Number:	71.0
Ia/S:	0.00
% Impervious:	0.00
% DCIA:	0.00
% Direct:	0.00
Rainfall Name:	

Comment:

Node: BNDY

Scenario:	Scenario1
Type:	Time/Stage
Base Flow:	0.00 cfs
Initial Stage:	0.00 ft
Warning Stage:	0.00 ft
Alert Stage:	0.00 ft
Boundary Stage:	

Comment:

Node: EX CULVERT

Scenario:	Scenario1
Type:	Stage/Area
Base Flow:	0.00 cfs
Initial Stage:	788.75 ft
Warning Stage:	793.00 ft
Alert Stage:	793.00 ft

Stage [ft]	Area [ac]	Area [ft2]
788.75	0.0000	0
792.00	0.0800	3485
793.00	0.2000	8712

Comment:

Node: MH

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 797.13 ft
Warning Stage: 801.00 ft
Alert Stage: 801.00 ft

Stage [ft]	Area [ac]	Area [ft2]
797.13	0.0003	13
801.00	0.0003	13

Comment:

Node: POND 1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 790.50 ft
Warning Stage: 794.50 ft
Alert Stage: 794.50 ft

Stage [ft]	Area [ac]	Area [ft2]
790.50	0.5000	21780
794.50	0.7000	30492

Comment:

Node: POND 2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 790.50 ft
Warning Stage: 794.50 ft
Alert Stage: 794.50 ft

Stage [ft]	Area [ac]	Area [ft2]
790.50	0.5000	21780
794.50	0.7000	30492

Comment:

Node: POND 3

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 798.00 ft
Warning Stage: 803.00 ft
Alert Stage: 803.00 ft

Stage [ft]	Area [ac]	Area [ft2]
798.00	0.5000	21780
803.00	0.7000	30492

Comment:

Pipe Link: EX CULVERT

		Upstream		Downstream	
Scenario:	Scenario1	Invert:	788.75 ft	Invert:	788.58 ft
From Node:	EX CULVERT	Manning's N:	0.0240	Manning's N:	0.0240
To Node:	BNDY	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	41.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	1	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0	Top Clip			
Bend Loss Coef:	0	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: MH OUT

		Upstream		Downstream	
Scenario:	Scenario1	Invert:	797.13 ft	Invert:	790.50 ft
From Node:	MH	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	POND 1	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.00 ft	Max Depth:	2.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	1238.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	

Entr Loss Coef:	1	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0		Top Clip		
Bend Loss Coef:	0	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: P2 - P1		Upstream		Downstream	
Scenario:	Scenario1	Invert:	790.50 ft	Invert:	790.50 ft
From Node:	POND 2	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	POND 1	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	3.00 ft	Max Depth:	3.00 ft
Flow Direction:	Both		Bottom Clip		
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	95.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	1	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0		Top Clip		
Bend Loss Coef:	0	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: P3 OUT		Upstream		Downstream	
Scenario:	Scenario1	Invert:	798.00 ft	Invert:	797.13 ft
From Node:	POND 3	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	MH	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	1.50 ft	Max Depth:	1.50 ft
Flow Direction:	Both		Bottom Clip		
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	162.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	1	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0		Top Clip		
Bend Loss Coef:	0	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Pipe Link: POND 1 OUT		Upstream		Downstream	
Scenario:	Scenario1	Invert:	790.50 ft	Invert:	790.19 ft
From Node:	POND 1	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	EX CULVERT	Geometry: Circular		Geometry: Circular	
Link Count:	1	Max Depth:	2.50 ft	Max Depth:	2.50 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	57.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	1	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0	Top Clip			
Bend Loss Coef:	0	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000

Comment:

Simulation: 010yr-001hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:29 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q1
Rainfall Amount: 1.96 in
Storm Duration: 1.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-002hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:31 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

Hydrology [sec]	Surface Hydraulics [sec]

Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	2.40 in
		Storm Duration:	2.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-003hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:32 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec

Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	2.64 in
		Storm Duration:	3.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-006hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:34 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	12.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:	Huff Bulletin 71	Boundary Stage Set:	
		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	

Tolerances & Options			
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	3.12 in
		Storm Duration:	6.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 010yr-012hr

Scenario:	Scenario1
Run Date/Time:	9/4/2024 8:59:36 AM
Program Version:	StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q2
Rainfall Amount: 3.60 in
Storm Duration: 12.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 010yr-024hr

Scenario: Scenario1

Run Date/Time: 9/4/2024 8:59:41 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global

Link Optimizer Tol: 0.0001 ft

Rainfall Name:	Huff_Q3
Rainfall Amount:	4.08 in
Storm Duration:	24.0000 hr
Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	100 ft2
Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-001hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:48 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Lookup Tables

Boundary Stage Set:

		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	2.88 in
		Storm Duration:	1.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-002hr

Scenario:	Scenario1
Run Date/Time:	9/4/2024 8:59:50 AM
Program Version:	StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q1
Rainfall Amount: 3.50 in
Storm Duration: 2.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-003hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:51 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	6.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set:

Green-Ampt Set:

Vertical Layers Set:

Impervious Set:

Tolerances & Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight Fact: 0.5 dec

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr

Ia/S: 0.20 dec

Smp/Man Basin Rain Opt: Global

Rainfall Name: Huff_Q1

Rainfall Amount:	3.87 in
Storm Duration:	3.0000 hr
Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	100 ft2
Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-006hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:53 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	12.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:

Folder:

Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight Fact:	0.5 dec	Ia/S:	0.20 dec
dZ Tolerance:	0.0010 ft		
Max dZ:	1.0000 ft	Smp/Man Basin Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft		
		Rainfall Name:	Huff_Q1
		Rainfall Amount:	4.50 in
		Storm Duration:	6.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment:

Simulation: 100yr-012hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 8:59:56 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q2
Rainfall Amount: 5.16 in
Storm Duration: 12.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100yr-024hr

Scenario: Scenario1
Run Date/Time: 9/4/2024 9:00:01 AM
Program Version: StormWise 4.08.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	30.0000

	Hydrology [sec]	Surface Hydraulics [sec]
Min Calculation Time:	60.0000	0.1000
Max Calculation Time:		30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder: Huff Bulletin 71

Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec
Smp/Man Basin Rain Opt: Global
Rainfall Name: Huff_Q3
Rainfall Amount: 6.00 in

Storm Duration:	24.0000 hr
Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (1D):	100 ft2
Energy Switch (1D):	Energy

Comment: