

City of La Crescent
Planning Commission
Meeting Notice



September 5th, 2023 - 5:30 P.M.
LA CRESCENT COMMUNITY BUILDING
336 SOUTH FIRST STREET

Agenda

1. Call To Order
2. Pledge of Allegiance
3. Roll Call
4. Approval of June 6th, 2023 Meeting Minutes
5. 5:35 Public Hearing Final Plat Wagon Wheel Electric Substation
6. 5:50 Public Hearing Final Plat Horse Track Meadows North
7. Planning commission related updates from planning commission appointed city council member
8. Adjourn

TO: Planning Commission Members

FROM: Jason Ludwigson, Sustainability Coordinator

DATE: August 30th, 2023

RE: Final Plat Wagon Wheel Electric Substation

Attached is the final plat application and final plat for the Wagon Wheel Electric Substation. Memos from WHKS and city staff are also included. The included memos address the preliminary plat conditions of approval adopted by the city council on June 26th, 2023. Larger copies of the final plat will be available at the meeting.

**CITY OF LA CRESCENT
NOTICE OF PUBLIC HEARING
FINAL PLAT APPLICATION WAGON WHEEL SUBSTATION**

Notice is hereby given that the Planning Commission of the City Zoning Authority will hold a public hearing at the La Crescent Community Building, 336 South 1st St, in said City on Tuesday, September 5, 2023 at 5:50 p.m. to consider the application for a final plat. The final plat request concerns certain premises situated in said City described as follows, to wit: Parcel numbers 25.0113.000, 25.0114.00, 25.0115.000, 25.116.000, 25.0117.000 Houston County, 67 North 3rd St, La Crescent.

Complete legal description is on file in the Building Department for review:

All persons having an interest in the matter will be given opportunity to be heard with reference thereto.

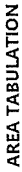
Dated: August 18, 2023

By order of the City Zoning Authority

Jason Ludwigson
Sustainability Coordinator
P. O. Box 142
La Crescent, MN 55947

AUG 25 2023

WAGON WHEEL



Drainage and Utility Easements as shown thus:

Being 12 feet in width along front and rear lot lines and 70 feet in width adjacent to all plot boundaries as shown on the plat.

Sheet 1 of 7 Sheets

#4

2905 South Broadway
Rochester, MN 55904-5515
Phone: 507.288.3923
Fax: 507.288.2675
Email: rochester@whks.com
Website: www.whks.com

whks

engineers + planners + land surveyors

August 30, 2023

Mr. Bill Waller
City Administrator
City of La Crescent
315 Main Street
La Crescent, MN 55947

RE: City of La Crescent
Wagon Wheel
Review of Final Plat Grading and Stormwater Submittal

Dear Mr. Waller:

Additional information was received by the City of La Crescent on August 30, 2023, for the Grading and Stormwater Management plans and report for the proposed Wagon Wheel Plat. The information submitted addresses comments related to Grading and Stormwater Management (D, 10, 19) from our letter dated July 28, 2023.

We recommend approval of the Grading and Stormwater Management submittals.

Please contact me if you have any questions.

Sincerely,

WHKS & CO.



For
Timothy A. Hruska, P.E., L.S.
City Engineer

2905 South Broadway
Rochester, MN 55904-5515
Phone: 507.288.3923
Fax: 507.288.2675
Email: rochester@whks.com
Website: www.whks.com

whks

engineers + planners + land surveyors

July 28, 2023

Mr. Bill Waller
City Administrator
City of La Crescent
315 Main Street
La Crescent, MN 55947

RE: City of La Crescent
Wagon Wheel
Review of Preliminary Plat Grading and Stormwater Submittal

Dear Mr. Waller:

We have reviewed the Grading and Stormwater Management plans and report submitted for the proposed Wagon Wheel Plat and offer the following comments.

Review Comments

Please see attached review letter dated May 30, 2023, for items that have not yet been received by the city, A. Certificate of Survey, B. Resource Inventory, C. Preliminary Plat Information.

The following pertains to the grading and stormwater management information submitted:

D. Preliminary grading, drainage, flood control and erosion control plan

10) Location of all existing storm sewer facilities including pipes, manholes, catch basins, ponds, swales and drainage channels within one hundred (100) feet of the subject property. Existing pipe grades, rim and invert elevations and normal and high water elevations must be included.

19) Drainage plan, including the configuration of drainage areas and calculations for two (2) year, ten (10) year, and one hundred (100) year storm events.

A drainage plan has been submitted with only the 100-year storm event. Submit additional information for the 2- and 10-year storms.

We recommend approval of the Grading and Stormwater Management submittals upon the above items being addressed during the final plat submittal.

Please contact me if you have any questions.

Sincerely,

WHKS & CO.

TO: Planning Commission Members

FROM: Jason Ludwigson, Sustainability Coordinator

DATE: August 30th, 2023

RE: Wagon Wheel Final Plat

At the June 26th 2023 meeting the city council approved the following conditions of approval:

- 1) The applicant/developer will abide by all representations made by the applicant/develop, or their agents, made during the permitting process, to the extent those representations were not negated by the Planning Commission or City Council and to the extent they are not inconsistent with the spirit or explicit conditions of the plat application.
- 2) The applicant/developer complies with all applicable federal state, and local regulations.
- 3) No site work shall commence until after approval of the final plat.
- 4) That the alley shown on the preliminary plat is vacated prior to the approval of the final plat.

Staff finds that all of the conditions listed above have been satisfied.

#8

RECEIVED

JUL 18 2023

City of La Crescent, MN

City of La Crescent, MN

JUL 18 2023

RECEIVED

CITY OF LA CRESCENT ZONING AUTHORITY
APPLICATION FOR FINAL PLAT

The undersigned being the owner(s) of record (optionee(s) with regard to enforceable exclusion options to purchase) of the hereinafter described premises hereby makes application for a:
FINAL PLAT

TO WIT:

P & K Shepardson Rentals LLC and Northern States Power Company d/b/a Xcel Energy hereby apply for a Final Plat of the Wagon Wheel property located along Sycamore Street, City of La Crescent, Houston County, MN

the lands to which this application has reference are described as follows, to wit:

Please refer to the attached for the Legal Description

Attached is a sketch of the site plan showing North arrow and other relevant data with reference hereto. I (we) understand that additional data may be requested by the City of La Crescent Planning Commission with regard hereto.

Dated: 7-17-2023

Paul A. Shepardson
Brian Sellen

(Owners (s)) (Optionee(s))

WAGON WHEEL LEGAL DESCRIPTION

Lots 1, 2, 3, 19 and 20, Block 21, La Crescent Plat of the City, formerly Village, of La Crescent

And

That part of Lot 4, Block 21, La Crescent Plat of the City (formerly Village) of La Crescent more particularly described as follows:

*Commencing at the Northwest Corner of Section 10, Township 104, Range 4;
Thence N 88° 46' 09" E 2635.04 to the North Quarter Corner of said Section 10;
Thence S 76° 38' 43" E 1105.24 feet to the northwest corner of Lot 4, Block 21, La Crescent Plat of the City (formerly Village) of La Crescent to the point of beginning;
Thence N 89° 40' 58" E 50.00 feet along the north line of said Lot 4 to the northeast corner thereof;
Thence S 00° 28' 22" E 9.72 feet along the east line of said Lot 4 to the westerly right-of-way of the Canadian Pacific Railroad;
Thence S 13° 08' 26" W 123.68 feet along said westerly right-of-way to the south line of said Lot 4;
Thence S 89° 40' 58" W 20.89 feet to the southwest corner of said Lot 4;
Thence N 00° 28' 22" W 130.00 feet along the west line of said Lot 4 to the point of beginning.
Containing 4,749 square feet ± or 0.11 acres ±.*

And that part of Lot 17 and Lot 18, Block 21, La Crescent Plat of the City (formerly Village) of La Crescent more particularly described as follows:

*Commencing at the Northwest Corner of Section 10, Township 104, Range 4;
Thence N 88° 46' 09" E 2635.04 feet to the North Quarter Corner of said Section 10;
Thence S 76° 38' 43" E 1105.24 feet to the northwest corner of Lot 4, Block 21, La Crescent Plat of the City (formerly Village) of La Crescent;
Thence N 89° 40' 58" E 50.00 feet along the north line of said Lot 4 to the northeast corner thereof;
Thence S 00° 28' 22" E 9.72 feet along the east line of said Lot 4 to the westerly right-of-way of the Canadian Pacific Railroad;
Thence S 13° 08' 34" W 144.24 feet along said westerly right-of-way to the north line of Lot 17 of said Plat of the City of La Crescent and the point of beginning;
Thence continuing S 13° 09' 40" W 133.88 feet along said westerly right-of-way to the south line of Lot 18;
Thence S 89° 40' 58" W 34.53 feet along said south line of Lot 18 to the southwest corner thereof;
Thence N 00° 28' 22" W 130.00 feet along the west line of said Lot 18 to the northwest corner thereof;
Thence N 89° 40' 58" E 50.00 feet along the north line of said Lot 18 to the northwest corner of said Lot 17;
Thence continuing N 89° 40' 58" E 16.04 feet along the north line of said Lot 17 to said westerly right-of-way and the point of beginning.*

Containing 6,537 square feet ± or 0.15 acres ±.

Legal Description of Wagon Wheel
Page 2

And that part of the 20-foot alley, Block 21, La Crescent Plat, according to the recorded plat thereof on file and recorded in the Office of the County Recorder, Houston County, Minnesota, described as follows:

Commencing at the northwest corner of Section 10, Township 104 North, Range 4 West; thence North 88 degrees 46 minutes 06 seconds East along the north line of said Section 10, a distance of 2635.08 feet to the North Quarter corner of said Section 10; thence South 67 degrees 23 minutes 17 seconds East, a distance of 1003.55 feet to the southwest corner of Lot 1, Block 21, of said La Crescent Plat and the point of beginning of the tract to be described; thence North 89 degrees 48 minutes 38 seconds East along the south line of Lots 1, 2, 3, and 4, Block 21, of said La Crescent Plat, a distance of 171.03 feet to the westerly right-of-way of the Canadian Pacific Railroad as defined in Court File No. 28-CV-22-500 and Document A307993, filed in the Houston County Recorder's Office; thence South 13 degrees 04 minutes 25 seconds West along said railroad right-of-way, a distance of 20.55 feet to the north line of Lot 17, Block 21, of said La Crescent Plat; thence South 89 degrees 48 minutes 38 seconds West along the north line of Lots 17, 18, 19, and 20, Block 21, of said La Crescent Plat, a distance of 166.22 feet to the northwest corner of Lot 20, Block 21, of said La Crescent Plat; thence North 00 degrees 28 minutes 10 seconds West, a distance of 20.00 feet to the point of beginning.

Said description contains 3372.53 sq. ft. or 0.08 acres more or less.

Proposed Legal Description

Lot 1 Block 1, Wagon Wheel

GENERAL NOTES
1. LOCATION OF BENCHMARK FOR GRADE ELEVATION IS THE TOP OF THE HYDRANT AT THE END OF NORTH THIRD STREET.

2. CONTOURS AT ONE FOOT INTERVALS.
3. CONTOURS INSIDE OF THE SUBSTATION GRADED AREA ARE TOP OF BASE COURSE (B.C.) MATERIAL.
4. CONTOURS OUTSIDE OF THE SUBSTATION GRADED AREA INDICATE THE TOP OF FINISHED GRADE (F.G.) TOPSOIL.

5. FINISHED GRADE IN SUBSTATION GRADED AREA IS 4 INCHES HIGHER THAN THE EXISTING GRADE. THE SUBSTATION GRADED AREA SHALL BE GRADED TO THE GRADED RISE PROVIDED AND INSTALLED BY XCEL ENERGY.
6. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH XCEL ENERGY SPEC. 200 "SPECIFICATION FOR SITE GRADING", REV. 3, DATED 9/19/02.

7. EROSION CONTROL SHALL BE PERFORMED IN ACCORDANCE WITH XCEL ENERGY SPEC. 201 "SPECIFICATION FOR EROSION CONTROL", REV. 3, DATED 9/19/02.
8. EXCESS SOIL FROM GRADING EXCAVATION TO BE PROPERLY DISPOSED OF OFF-SITE. THE CONTRACTOR SHALL MAINTAIN ACCESS AND IN NO CASE SHALL IT AFFECT OVERALL SITE DRAINAGE.

9. PERMITS: A FENCE SHALL BE INSTALLED ON ALL DOWN-SLOPE GRADIENT SLOPES OF THE SITE BEFORE GRADING OPERATIONS BEGIN AND SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ACHIEVED.
10. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PERIOD. FINAL STABILIZATION SHALL BE ACHIEVED.

CONSTRUCTION SEQUENCE (STAGES)
1. INITIAL SITE FENCE AND INLET PROTECTION.
2. DEMOLISH EXISTING STRUCTURES, CLEAR AND GRUB. INSTALL VEHICLE TRACKING CONTROL.
3. EXISTING SITE MASS GRADING & INSTALL PERMANENT SUBSURFACE INFILTRATION DRAIN.
4. DISPOSE EXCESS MATERIAL OFF-SITE. RE-SURFACE TOPSOIL.
5. SEED AND BLANKET. (MIXED SEED MIXTURE 25:41:1. SEEDING RATE 50 LBS/ACRE)

AFTER MAJOR GRADING IS COMPLETED
1. REMOVE TEMPORARY ROCK CONSTRUCTION ENTRANCE AND INSTALL 12" WIDE COURSE MATERIAL.
2. SEED AND BLANKET. (MIXED SEED MIXTURE 25:41:1. SEEDING RATE 50 LBS/ACRE)

AFTER VEGETATION IS ESTABLISHED
1. REMOVE ALL TEMPORARY BMPs SUCH AS SILT FENCES AND BIO ROLLS AS SOON AS POSSIBLE. THE CONTRACTOR SHALL MAINTAIN ACCESS AND IN NO CASE SHALL IT AFFECT OVERALL SITE DRAINAGE.
2. SEED AND BLANKET. (MIXED SEED MIXTURE 25:41:1. SEEDING RATE 50 LBS/ACRE)

MAINTENANCE
1. INSPECTION OF ALL EROSION CONTROL FEATURES SHOULD BE AT A MINIMUM ONCE EVERY FOURTEEN DAYS AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 1/4" IN 24 HOURS.
2. MAINTENANCE OF BMPs SHALL BE COMPLETE WITHIN 24 HOURS.

3. THE ROCK CONSTRUCTION ENTRANCE PERFORMANCE SHALL BE MAINTAINED THROUGH DRAINING OF PAVING WITH ADDITIONAL AGGREGATE.
4. SEDIMENT CLEANUP BY THE END OF EACH DAY OF CONSTRUCTION. OFF-SITE CONSTRUCTION SITE, FILLING SHALL NOT BE ALLOWED UNLESS RUNOFF IS TREATED BEFORE DISCHARGE FROM THE SITE.

5. ALL PERMITS SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL MAINTAIN ACCESS AND IN NO CASE SHALL IT AFFECT OVERALL SITE DRAINAGE.
6. BIO ROLLS SHALL BE INSTALLED AS DITCH CHECKS DOWN THE LENGTH OF ALL CONSTRUCTED OR DISTURBED DITCHES AND REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ACHIEVED.

PRE-EXCAVATION PROCEDURE
1. CAUTION: THERE MAY BE UNDERGROUND UTILITIES DISTRIBUTED IN THIS AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL UTILITIES. THE CONTRACTOR SHALL LOCATE AND CLEARLY MARK ALL UTILITIES PRIOR TO EXCAVATION. PROJECT AT LEAST THREE (3) BUSINESS DAYS PRIOR TO EXCAVATION WORK.
2. FOR UNDERGROUND UTILITY LOCATES INSIDE THE SUBSTATION FENCE, REQUEST LOCATES FROM CHS COTTON - 3 SUPERVISOR FIELD OPS/AT LEAST TEN (10) BUSINESS DAYS PRIOR TO EXCAVATION WORK.
3. SEE REFERENCE DRAWING NH-29857-1 FOR KNOWN UNDERGROUND UTILITIES.
4. REFER TO CONSTRUCTION SPECIFICATION NSR-270-COL AND PHYSICAL SUBSTATION CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL LOCATE INFORMATION.
5. DRAWINGS SHALL NOT BE RELIED ON AS THE SOLE SOURCE OF INFORMATION REGARDING UNDERGROUND UTILITIES.

THE PERMIT IS ONLY APPLICABLE TO THE CURRENT CONSTRUCTION REVISION. FOR DRAWING REVISIONS AND REVISION INFORMATION SEE CIVIL INDEX SHEET.

ISSUED BY ENGINEERING DEPT FOR: PERMIT
WAGON WHEEL SUBSTATION
CONTOUR AND GRADING LAYOUT
PLAN

Xcel Energy NH-29857-1
0

NO FOR CONVENTION

SCALE IN FEET
1" = 20'

0 20' 40' 60' 80' 100'

11/25/2023 10:00 AM

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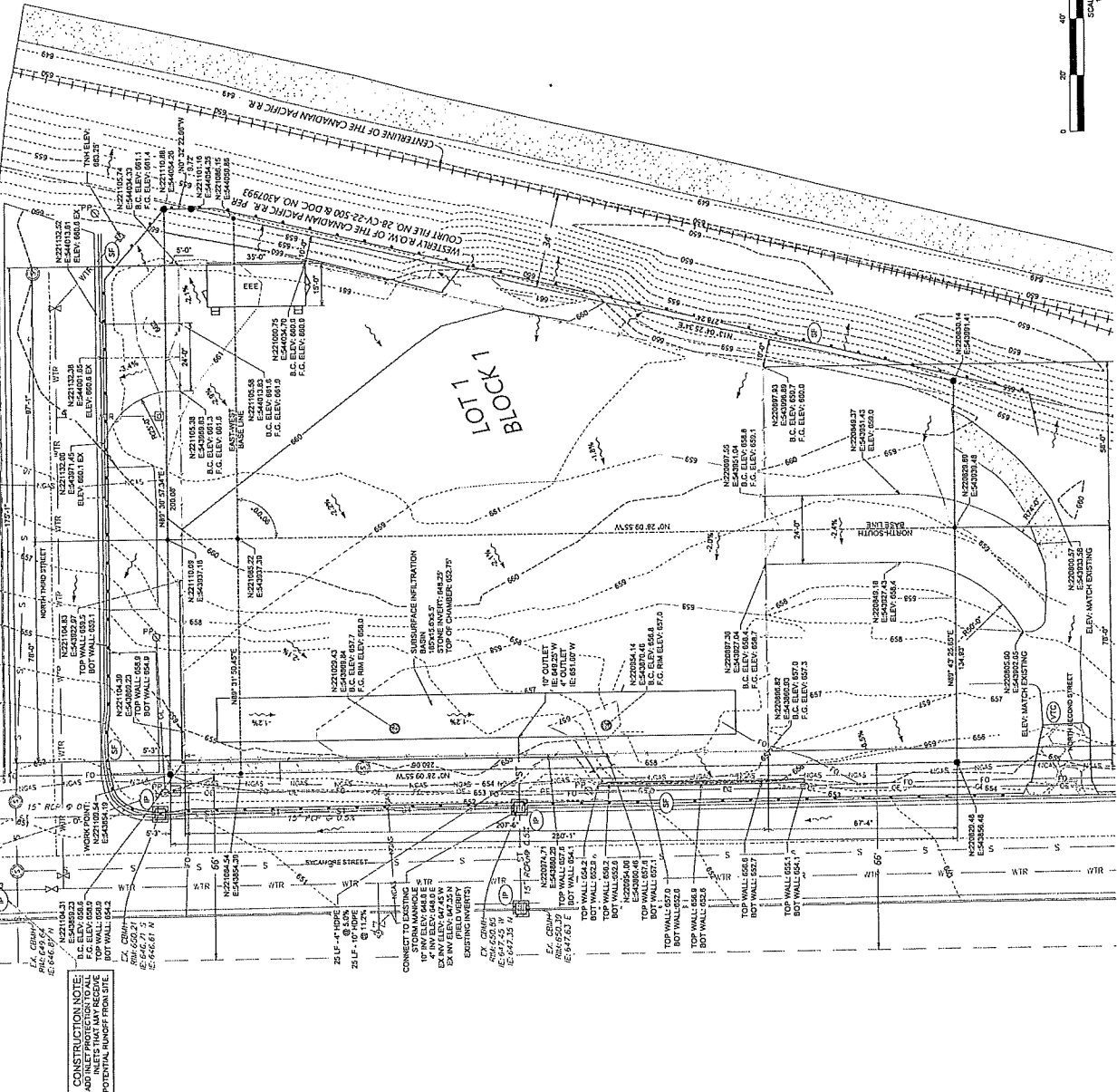
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LEGEND
--- BASELINE
--- PROPERTY LINE
--- LOT LINE
--- RIGHT OF WAY
--- RAILWAY CENTERLINE
--- PROPOSED IDEAL OF PAVEMENT
--- EXISTING MAJOR CONTOURS
--- EXISTING MINOR CONTOURS
--- EXISTING POLE ANCHOR
--- EXISTING BUILDING
--- EXISTING GRAVEL
--- EXISTING CONCRETE
--- EXISTING STORM SEWER
--- EXISTING WATER MAIN
--- OVERHEAD ELECTRIC
--- FIBER OPTIC LINE
--- NATURAL GAS LINE
--- FLOW DIRECTION
--- PROPERTY CORNER
--- SURVEY POINT
--- POWER POLE
--- EXISTING STORM MANHOLE
--- EXISTING SANITARY MANHOLE
--- EXISTING SANITARY CLEANSUIT
--- EXISTING HYDRANT
--- EXISTING GATE VALVE
--- EXISTING CURB STOP
--- EXISTING AC UNIT
--- EXISTING TELEPHONE BOX
--- EXISTING GAS METER
--- EXISTING STORM SEWER
--- PROPOSED 30" FENCE
--- INLET PROTECTION
--- VEHICLE TRACKING CONTROL
--- SOIL BORING LOCATIONS



CONSTRUCTION NOTE:
ADD INLETS THAT MAY RECEIVE
POTENTIAL RUNOFF FROM SITE.

25 LF - 4" HDPE
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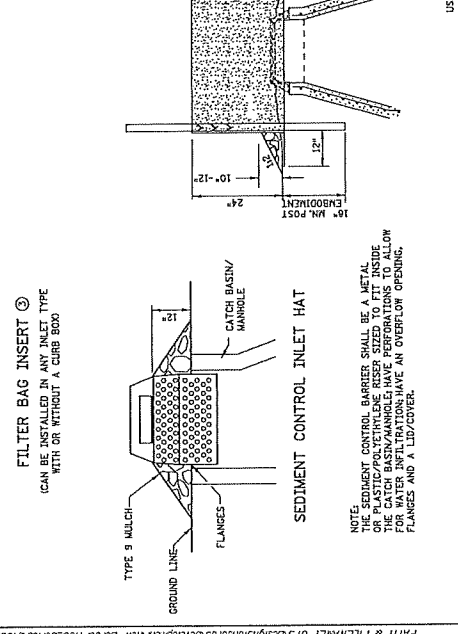
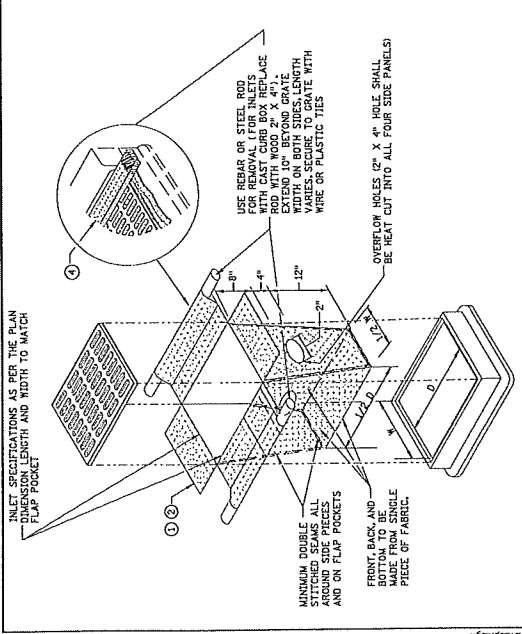
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ADD INLETS THAT MAY RECEIVE
POTENTIAL RUNOFF FROM SITE.

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SCALE	
NONE	



	STANDARD PLAN 5-297.405	4 OF 8	TEMPORARY SEDIMENT CONTROL
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REVISIONS	APPROVED: 2-28-2017		STORM DRAIN INLET PROTECTION MINNESOTA
APPROVED: 9-18-2017	REVISOR:		

APPROVED: *[Signature]*
DATE: 12-23-2011

STATE PROJ. NO. _____ (T.H.) SHEET NO. _____ OF _____ SHEETS

STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION

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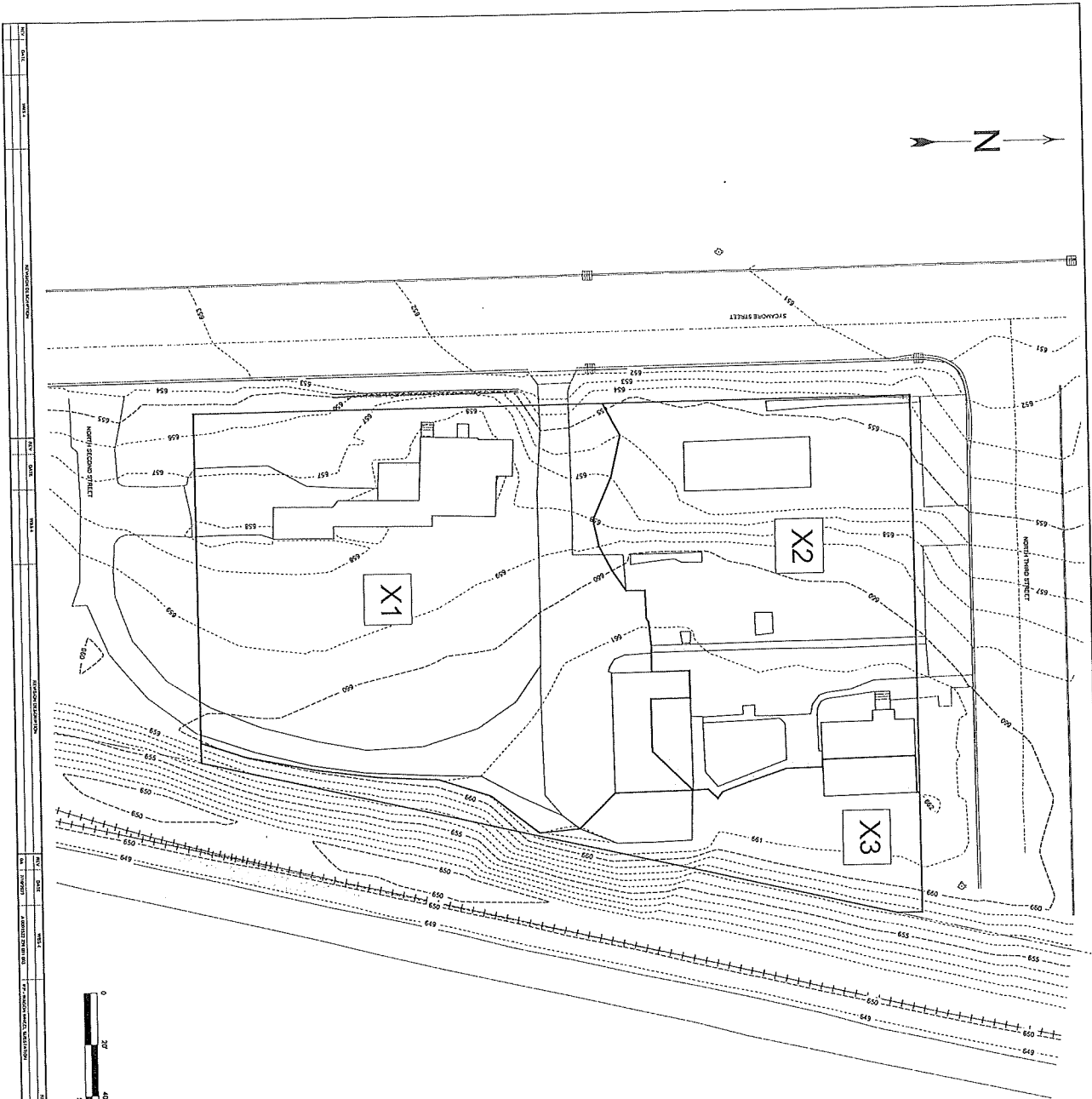
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FOR DRAWING REFERENCE AND NOT
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WAGON WHEEL S

NOT FOR PLANS	EROSION CONTROL DETAIL
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LEGEND

EXISTING SUBCATCHMENTS DELINEATION

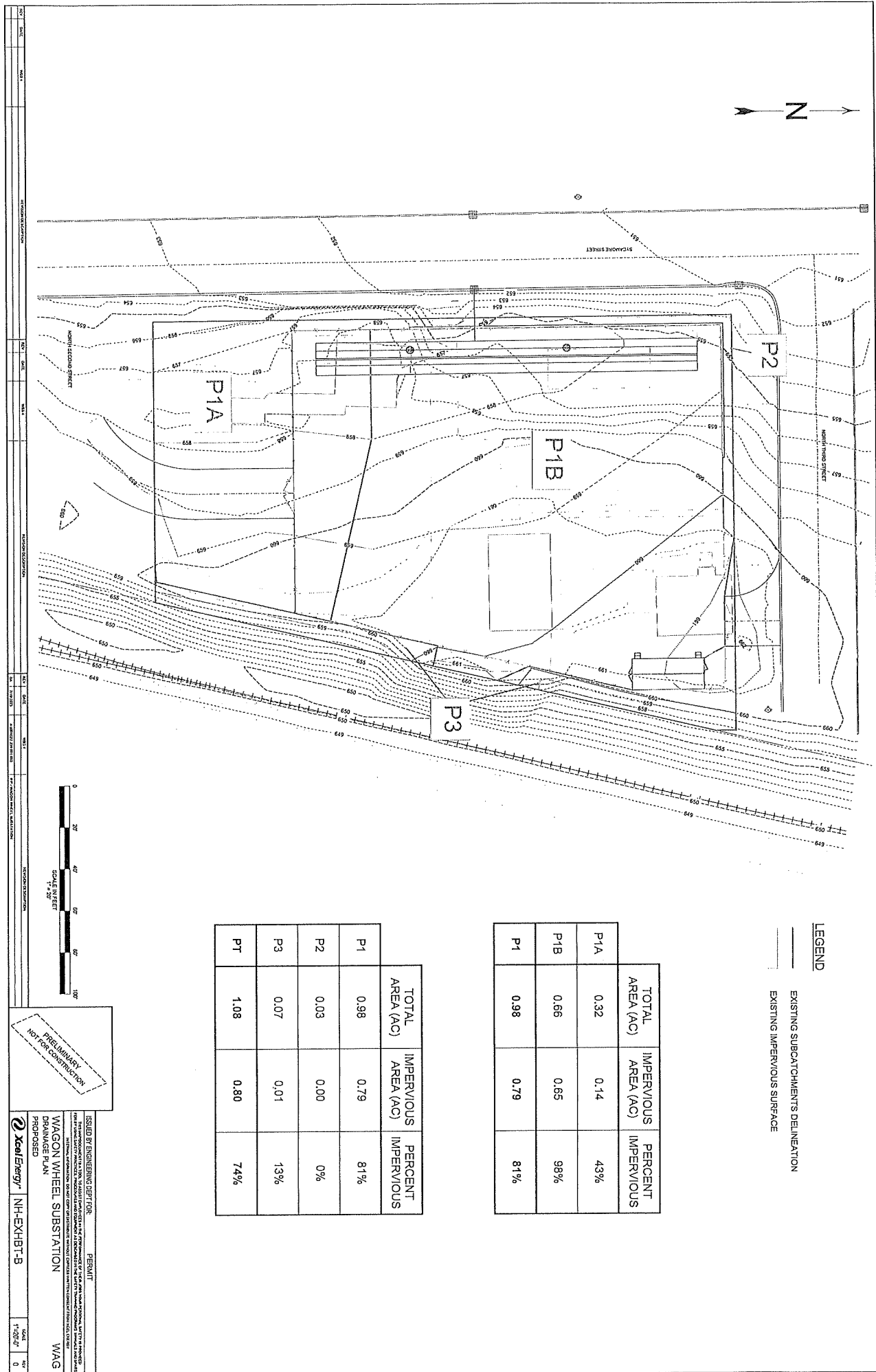
EXISTING IMPERVIOUS SURFACE

	TOTAL AREA (AC)	IMPERVIOUS AREA (AC)	PERCENT IMPERVIOUS
X1	0.57	0.23	40%
X2	0.36	0.08	22%
X3	0.15	0.03	19%
XT	1.08	0.34	31%

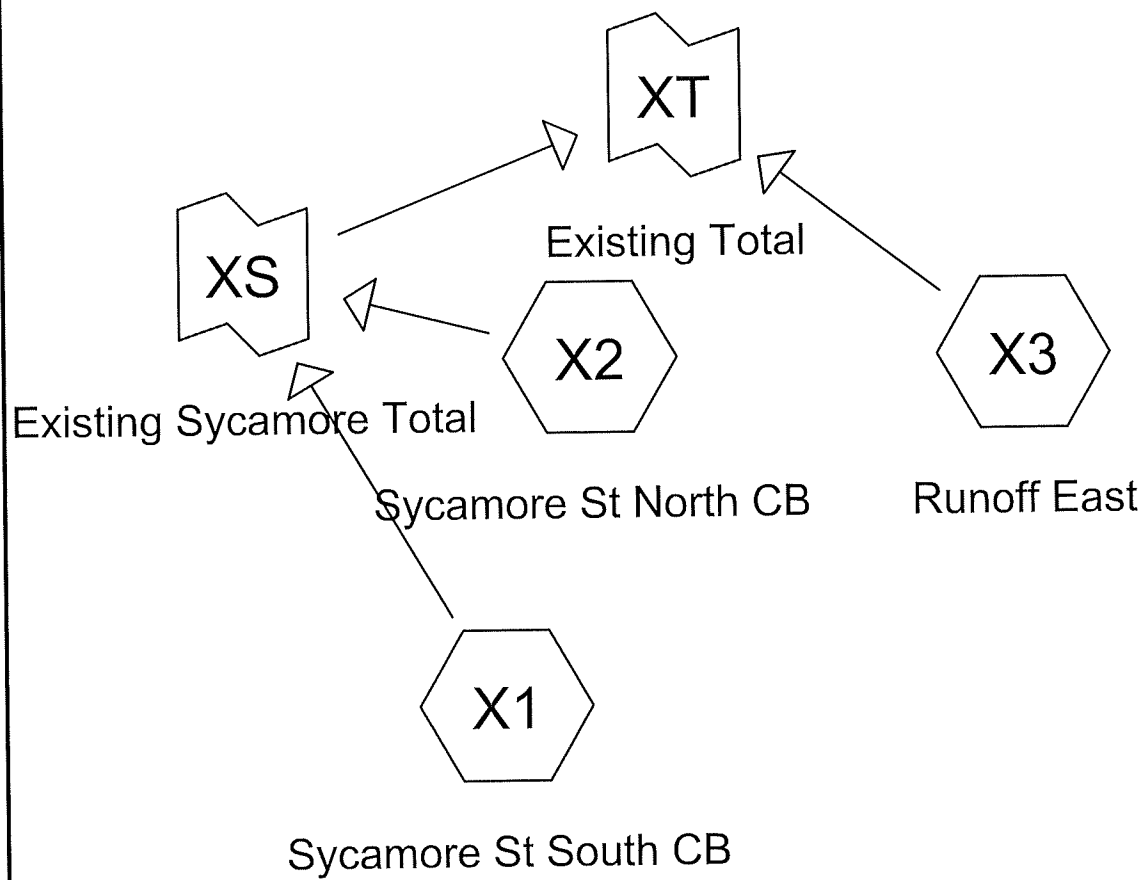
PRELIMINARY
NOT FOR CONSTRUCTION

DESIGNED BY ENGINEERING DEPT. FOR PERMIT
WAGON WHEEL SUBSTATION
DRAINAGE PLAN
EXISTING
Xcel Energy
NH-EXHIBIT-A
DATE 1-20-07
BY 0

#16



EXISTING



Routing Diagram for WAG-STRM

Prepared by Burns and McDonnell, Printed 8/29/2023

HydroCAD® 10.10-5a s/n 08510 © 2020 HydroCAD Software Solutions LLC

#18

WAG-STRM

Prepared by Burns and McDonnell

Printed 8/29/2023

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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	MSE 24-hr	3	Default	24.00	1	3.04	2
2	10-Year	MSE 24-hr	3	Default	24.00	1	4.56	2
3	100-Year	MSE 24-hr	3	Default	24.00	1	7.81	2

#19

WAG-STRM

Prepared by Burns and McDonnell

Printed 8/29/2023

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Page 3

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.749	49	50-75% Grass cover, Fair, HSG A (X1, X2, X3)
0.336	98	Unconnected pavement, HSG A (X1, X2, X3)
1.085	64	TOTAL AREA

#20

WAG-STRM

Prepared by Burns and McDonnell

Printed 8/29/2023

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Page 4

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.085	HSG A	X1, X2, X3
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.085		TOTAL AREA

#21

WAG-STRM

Prepared by Burns and McDonnell

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Page 5

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.749	0.000	0.000	0.000	0.000	0.749	50-75% Grass cover, Fair	X1, X2, X3
0.336	0.000	0.000	0.000	0.000	0.336	Unconnected pavement	X1, X2, X3
1.085	0.000	0.000	0.000	0.000	1.085	TOTAL AREA	

#22

WAG-STRM

MSE 24-hr 3 2-Year Rainfall=3.04"

Prepared by Burns and McDonnell

Printed 8/29/2023

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Page 6

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentX1: Sycamore St South CB Runoff Area=24,941 sf 39.91% Impervious Runoff Depth=0.69"
Flow Length=146' Tc=8.5 min CN=69 Runoff=0.60 cfs 0.033 af

SubcatchmentX2: Sycamore St North CB Runoff Area=15,893 sf 21.59% Impervious Runoff Depth=0.18"
Flow Length=114' Tc=7.2 min UI Adjusted CN=54 Runoff=0.03 cfs 0.006 af

SubcatchmentX3: Runoff East Runoff Area=6,421 sf 19.22% Impervious Runoff Depth=0.18"
Flow Length=49' Tc=7.0 min UI Adjusted CN=54 Runoff=0.01 cfs 0.002 af

Link XS: Existing Sycamore Total Inflow=0.62 cfs 0.038 af
Primary=0.62 cfs 0.038 af

Link XT: Existing Total Inflow=0.63 cfs 0.041 af
Primary=0.63 cfs 0.041 af

Total Runoff Area = 1.085 ac Runoff Volume = 0.041 af Average Runoff Depth = 0.45"
69.06% Pervious = 0.749 ac 30.94% Impervious = 0.336 ac

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 7

Summary for Subcatchment X1: Sycamore St South CB

Runoff = 0.60 cfs @ 12.17 hrs, Volume= 0.033 af, Depth= 0.69"

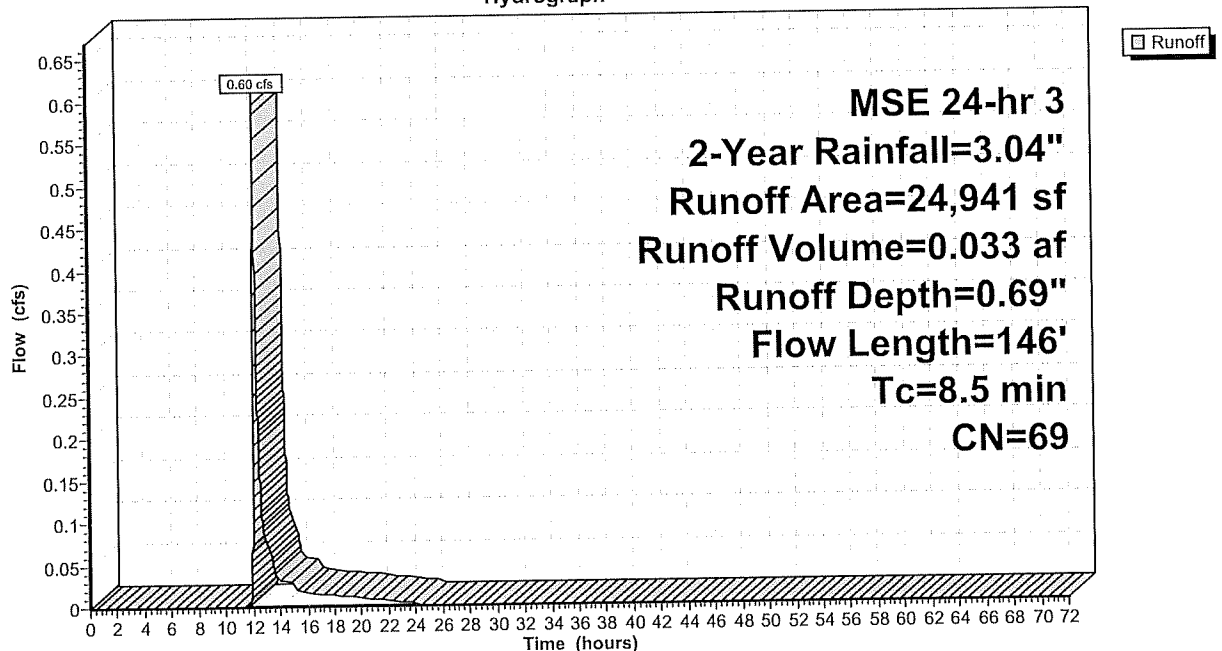
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Description
14,986	49	50-75% Grass cover, Fair, HSG A
9,955	98	Unconnected pavement, HSG A
24,941	69	Weighted Average
14,986		60.09% Pervious Area
9,955		39.91% Impervious Area
9,955		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0113	0.73		Sheet Flow, Gravel Rd Smooth surfaces n= 0.011 P2= 3.04"
7.9	83	0.0252	0.18		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.1	27	0.0500	4.54		Shallow Concentrated Flow, Driveway Paved Kv= 20.3 fps
0.2	21	0.0540	1.63		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
8.5	146	Total			

Subcatchment X1: Sycamore St South CB

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 8

Summary for Subcatchment X2: Sycamore St North CB

Runoff = 0.03 cfs @ 12.34 hrs, Volume= 0.006 af, Depth= 0.18"

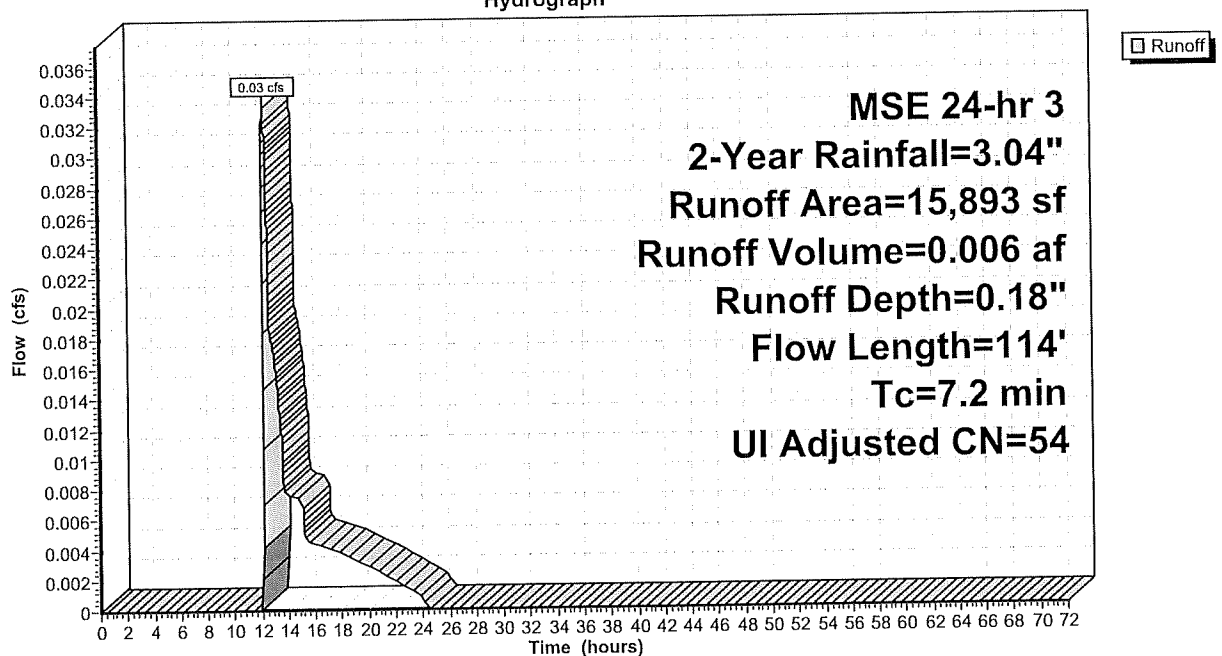
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Adj	Description
12,461	49		50-75% Grass cover, Fair, HSG A
3,432	98		Unconnected pavement, HSG A
15,893	60	54	Weighted Average, UI Adjusted
12,461			78.41% Pervious Area
3,432			21.59% Impervious Area
3,432			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	78	0.0440	0.22		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.9	14	0.1750	0.27		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.3	22	0.0380	1.36		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
7.2	114	Total			

Subcatchment X2: Sycamore St North CB

Hydrograph



#25

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 9

Summary for Subcatchment X3: Runoff East

Runoff = 0.01 cfs @ 12.34 hrs, Volume= 0.002 af, Depth= 0.18"

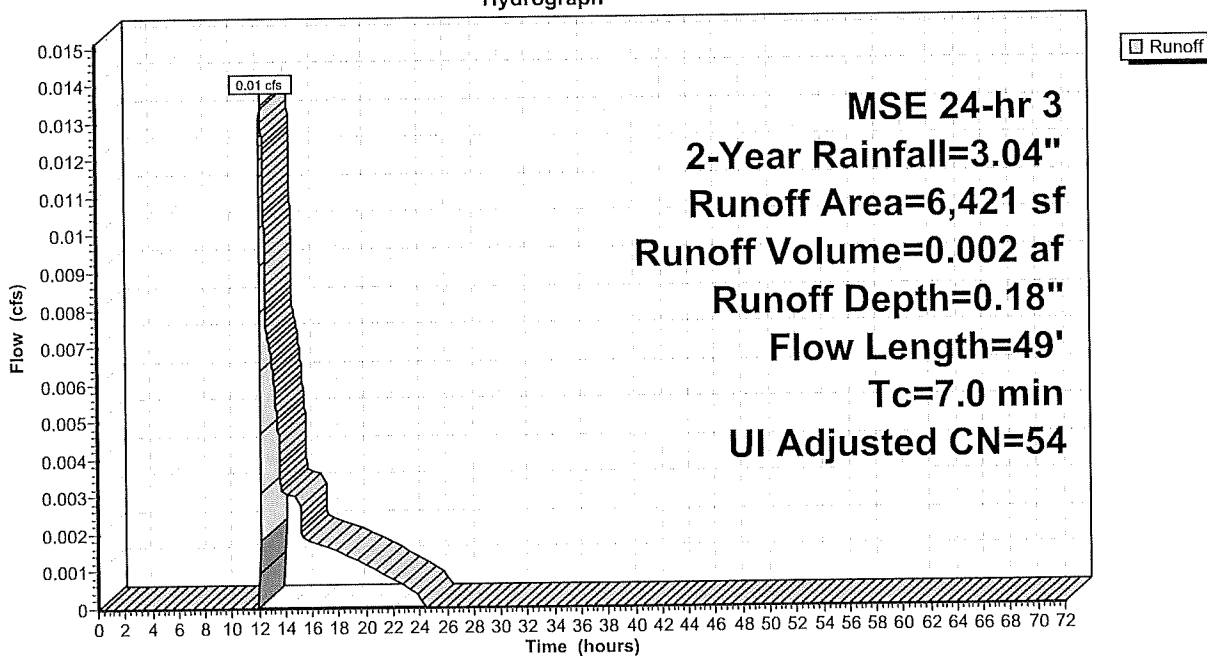
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Adj	Description
5,187	49		50-75% Grass cover, Fair, HSG A
1,234	98		Unconnected pavement, HSG A
6,421	58	54	Weighted Average, UI Adjusted
5,187			80.78% Pervious Area
1,234			19.22% Impervious Area
1,234			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0480	0.20		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.5	9	0.2985	0.30		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
3.9	49	Total, Increased to minimum Tc = 7.0 min			

Subcatchment X3: Runoff East

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=3.04"

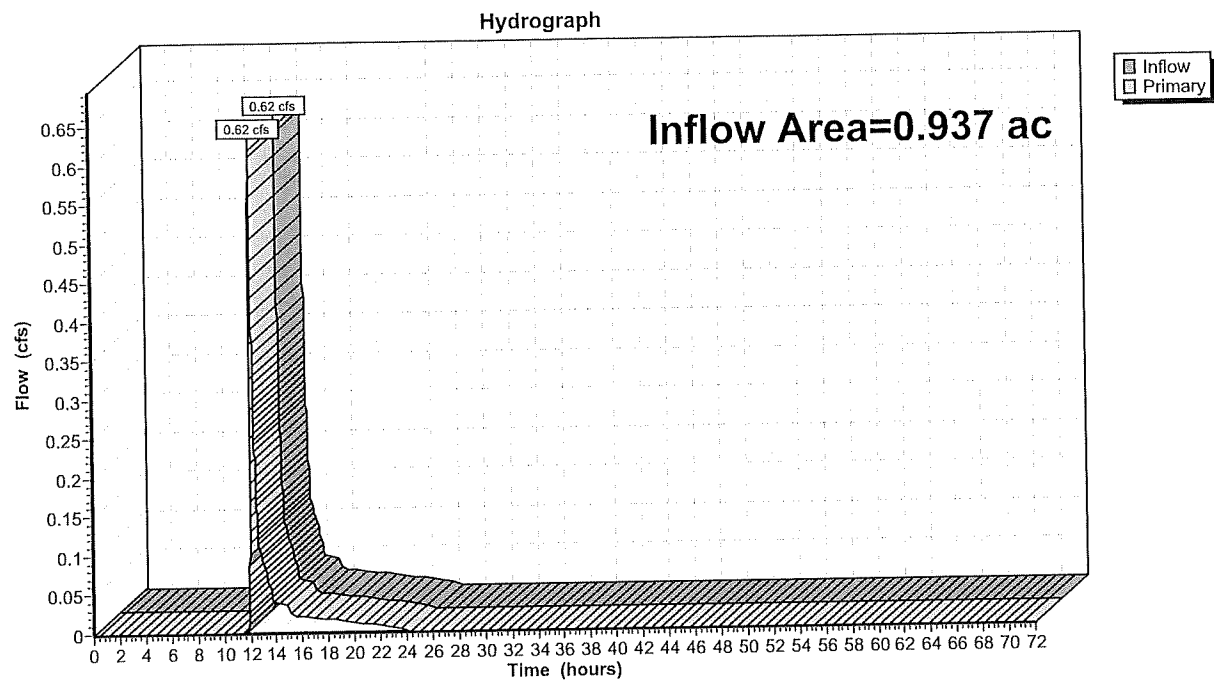
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Page 10

Summary for Link XS: Existing Sycamore Total

Inflow Area = 0.937 ac, 32.78% Impervious, Inflow Depth = 0.49" for 2-Year event
Inflow = 0.62 cfs @ 12.17 hrs, Volume= 0.038 af
Primary = 0.62 cfs @ 12.17 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link XS: Existing Sycamore Total

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 11

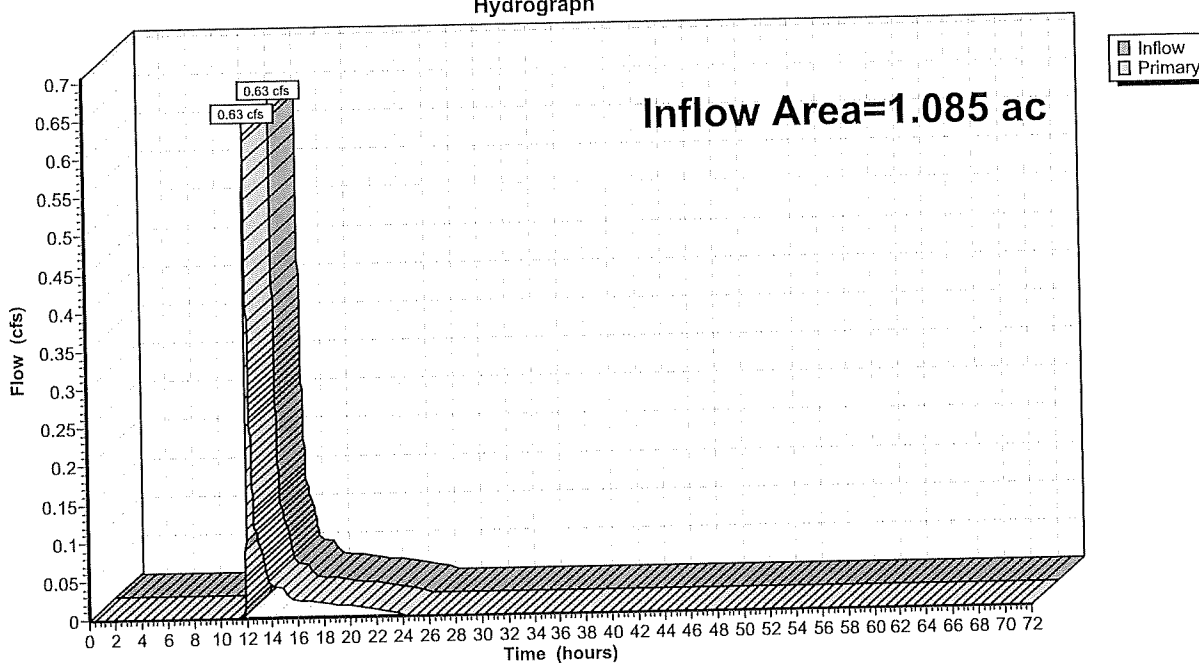
Summary for Link XT: Existing Total

Inflow Area = 1.085 ac, 30.94% Impervious, Inflow Depth = 0.45" for 2-Year event
Inflow = 0.63 cfs @ 12.17 hrs, Volume= 0.041 af
Primary = 0.63 cfs @ 12.17 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link XT: Existing Total

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 12

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentX1: Sycamore St South CB Runoff Area=24,941 sf 39.91% Impervious Runoff Depth=1.64"
Flow Length=146' Tc=8.5 min CN=69 Runoff=1.54 cfs 0.078 af

SubcatchmentX2: Sycamore St North CB Runoff Area=15,893 sf 21.59% Impervious Runoff Depth=0.72"
Flow Length=114' Tc=7.2 min UI Adjusted CN=54 Runoff=0.37 cfs 0.022 af

SubcatchmentX3: Runoff East Runoff Area=6,421 sf 19.22% Impervious Runoff Depth=0.72"
Flow Length=49' Tc=7.0 min UI Adjusted CN=54 Runoff=0.15 cfs 0.009 af

Link XS: Existing Sycamore Total

Inflow=1.91 cfs 0.100 af

Primary=1.91 cfs 0.100 af

Link XT: Existing Total

Inflow=2.06 cfs 0.109 af

Primary=2.06 cfs 0.109 af

Total Runoff Area = 1.085 ac Runoff Volume = 0.109 af Average Runoff Depth = 1.21"
69.06% Pervious = 0.749 ac 30.94% Impervious = 0.336 ac

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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 13

Summary for Subcatchment X1: Sycamore St South CB

Runoff = 1.54 cfs @ 12.16 hrs, Volume= 0.078 af, Depth= 1.64"

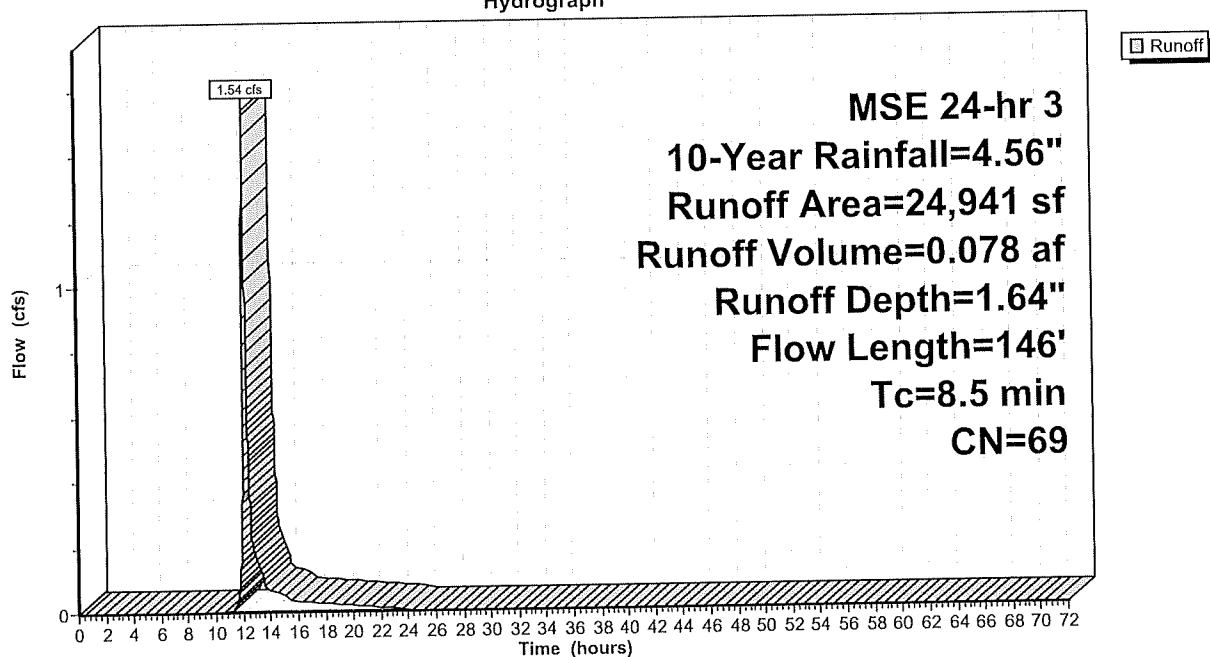
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Description
14,986	49	50-75% Grass cover, Fair, HSG A
9,955	98	Unconnected pavement, HSG A
24,941	69	Weighted Average
14,986		60.09% Pervious Area
9,955		39.91% Impervious Area
9,955		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0113	0.73		Sheet Flow, Gravel Rd Smooth surfaces n= 0.011 P2= 3.04"
7.9	83	0.0252	0.18		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.1	27	0.0500	4.54		Shallow Concentrated Flow, Driveway Paved Kv= 20.3 fps
0.2	21	0.0540	1.63		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
8.5	146	Total			

Subcatchment X1: Sycamore St South CB

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 14

Summary for Subcatchment X2: Sycamore St North CB

Runoff = 0.37 cfs @ 12.16 hrs, Volume= 0.022 af, Depth= 0.72"

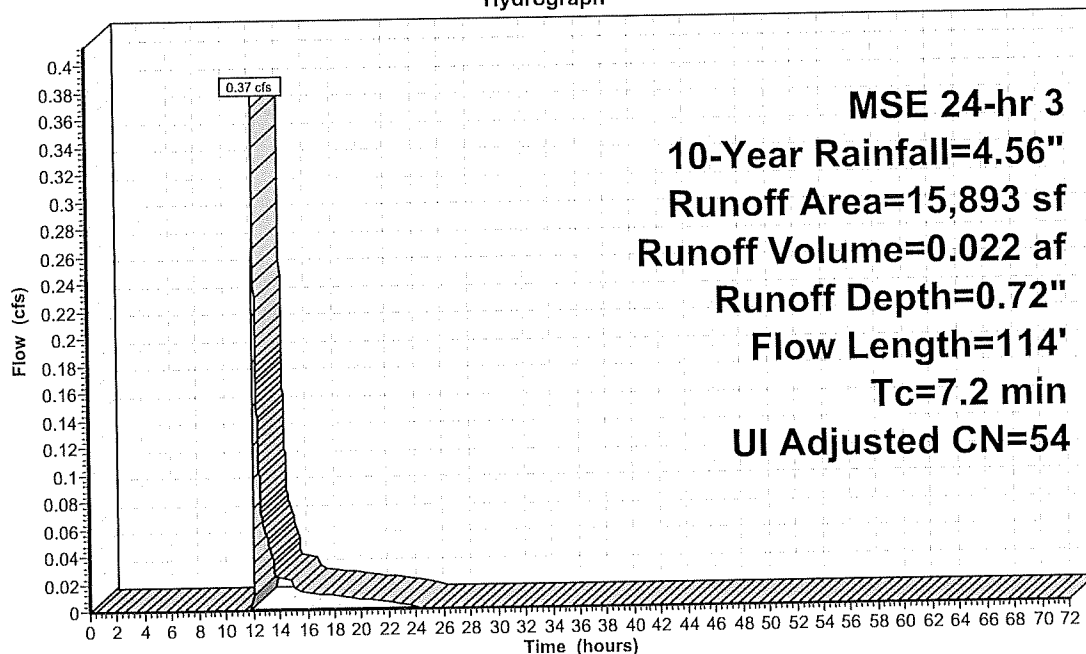
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Adj	Description
12,461	49		50-75% Grass cover, Fair, HSG A
3,432	98		Unconnected pavement, HSG A
15,893	60	54	Weighted Average, UI Adjusted
12,461			78.41% Pervious Area
3,432			21.59% Impervious Area
3,432			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	78	0.0440	0.22		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.9	14	0.1750	0.27		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.3	22	0.0380	1.36		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
7.2	114	Total			

Subcatchment X2: Sycamore St North CB

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 15

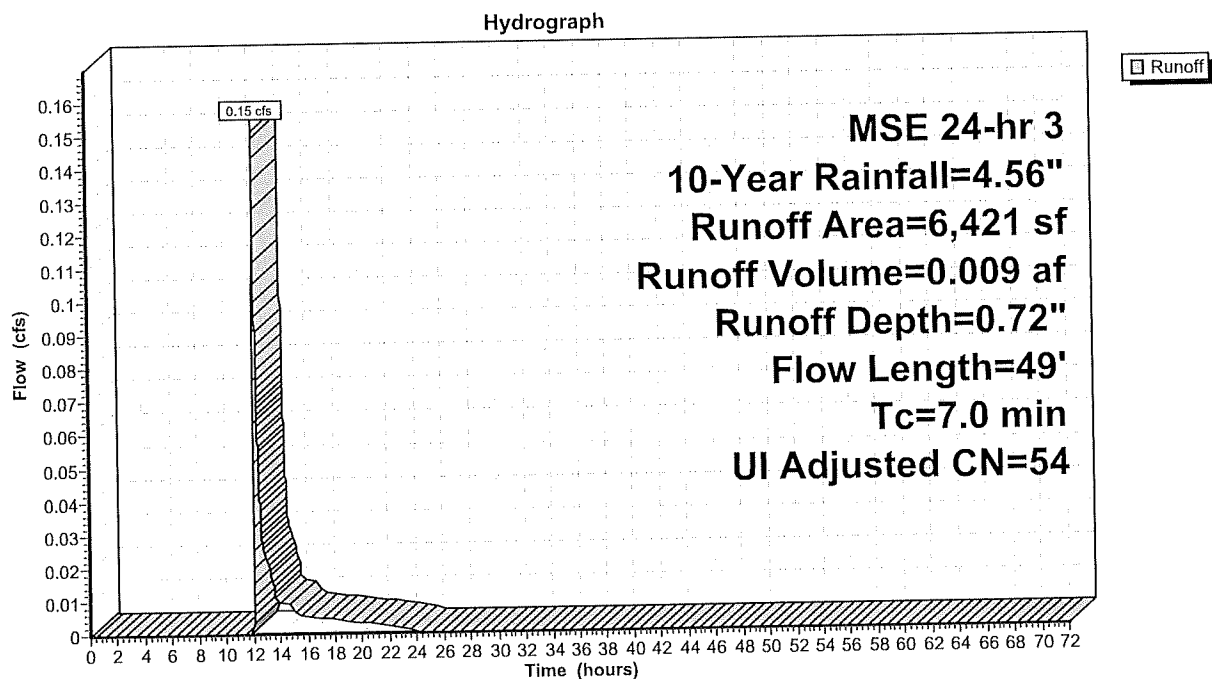
Summary for Subcatchment X3: Runoff East

Runoff = 0.15 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Adj	Description
5,187	49		50-75% Grass cover, Fair, HSG A
1,234	98		Unconnected pavement, HSG A
6,421	58	54	Weighted Average, UI Adjusted
5,187			80.78% Pervious Area
1,234			19.22% Impervious Area
1,234			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0480	0.20		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.5	9	0.2985	0.30		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
3.9	49	Total, Increased to minimum Tc = 7.0 min			

Subcatchment X3: Runoff East

#32

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MSE 24-hr 3 10-Year Rainfall=4.56"

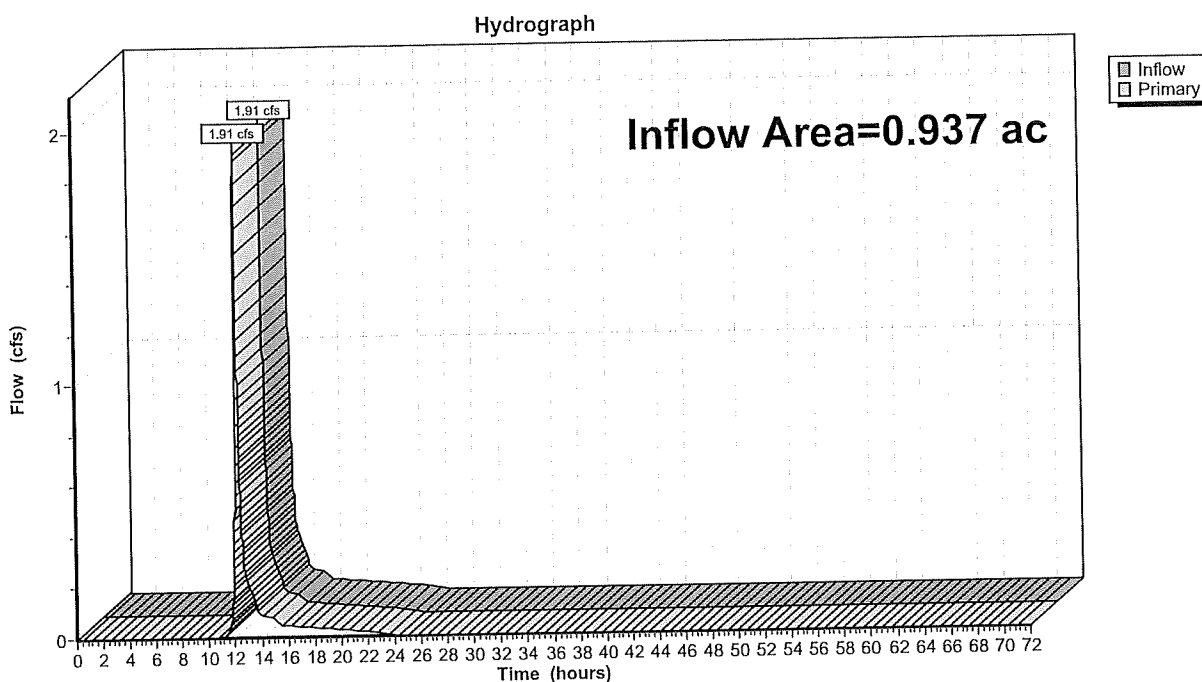
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Page 16

Summary for Link XS: Existing Sycamore Total

Inflow Area = 0.937 ac, 32.78% Impervious, Inflow Depth = 1.28" for 10-Year event
Inflow = 1.91 cfs @ 12.16 hrs, Volume= 0.100 af
Primary = 1.91 cfs @ 12.16 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link XS: Existing Sycamore Total

#33

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MSE 24-hr 3 10-Year Rainfall=4.56"

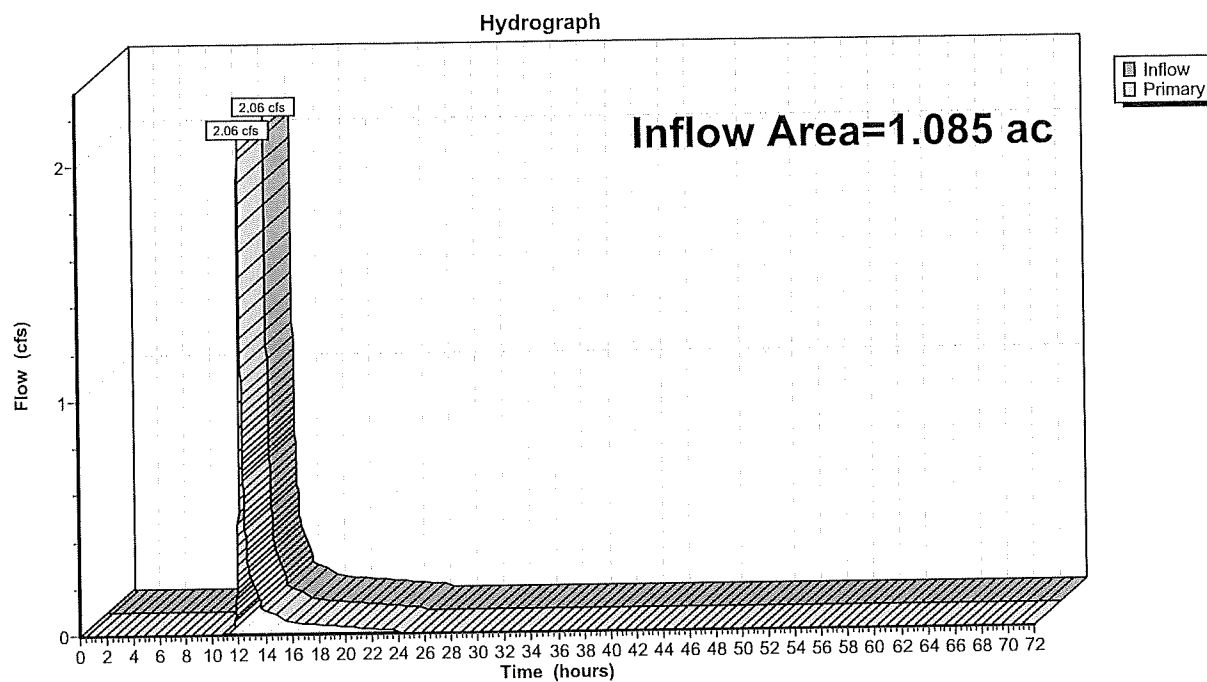
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Page 17

Summary for Link XT: Existing Total

Inflow Area = 1.085 ac, 30.94% Impervious, Inflow Depth = 1.21" for 10-Year event
Inflow = 2.06 cfs @ 12.16 hrs, Volume= 0.109 af
Primary = 2.06 cfs @ 12.16 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link XT: Existing Total

#34

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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 18

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentX1: Sycamore St South CB Runoff Area=24,941 sf 39.91% Impervious Runoff Depth=4.19"
Flow Length=146' Tc=8.5 min CN=69 Runoff=3.98 cfs 0.200 af

SubcatchmentX2: Sycamore St North CB Runoff Area=15,893 sf 21.59% Impervious Runoff Depth=2.55"
Flow Length=114' Tc=7.2 min UI Adjusted CN=54 Runoff=1.61 cfs 0.078 af

SubcatchmentX3: Runoff East Runoff Area=6,421 sf 19.22% Impervious Runoff Depth=2.55"
Flow Length=49' Tc=7.0 min UI Adjusted CN=54 Runoff=0.66 cfs 0.031 af

Link XS: Existing Sycamore Total

Inflow=5.58 cfs 0.277 af
Primary=5.58 cfs 0.277 af

Link XT: Existing Total

Inflow=6.23 cfs 0.309 af
Primary=6.23 cfs 0.309 af

Total Runoff Area = 1.085 ac Runoff Volume = 0.309 af Average Runoff Depth = 3.41"
69.06% Pervious = 0.749 ac 30.94% Impervious = 0.336 ac

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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 19

Summary for Subcatchment X1: Sycamore St South CB

Runoff = 3.98 cfs @ 12.16 hrs, Volume= 0.200 af, Depth= 4.19"

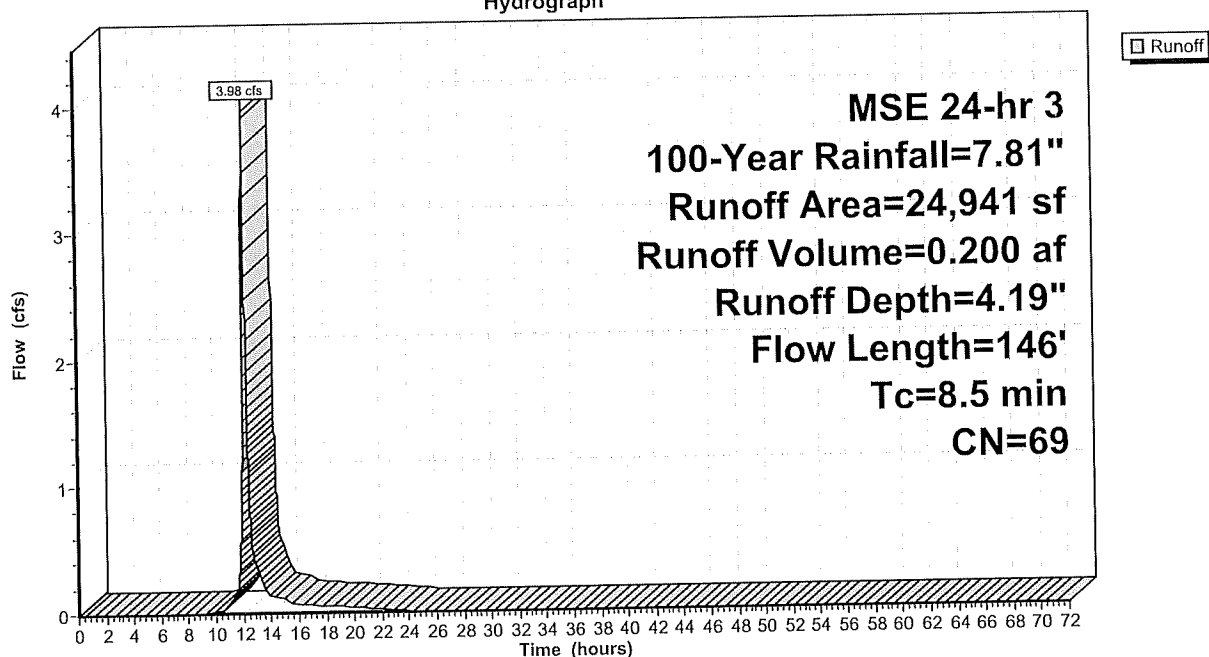
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Description
14,986	49	50-75% Grass cover, Fair, HSG A
9,955	98	Unconnected pavement, HSG A
24,941	69	Weighted Average
14,986		60.09% Pervious Area
9,955		39.91% Impervious Area
9,955		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0113	0.73		Sheet Flow, Gravel Rd Smooth surfaces n= 0.011 P2= 3.04"
7.9	83	0.0252	0.18		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.1	27	0.0500	4.54		Shallow Concentrated Flow, Driveway Paved Kv= 20.3 fps
0.2	21	0.0540	1.63		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
8.5	146	Total			

Subcatchment X1: Sycamore St South CB

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 20

Summary for Subcatchment X2: Sycamore St North CB

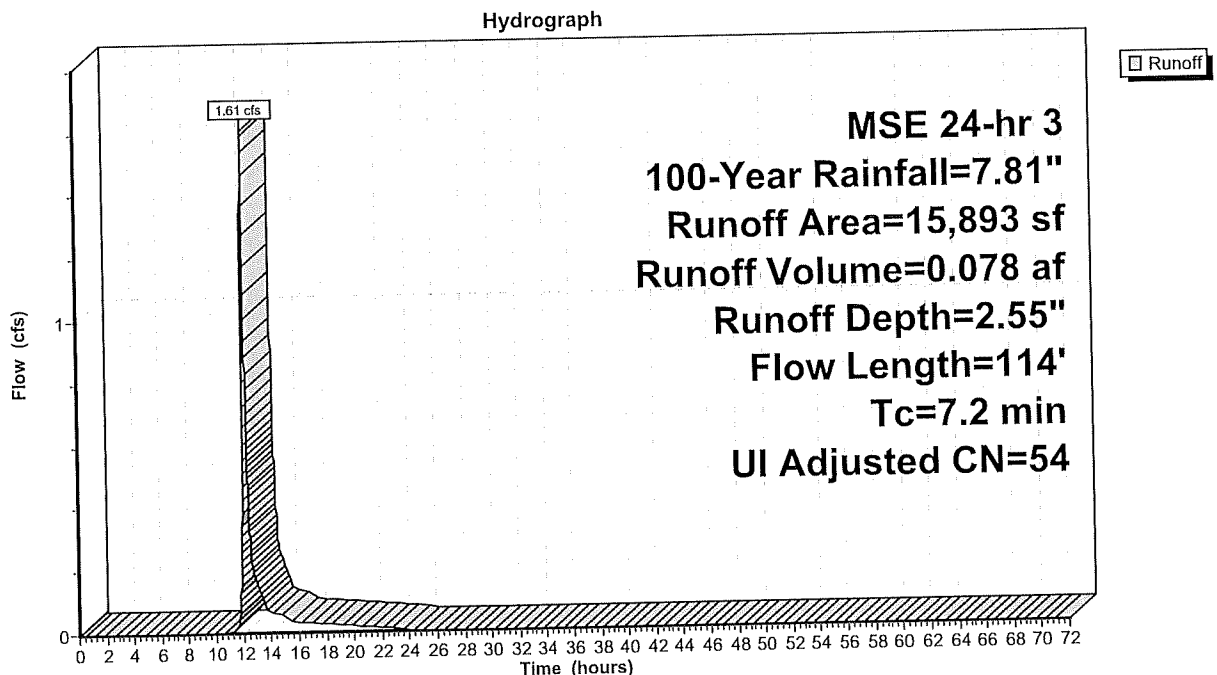
Runoff = 1.61 cfs @ 12.15 hrs, Volume= 0.078 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Adj	Description
12,461	49		50-75% Grass cover, Fair, HSG A
3,432	98		Unconnected pavement, HSG A
15,893	60	54	Weighted Average, UI Adjusted
12,461			78.41% Pervious Area
3,432			21.59% Impervious Area
3,432			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	78	0.0440	0.22		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.9	14	0.1750	0.27		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.3	22	0.0380	1.36		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
7.2	114	Total			

Subcatchment X2: Sycamore St North CB



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 21

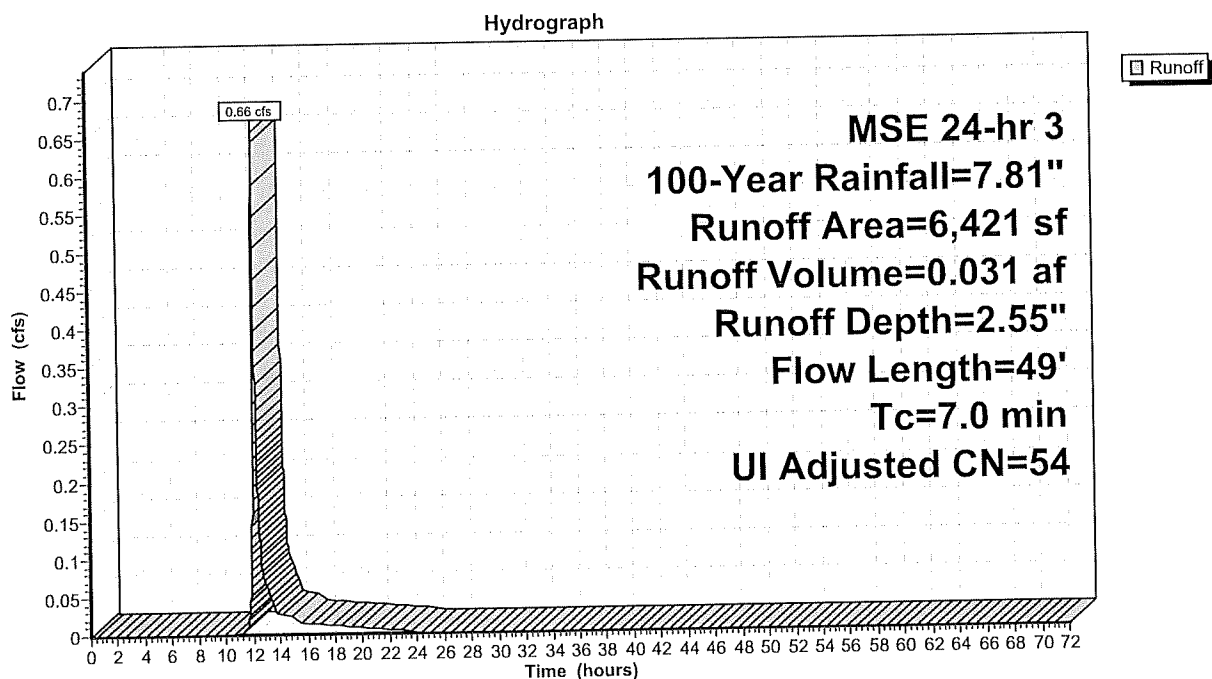
Summary for Subcatchment X3: Runoff East

Runoff = 0.66 cfs @ 12.15 hrs, Volume= 0.031 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Adj	Description
5,187	49		50-75% Grass cover, Fair, HSG A
1,234	98		Unconnected pavement, HSG A
6,421	58	54	Weighted Average, UI Adjusted
5,187			80.78% Pervious Area
1,234			19.22% Impervious Area
1,234			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0480	0.20		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
0.5	9	0.2985	0.30		Sheet Flow, Grass - Fair Grass: Short n= 0.150 P2= 3.04"
3.9	49	Total, Increased to minimum Tc = 7.0 min			

Subcatchment X3: Runoff East

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MSE 24-hr 3 100-Year Rainfall=7.81"

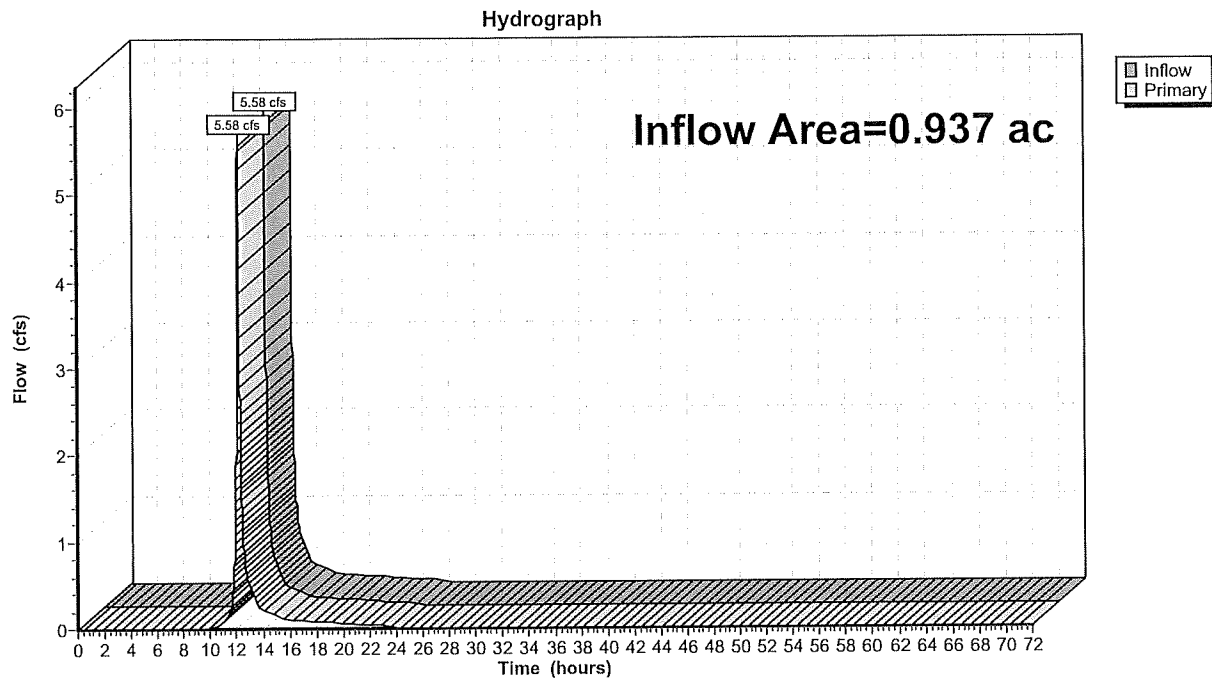
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Page 22

Summary for Link XS: Existing Sycamore Total

Inflow Area = 0.937 ac, 32.78% Impervious, Inflow Depth = 3.55" for 100-Year event
Inflow = 5.58 cfs @ 12.16 hrs, Volume= 0.277 af
Primary = 5.58 cfs @ 12.16 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link XS: Existing Sycamore Total

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MSE 24-hr 3 100-Year Rainfall=7.81"

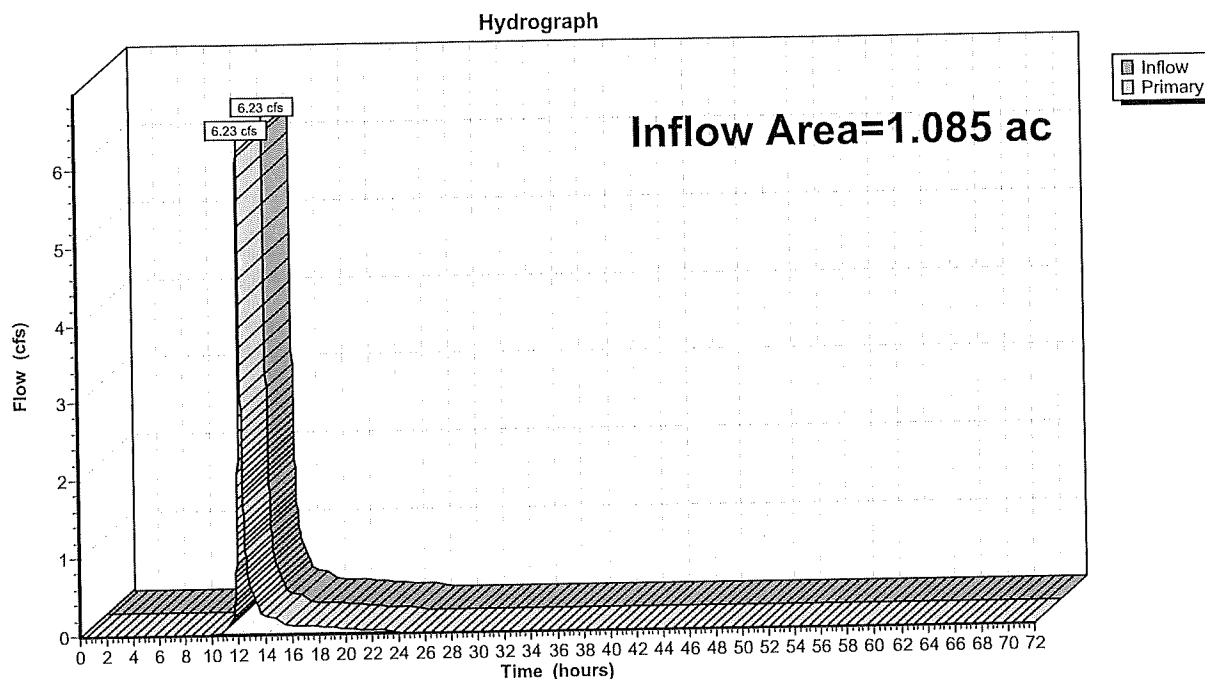
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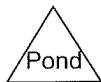
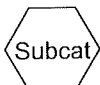
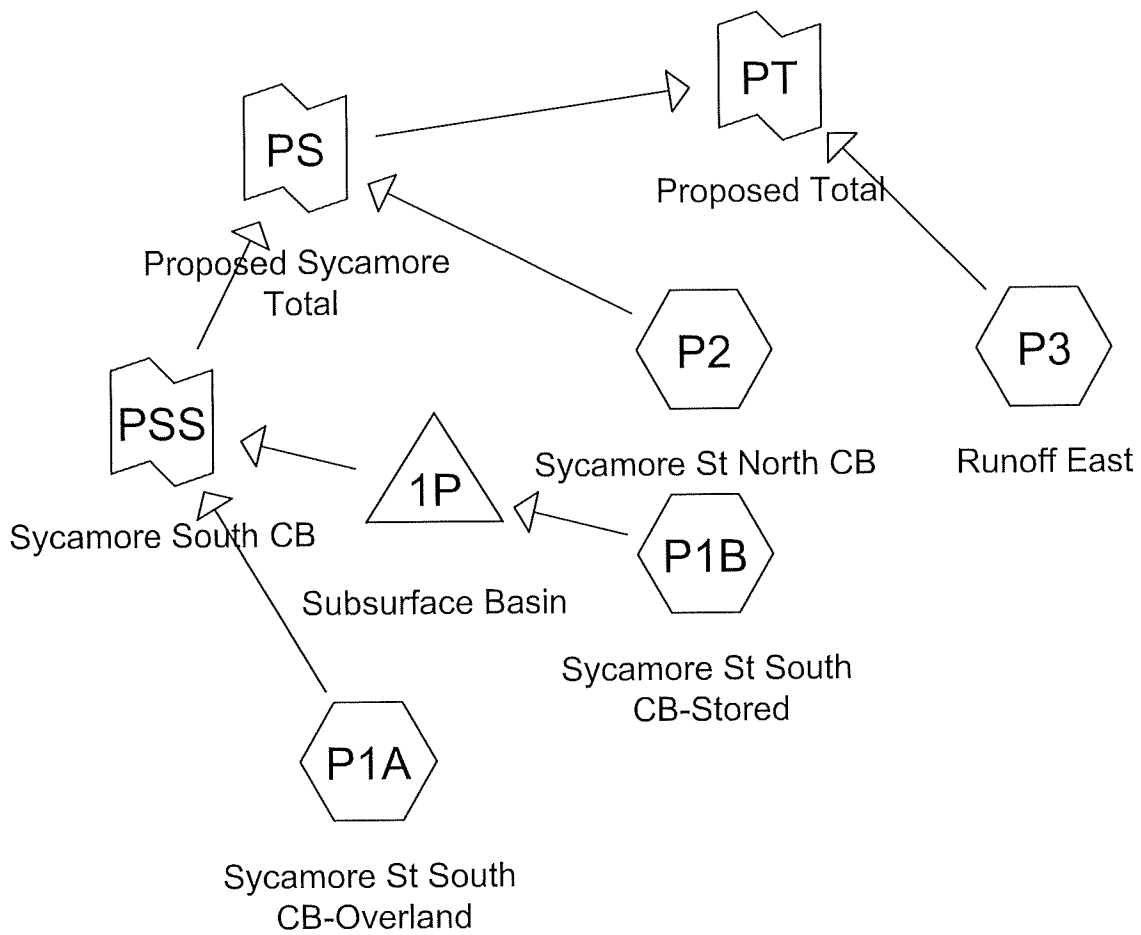
Page 23

Summary for Link XT: Existing Total

Inflow Area = 1.085 ac, 30.94% Impervious, Inflow Depth = 3.41" for 100-Year event
Inflow = 6.23 cfs @ 12.16 hrs, Volume= 0.309 af
Primary = 6.23 cfs @ 12.16 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link XT: Existing Total

PROPOSED**Routing Diagram for WAG-STRM**

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Page 2

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	MSE 24-hr	3	Default	24.00	1	3.04	2
2	10-Year	MSE 24-hr	3	Default	24.00	1	4.56	2
3	100-Year	MSE 24-hr	3	Default	24.00	1	7.81	2

#42

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Page 3

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.284	39	>75% Grass cover, Good, HSG A (P1A, P1B, P2, P3)
0.801	98	Unconnected pavement, HSG A (P1A, P1B, P2, P3)
1.085	83	TOTAL AREA

#43

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Page 4

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.085	HSG A	P1A, P1B, P2, P3
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.085		TOTAL AREA

#44

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Page 5

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.284	0.000	0.000	0.000	0.000	0.284	>75% Grass cover, Good	P1A, P1B, P2, P3
0.801	0.000	0.000	0.000	0.000	0.801	Unconnected pavement	P1A, P1B, P2, P3
1.085	0.000	0.000	0.000	0.000	1.085	TOTAL AREA	

#45

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Page 6

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1P	649.25	648.00	25.0	0.0500	0.010	0.0	4.0	0.0
2	1P	651.60	648.80	25.0	0.1120	0.013	0.0	10.0	0.0

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 7

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentP1A: Sycamore St South Runoff Area=13,757 sf 43.48% Impervious Runoff Depth=0.52"
Flow Length=162' Tc=12.2 min CN=65 Runoff=0.19 cfs 0.014 af

SubcatchmentP1B: Sycamore St South Runoff Area=28,830 sf 98.38% Impervious Runoff Depth=2.70"
Flow Length=227' Tc=7.0 min CN=97 Runoff=2.82 cfs 0.149 af

SubcatchmentP2: Sycamore St North CB Runoff Area=1,347 sf 8.98% Impervious Runoff Depth=0.01"
Flow Length=55' Slope=0.0895 '/' Tc=7.0 min UI Adjusted CN=42 Runoff=0.00 cfs 0.000 af

SubcatchmentP3: Runoff East Runoff Area=3,321 sf 13.25% Impervious Runoff Depth=0.01"
Flow Length=30' Tc=7.0 min UI Adjusted CN=43 Runoff=0.00 cfs 0.000 af

Pond 1P: Subsurface Basin Peak Elev=650.00' Storage=3,244 cf Inflow=2.82 cfs 0.149 af
Discarded=0.05 cfs 0.089 af Primary=0.32 cfs 0.060 af Outflow=0.37 cfs 0.149 af

Link PS: Proposed Sycamore Total Inflow=0.46 cfs 0.074 af
Primary=0.46 cfs 0.074 af

Link PSS: Sycamore South CB Inflow=0.46 cfs 0.074 af
Primary=0.46 cfs 0.074 af

Link PT: Proposed Total Inflow=0.46 cfs 0.074 af
Primary=0.46 cfs 0.074 af

Total Runoff Area = 1.085 ac Runoff Volume = 0.163 af Average Runoff Depth = 1.80"
26.13% Pervious = 0.284 ac 73.87% Impervious = 0.801 ac

#47

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 8

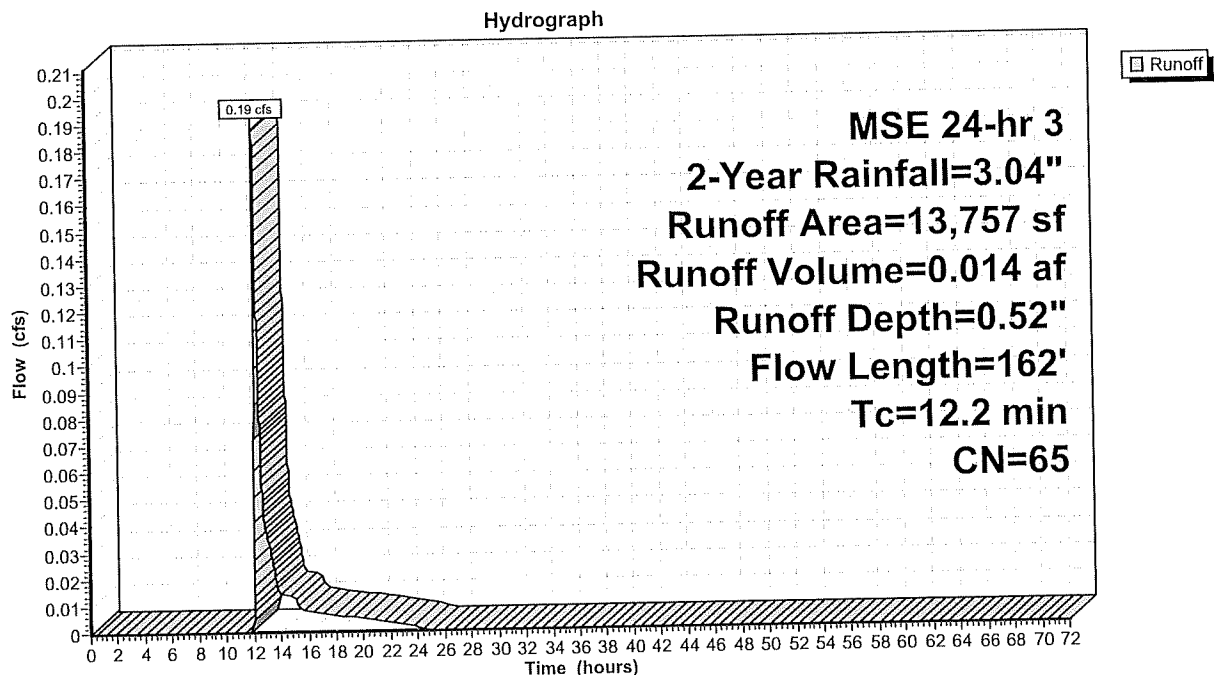
Summary for Subcatchment P1A: Sycamore St South CB-Overland

Runoff = 0.19 cfs @ 12.23 hrs, Volume= 0.014 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Description
7,775	39	>75% Grass cover, Good, HSG A
5,982	98	Unconnected pavement, HSG A
13,757	65	Weighted Average
7,775		56.52% Pervious Area
5,982		43.48% Impervious Area
5,982		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	65	0.0178	0.10		Sheet Flow, Grass-Dense Grass: Dense n= 0.240 P2= 3.04"
0.4	24	0.0208	1.02		Sheet Flow, Driveway Smooth surfaces n= 0.011 P2= 3.04"
0.9	73	0.0350	1.31		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
12.2	162	Total			

Subcatchment P1A: Sycamore St South CB-Overland

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 9

Summary for Subcatchment P1B: Sycamore St South CB-Stored

Runoff = 2.82 cfs @ 12.14 hrs, Volume= 0.149 af, Depth= 2.70"

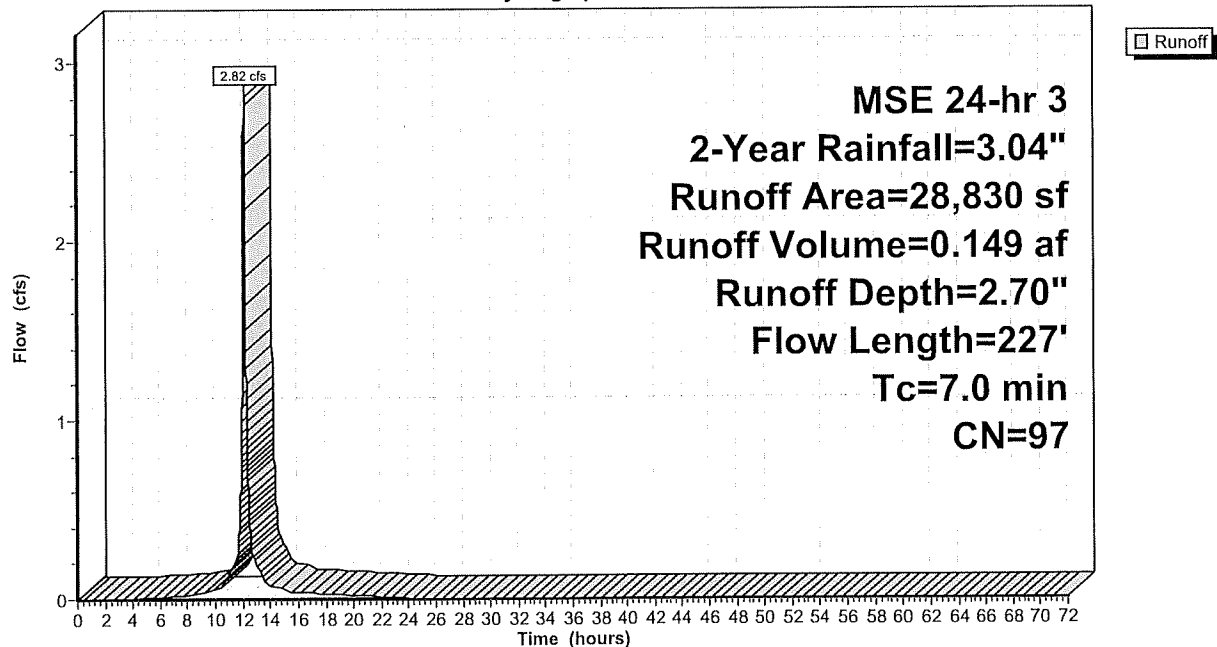
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Description
468	39	>75% Grass cover, Good, HSG A
28,362	98	Unconnected pavement, HSG A
28,830	97	Weighted Average
468		1.62% Pervious Area
28,362		98.38% Impervious Area
28,362		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0264	1.50		Sheet Flow, Paf Smooth surfaces n= 0.011 P2= 3.04"
0.6	79	0.0197	2.26		Shallow Concentrated Flow, Pad Unpaved Kv= 16.1 fps
0.5	48	0.0121	1.77		Shallow Concentrated Flow, Pad Unpaved Kv= 16.1 fps
2.2	227	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P1B: Sycamore St South CB-Stored

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 10

Summary for Subcatchment P2: Sycamore St North CB

Runoff = 0.00 cfs @ 19.64 hrs, Volume= 0.000 af, Depth= 0.01"

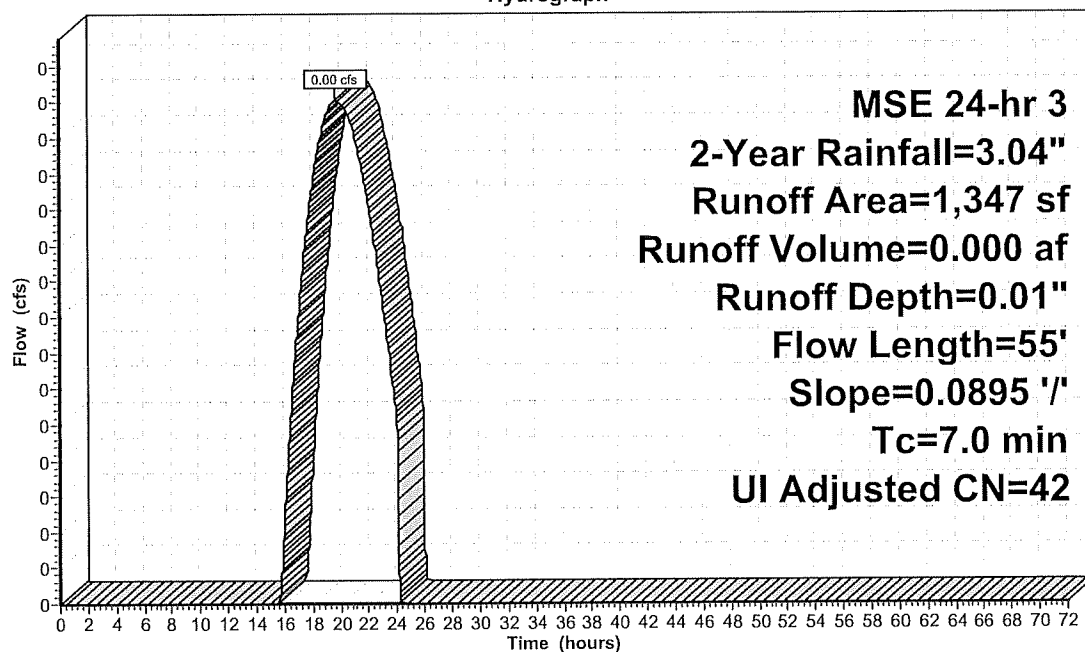
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Adj	Description
1,226	39		>75% Grass cover, Good, HSG A
121	98		Unconnected pavement, HSG A
1,347	44	42	Weighted Average, UI Adjusted
1,226			91.02% Pervious Area
121			8.98% Impervious Area
121			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	55	0.0895	0.18		Sheet Flow, Grass - Dense Grass: Dense n= 0.240 P2= 3.04"
5.0	55	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P2: Sycamore St North CB

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 11

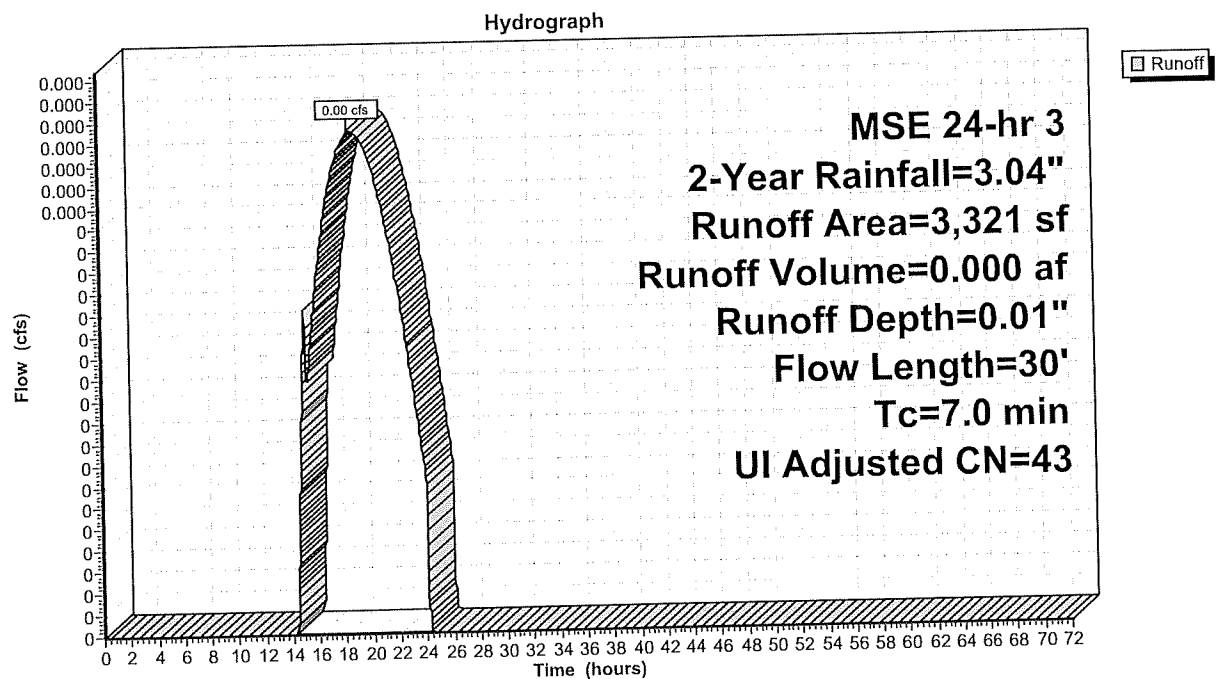
Summary for Subcatchment P3: Runoff East

Runoff = 0.00 cfs @ 18.55 hrs, Volume= 0.000 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=3.04"

Area (sf)	CN	Adj	Description
2,881	39		>75% Grass cover, Good, HSG A
440	98		Unconnected pavement, HSG A
3,321	47	43	Weighted Average, UI Adjusted
2,881			86.75% Pervious Area
440			13.25% Impervious Area
440			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0206	0.96		Sheet Flow, Pad Smooth surfaces n= 0.011 P2= 3.04"
1.3	12	0.1182	0.15		Sheet Flow, Grass - Dense Grass: Dense n= 0.240 P2= 3.04"
1.6	30	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P3: Runoff East

#51

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Page 12

Summary for Pond 1P: Subsurface Basin

Inflow Area = 0.662 ac, 98.38% Impervious, Inflow Depth = 2.70" for 2-Year event
 Inflow = 2.82 cfs @ 12.14 hrs, Volume= 0.149 af
 Outflow = 0.37 cfs @ 12.56 hrs, Volume= 0.149 af, Atten= 87%, Lag= 24.9 min
 Discarded = 0.05 cfs @ 10.85 hrs, Volume= 0.089 af
 Primary = 0.32 cfs @ 12.56 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 650.00' @ 12.56 hrs Surf.Area= 2,882 sf Storage= 3,244 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 201.0 min (962.3 - 761.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	648.25'	4,118 cf	15.58'W x 184.95'L x 5.50'H Field A 15,852 cf Overall - 5,557 cf Embedded = 10,295 cf x 40.0% Voids
#2A	649.00'	5,557 cf	ADS_StormTech MC-3500 d +Cap x 50 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 50 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
		9,675 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	648.25'	0.800 in/hr Exfiltration over Surface area
#2	Primary	649.25'	4.0" Round Culvert L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 649.25' / 648.00' S= 0.0500 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#3	Primary	651.60'	10.0" Round Culvert L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 651.60' / 648.80' S= 0.1120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Discarded OutFlow Max=0.05 cfs @ 10.85 hrs HW=648.31' (Free Discharge)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.32 cfs @ 12.56 hrs HW=650.00' TW=0.00' (Dynamic Tailwater)
 ↳ **2=Culvert** (Inlet Controls 0.32 cfs @ 3.68 fps)
 ↳ **3=Culvert** (Controls 0.00 cfs)

#52

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MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 13

Pond 1P: Subsurface Basin - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

25 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 182.95' Row Length +12.0" End Stone x 2 = 184.95' Base Length

2 Rows x 77.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 15.58' Base Width

9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

50 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 5,557.2 cf Chamber Storage

15,851.8 cf Field - 5,557.2 cf Chambers = 10,294.6 cf Stone x 40.0% Voids = 4,117.8 cf Stone Storage

Chamber Storage + Stone Storage = 9,675.0 cf = 0.222 af

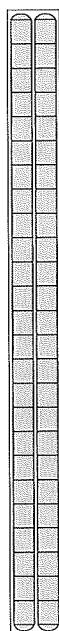
Overall Storage Efficiency = 61.0%

Overall System Size = 184.95' x 15.58' x 5.50'

50 Chambers

587.1 cy Field

381.3 cy Stone



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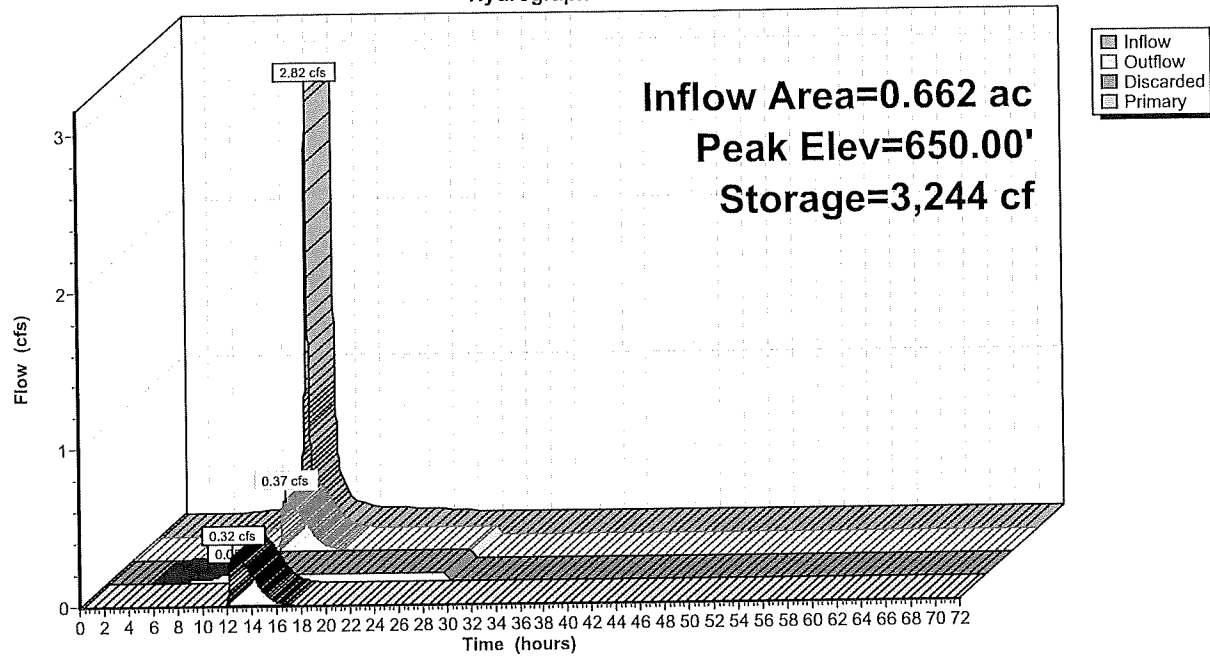
MSE 24-hr 3 2-Year Rainfall=3.04"

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Page 14

Pond 1P: Subsurface Basin

Hydrograph



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MSE 24-hr 3 2-Year Rainfall=3.04"

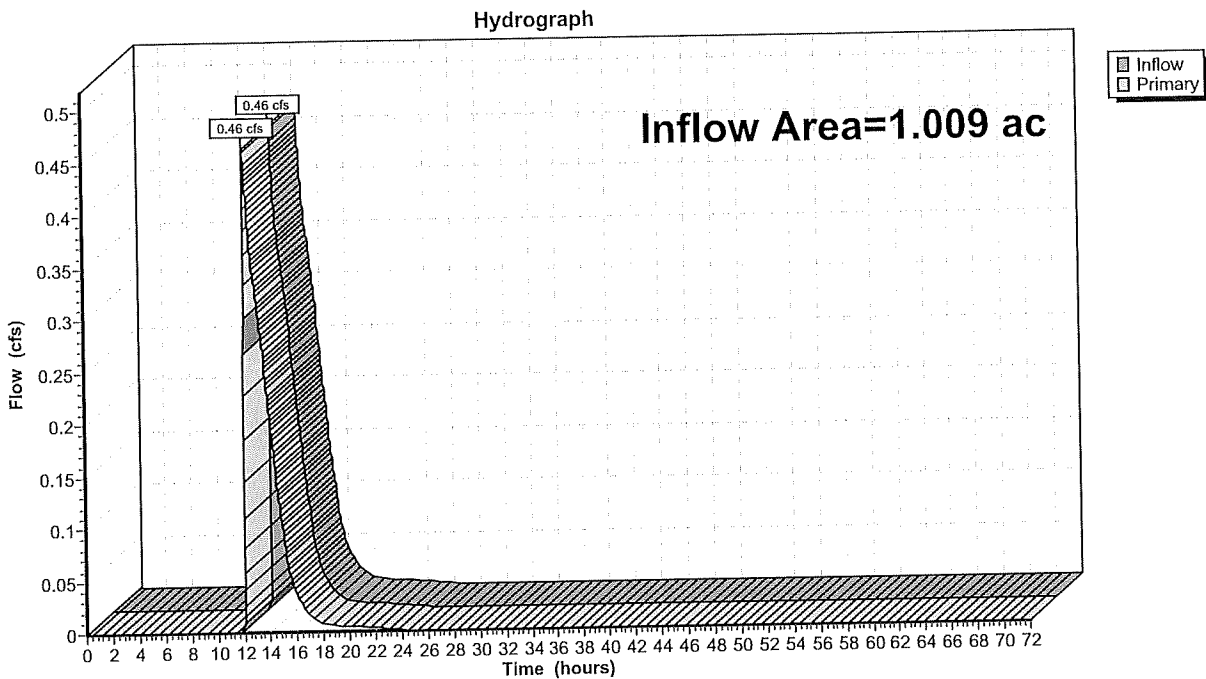
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Page 15

Summary for Link PS: Proposed Sycamore Total

Inflow Area = 1.009 ac, 78.45% Impervious, Inflow Depth = 0.88" for 2-Year event
Inflow = 0.46 cfs @ 12.26 hrs, Volume= 0.074 af
Primary = 0.46 cfs @ 12.26 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PS: Proposed Sycamore Total

#55

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MSE 24-hr 3 2-Year Rainfall=3.04"

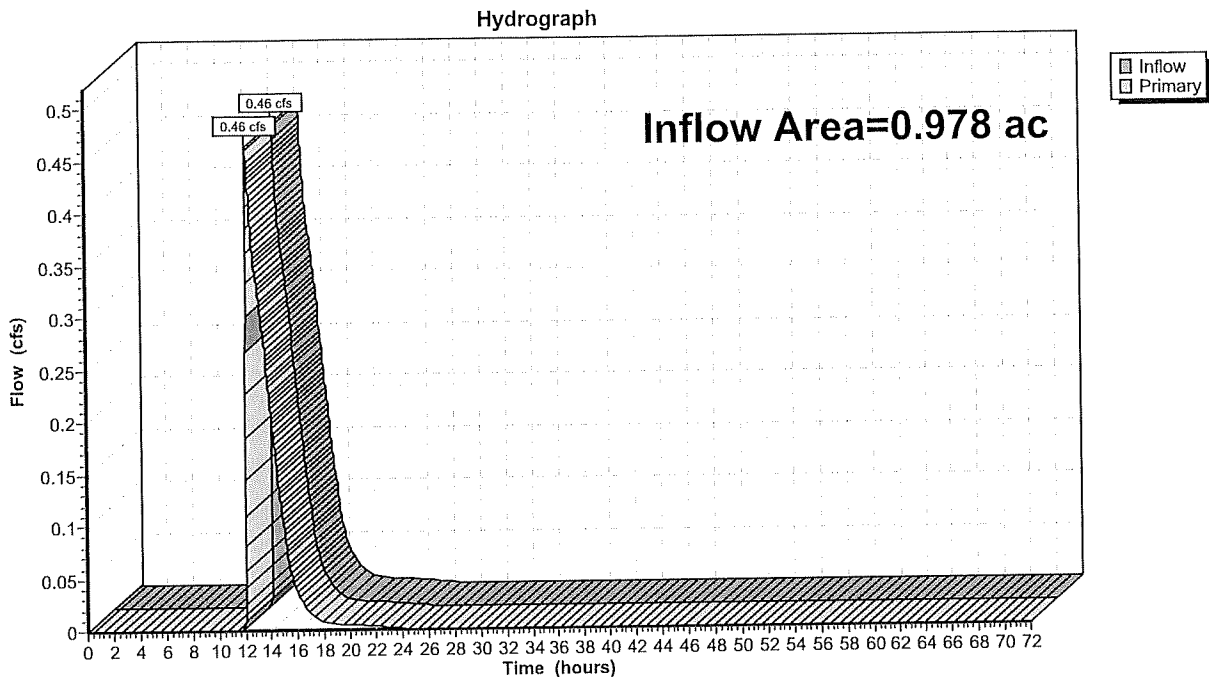
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Page 16

Summary for Link PSS: Sycamore South CB

Inflow Area = 0.978 ac, 80.64% Impervious, Inflow Depth = 0.91" for 2-Year event
Inflow = 0.46 cfs @ 12.26 hrs, Volume= 0.074 af
Primary = 0.46 cfs @ 12.26 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PSS: Sycamore South CB

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MSE 24-hr 3 2-Year Rainfall=3.04"

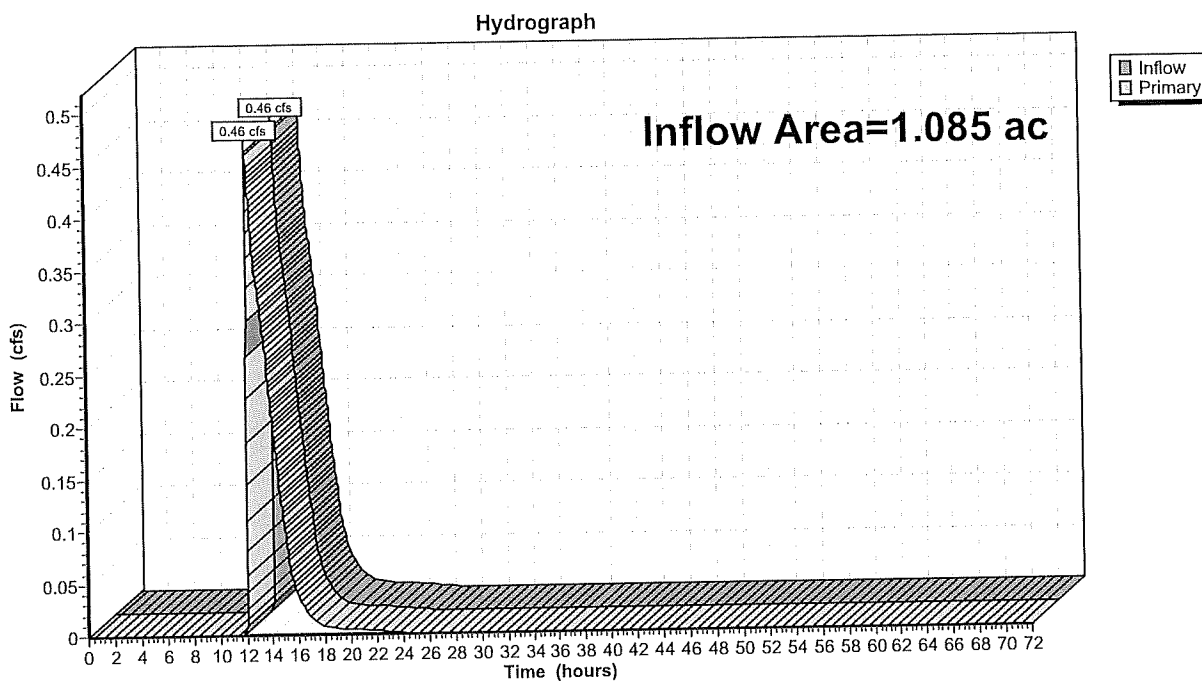
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Page 17

Summary for Link PT: Proposed Total

Inflow Area = 1.085 ac, 73.87% Impervious, Inflow Depth = 0.82" for 2-Year event
Inflow = 0.46 cfs @ 12.26 hrs, Volume= 0.074 af
Primary = 0.46 cfs @ 12.26 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT: Proposed Total

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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 18

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentP1A: Sycamore St South Runoff Area=13,757 sf 43.48% Impervious Runoff Depth=1.37"
Flow Length=162' Tc=12.2 min CN=65 Runoff=0.59 cfs 0.036 af

SubcatchmentP1B: Sycamore St South Runoff Area=28,830 sf 98.38% Impervious Runoff Depth=4.21"
Flow Length=227' Tc=7.0 min CN=97 Runoff=4.29 cfs 0.232 af

SubcatchmentP2: Sycamore St North CB Runoff Area=1,347 sf 8.98% Impervious Runoff Depth=0.21"
Flow Length=55' Slope=0.0895 '/' Tc=7.0 min UI Adjusted CN=42 Runoff=0.00 cfs 0.001 af

SubcatchmentP3: Runoff East Runoff Area=3,321 sf 13.25% Impervious Runoff Depth=0.24"
Flow Length=30' Tc=7.0 min UI Adjusted CN=43 Runoff=0.01 cfs 0.002 af

Pond 1P: Subsurface Basin Peak Elev=650.87' Storage=5,205 cf Inflow=4.29 cfs 0.232 af
Discarded=0.05 cfs 0.103 af Primary=0.51 cfs 0.130 af Outflow=0.56 cfs 0.232 af

Link PS: Proposed Sycamore Total Inflow=1.04 cfs 0.166 af
Primary=1.04 cfs 0.166 af

Link PSS: Sycamore South CB Inflow=1.03 cfs 0.166 af
Primary=1.03 cfs 0.166 af

Link PT: Proposed Total Inflow=1.04 cfs 0.168 af
Primary=1.04 cfs 0.168 af

Total Runoff Area = 1.085 ac Runoff Volume = 0.270 af Average Runoff Depth = 2.99"
26.13% Pervious = 0.284 ac 73.87% Impervious = 0.801 ac

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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 19

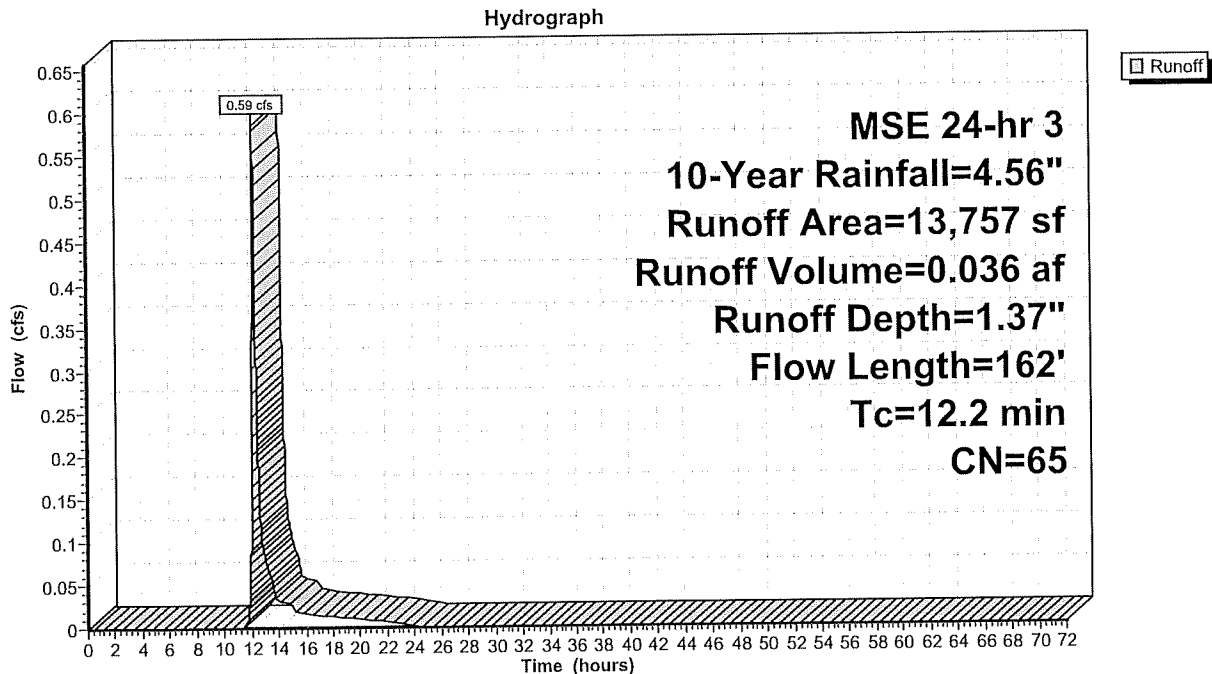
Summary for Subcatchment P1A: Sycamore St South CB-Overland

Runoff = 0.59 cfs @ 12.21 hrs, Volume= 0.036 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Description
7,775	39	>75% Grass cover, Good, HSG A
5,982	98	Unconnected pavement, HSG A
13,757	65	Weighted Average
7,775		56.52% Pervious Area
5,982		43.48% Impervious Area
5,982		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	65	0.0178	0.10		Sheet Flow, Grass-Dense Grass: Dense n= 0.240 P2= 3.04"
0.4	24	0.0208	1.02		Sheet Flow, Driveway Smooth surfaces n= 0.011 P2= 3.04"
0.9	73	0.0350	1.31		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
12.2	162	Total			

Subcatchment P1A: Sycamore St South CB-Overland

#59

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Page 20

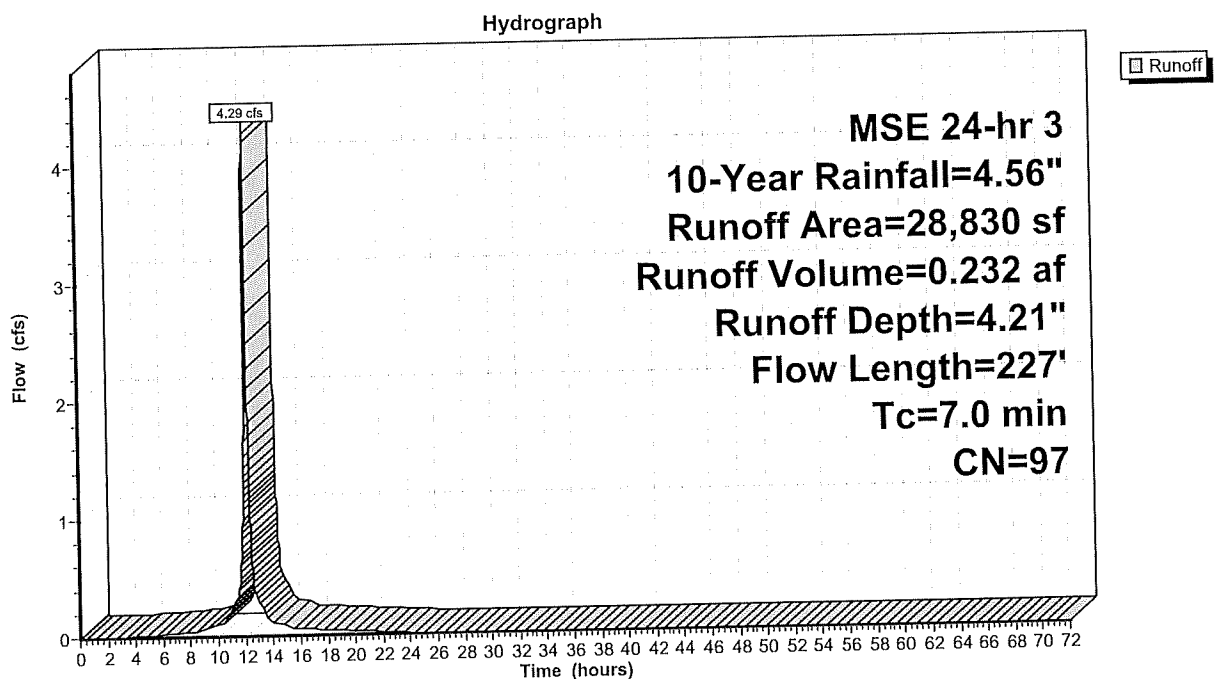
Summary for Subcatchment P1B: Sycamore St South CB-Stored

Runoff = 4.29 cfs @ 12.14 hrs, Volume= 0.232 af, Depth= 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Description
468	39	>75% Grass cover, Good, HSG A
28,362	98	Unconnected pavement, HSG A
28,830	97	Weighted Average
468		1.62% Pervious Area
28,362		98.38% Impervious Area
28,362		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0264	1.50		Sheet Flow, Paf Smooth surfaces n= 0.011 P2= 3.04"
0.6	79	0.0197	2.26		Shallow Concentrated Flow, Pad Unpaved Kv= 16.1 fps
0.5	48	0.0121	1.77		Shallow Concentrated Flow, Pad Unpaved Kv= 16.1 fps
2.2	227	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P1B: Sycamore St South CB-Stored

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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 21

Summary for Subcatchment P2: Sycamore St North CB

Runoff = 0.00 cfs @ 12.37 hrs, Volume= 0.001 af, Depth= 0.21"

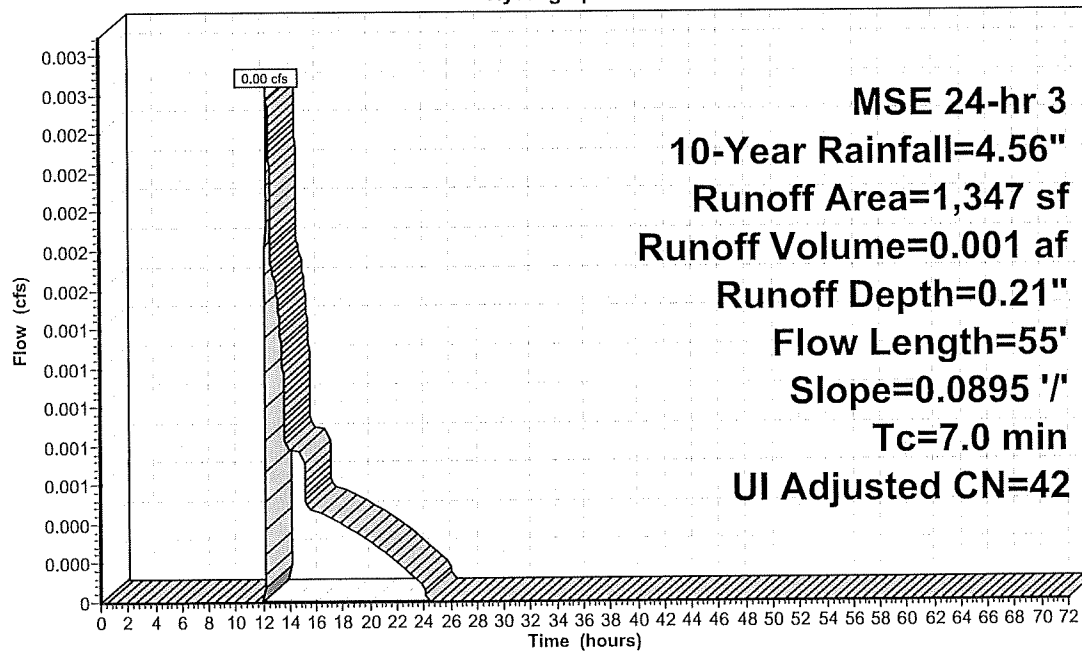
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Adj	Description
1,226	39		>75% Grass cover, Good, HSG A
121	98		Unconnected pavement, HSG A
1,347	44	42	Weighted Average, UI Adjusted
1,226			91.02% Pervious Area
121			8.98% Impervious Area
121			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	55	0.0895	0.18		Sheet Flow, Grass - Dense Grass: Dense n= 0.240 P2= 3.04"
5.0	55	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P2: Sycamore St North CB

Hydrograph



Runoff

WAG-STRM

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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 22

Summary for Subcatchment P3: Runoff East

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af, Depth= 0.24"

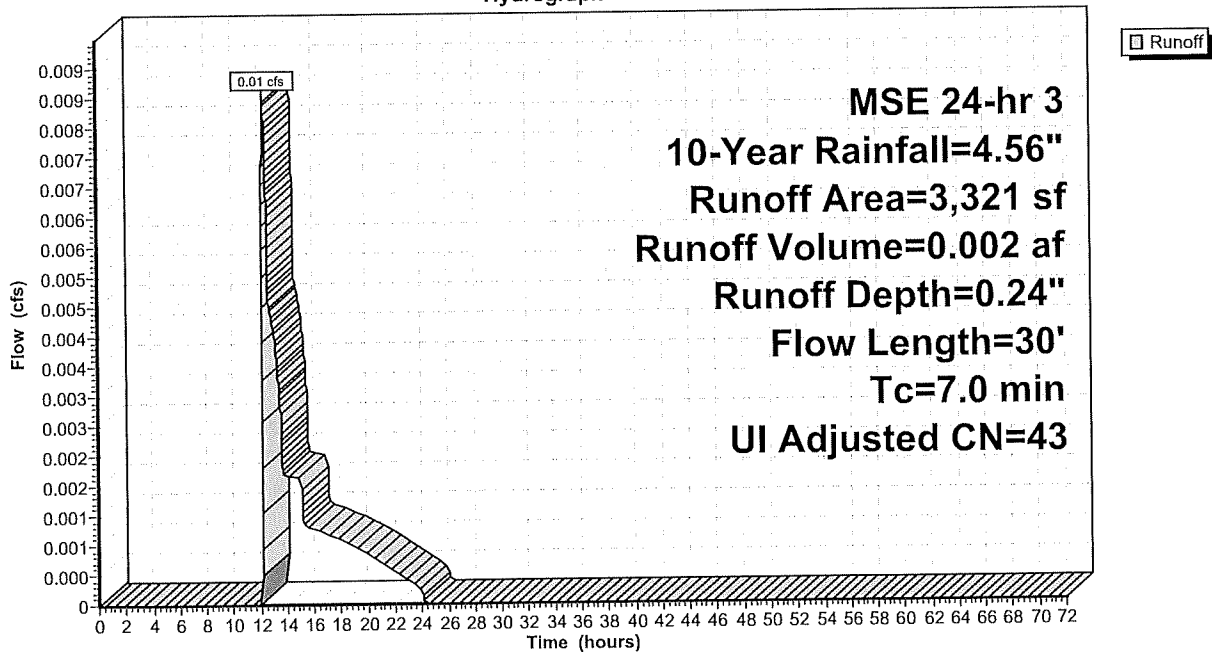
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.56"

Area (sf)	CN	Adj	Description
2,881	39		>75% Grass cover, Good, HSG A
440	98		Unconnected pavement, HSG A
3,321	47	43	Weighted Average, UI Adjusted
2,881			86.75% Pervious Area
440			13.25% Impervious Area
440			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0206	0.96		Sheet Flow, Pad Smooth surfaces n= 0.011 P2= 3.04"
1.3	12	0.1182	0.15		Sheet Flow, Grass - Dense Grass: Dense n= 0.240 P2= 3.04"
1.6	30	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P3: Runoff East

Hydrograph



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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 23

Summary for Pond 1P: Subsurface Basin

Inflow Area = 0.662 ac, 98.38% Impervious, Inflow Depth = 4.21" for 10-Year event
 Inflow = 4.29 cfs @ 12.14 hrs, Volume= 0.232 af
 Outflow = 0.56 cfs @ 12.56 hrs, Volume= 0.232 af, Atten= 87%, Lag= 25.1 min
 Discarded = 0.05 cfs @ 9.68 hrs, Volume= 0.103 af
 Primary = 0.51 cfs @ 12.56 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 650.87' @ 12.56 hrs Surf.Area= 2,882 sf Storage= 5,205 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 184.4 min (938.2 - 753.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	648.25'	4,118 cf	15.58'W x 184.95'L x 5.50'H Field A 15,852 cf Overall - 5,557 cf Embedded = 10,295 cf x 40.0% Voids
#2A	649.00'	5,557 cf	ADS StormTech MC-3500 d +Capx 50 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 50 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
		9,675 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	648.25'	0.800 in/hr Exfiltration over Surface area
#2	Primary	649.25'	4.0" Round Culvert L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 649.25' / 648.00' S= 0.0500 ' S= 0.0500 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#3	Primary	651.60'	10.0" Round Culvert L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 651.60' / 648.80' S= 0.1120 ' S= 0.1120 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Discarded OutFlow Max=0.05 cfs @ 9.68 hrs HW=648.31' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.51 cfs @ 12.56 hrs HW=650.87' TW=0.00' (Dynamic Tailwater)
 ↑ **2=Culvert** (Inlet Controls 0.51 cfs @ 5.81 fps)
 ↑ **3=Culvert** (Controls 0.00 cfs)

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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 24

Pond 1P: Subsurface Basin - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

25 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 182.95' Row Length +12.0" End Stone x 2 = 184.95' Base Length

2 Rows x 77.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 15.58' Base Width

9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

50 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 5,557.2 cf Chamber Storage

15,851.8 cf Field - 5,557.2 cf Chambers = 10,294.6 cf Stone x 40.0% Voids = 4,117.8 cf Stone Storage

Chamber Storage + Stone Storage = 9,675.0 cf = 0.222 af

Overall Storage Efficiency = 61.0%

Overall System Size = 184.95' x 15.58' x 5.50'

50 Chambers

587.1 cy Field

381.3 cy Stone



WAG-STRM

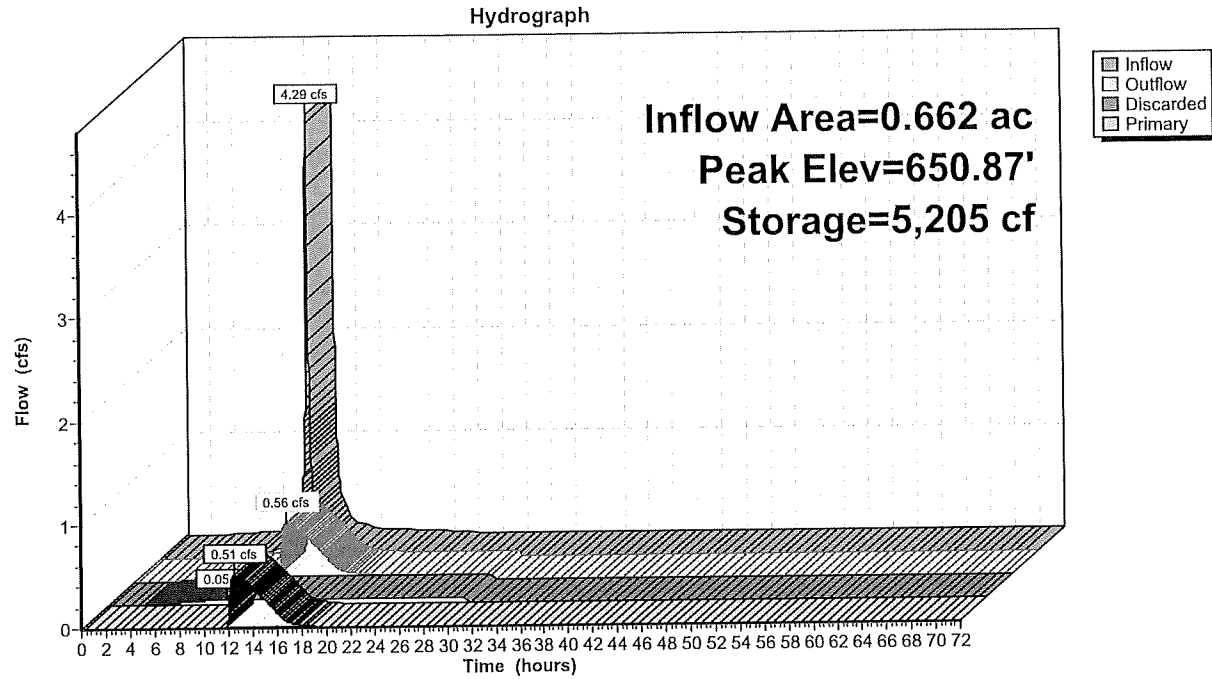
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MSE 24-hr 3 10-Year Rainfall=4.56"

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Page 25

Pond 1P: Subsurface Basin

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MSE 24-hr 3 10-Year Rainfall=4.56"

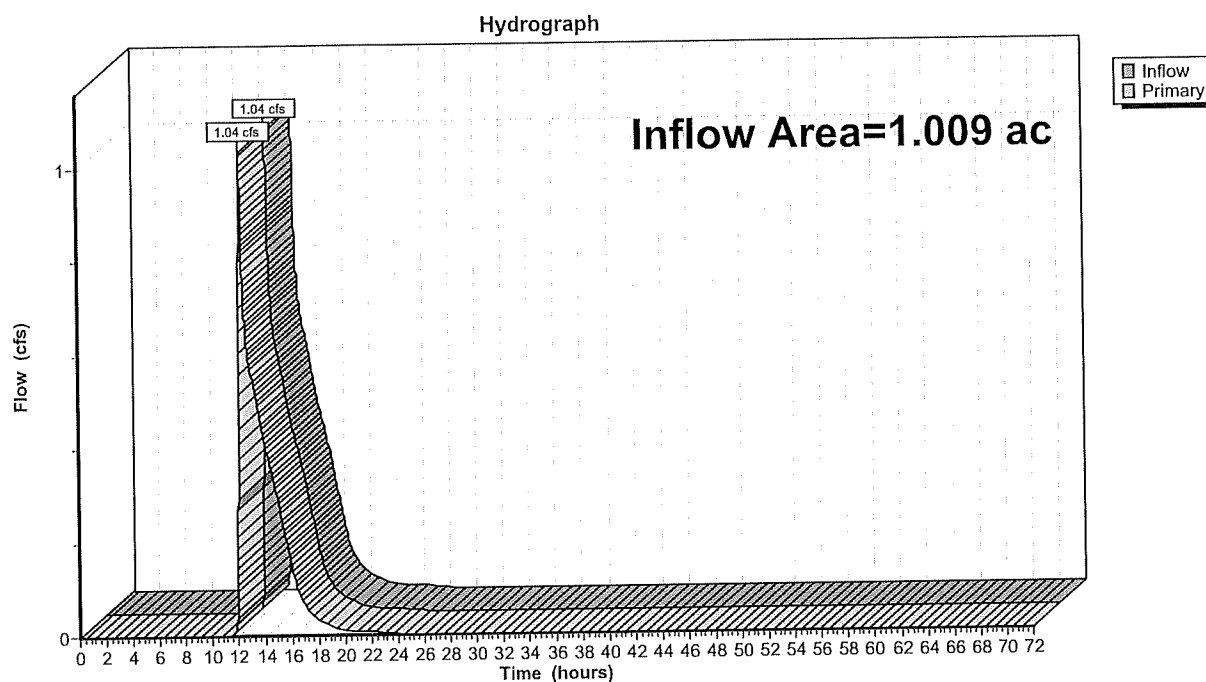
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Page 26

Summary for Link PS: Proposed Sycamore Total

Inflow Area = 1.009 ac, 78.45% Impervious, Inflow Depth = 1.98" for 10-Year event
Inflow = 1.04 cfs @ 12.22 hrs, Volume= 0.166 af
Primary = 1.04 cfs @ 12.22 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PS: Proposed Sycamore Total

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MSE 24-hr 3 10-Year Rainfall=4.56"

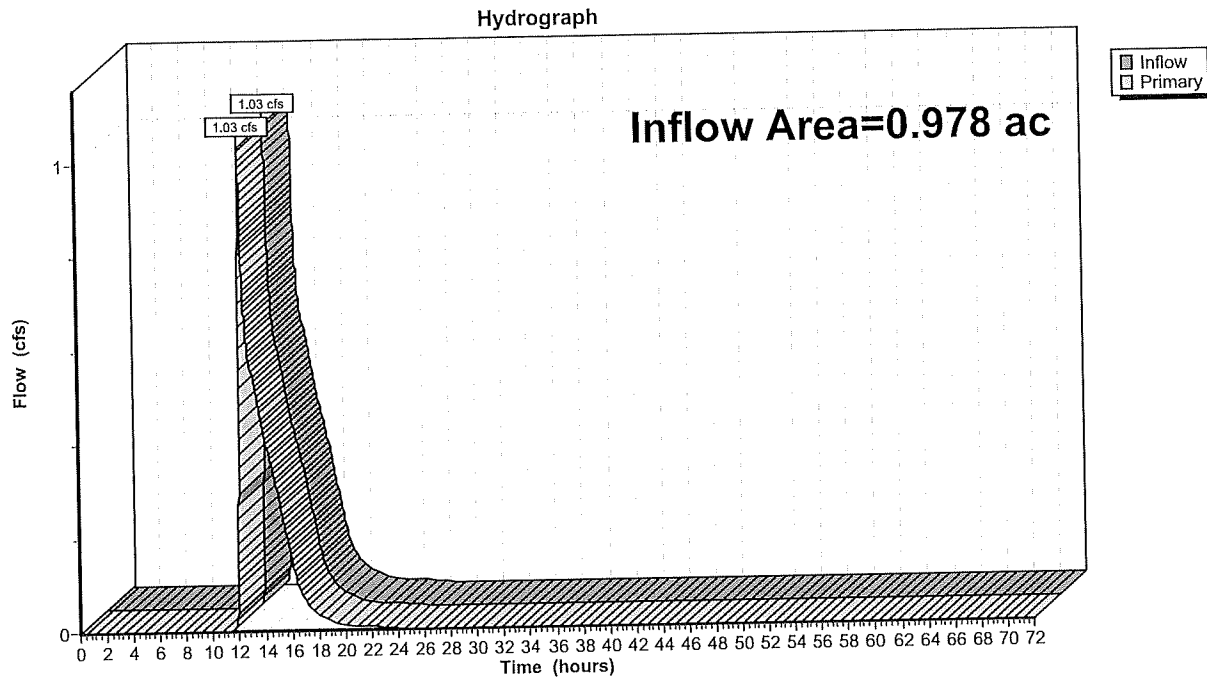
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Page 27

Summary for Link PSS: Sycamore South CB

Inflow Area = 0.978 ac, 80.64% Impervious, Inflow Depth = 2.03" for 10-Year event
 Inflow = 1.03 cfs @ 12.22 hrs, Volume= 0.166 af
 Primary = 1.03 cfs @ 12.22 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PSS: Sycamore South CB

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MSE 24-hr 3 10-Year Rainfall=4.56"

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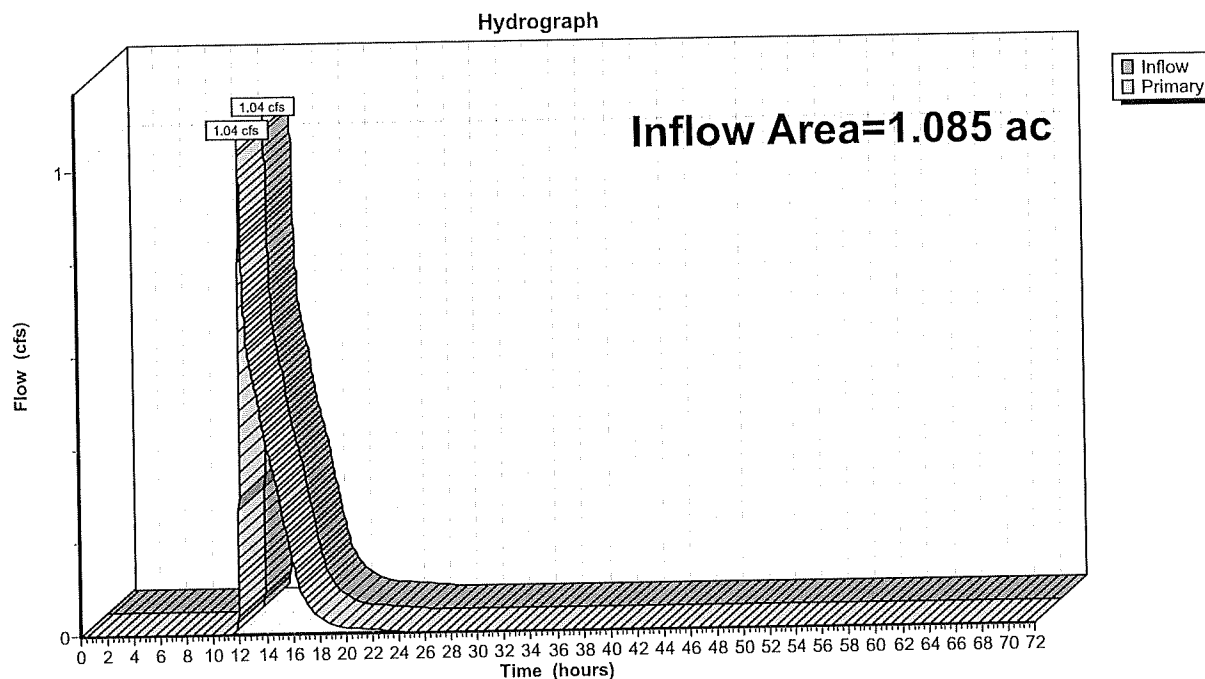
Page 28

Summary for Link PT: Proposed Total

Inflow Area = 1.085 ac, 73.87% Impervious, Inflow Depth = 1.85" for 10-Year event
Inflow = 1.04 cfs @ 12.22 hrs, Volume= 0.168 af
Primary = 1.04 cfs @ 12.22 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT: Proposed Total



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 29

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentP1A: Sycamore St South Runoff Area=13,757 sf 43.48% Impervious Runoff Depth=3.74"
Flow Length=162' Tc=12.2 min CN=65 Runoff=1.68 cfs 0.098 af

SubcatchmentP1B: Sycamore St South Runoff Area=28,830 sf 98.38% Impervious Runoff Depth=7.45"
Flow Length=227' Tc=7.0 min CN=97 Runoff=7.41 cfs 0.411 af

SubcatchmentP2: Sycamore St North CB Runoff Area=1,347 sf 8.98% Impervious Runoff Depth=1.35"
Flow Length=55' Slope=0.0895 ' / ' Tc=7.0 min UI Adjusted CN=42 Runoff=0.06 cfs 0.003 af

SubcatchmentP3: Runoff East Runoff Area=3,321 sf 13.25% Impervious Runoff Depth=1.45"
Flow Length=30' Tc=7.0 min UI Adjusted CN=43 Runoff=0.17 cfs 0.009 af

Pond 1P: Subsurface Basin Peak Elev=652.48' Storage=8,194 cf Inflow=7.41 cfs 0.411 af
Discarded=0.05 cfs 0.120 af Primary=2.53 cfs 0.291 af Outflow=2.58 cfs 0.411 af

Link PS: Proposed Sycamore Total Inflow=4.01 cfs 0.393 af
Primary=4.01 cfs 0.393 af

Link PSS: Sycamore South CB Inflow=3.97 cfs 0.390 af
Primary=3.97 cfs 0.390 af

Link PT: Proposed Total Inflow=4.12 cfs 0.402 af
Primary=4.12 cfs 0.402 af

Total Runoff Area = 1.085 ac Runoff Volume = 0.522 af Average Runoff Depth = 5.77"
26.13% Pervious = 0.284 ac 73.87% Impervious = 0.801 ac

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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 30

Summary for Subcatchment P1A: Sycamore St South CB-Overland

Runoff = 1.68 cfs @ 12.21 hrs, Volume= 0.098 af, Depth= 3.74"

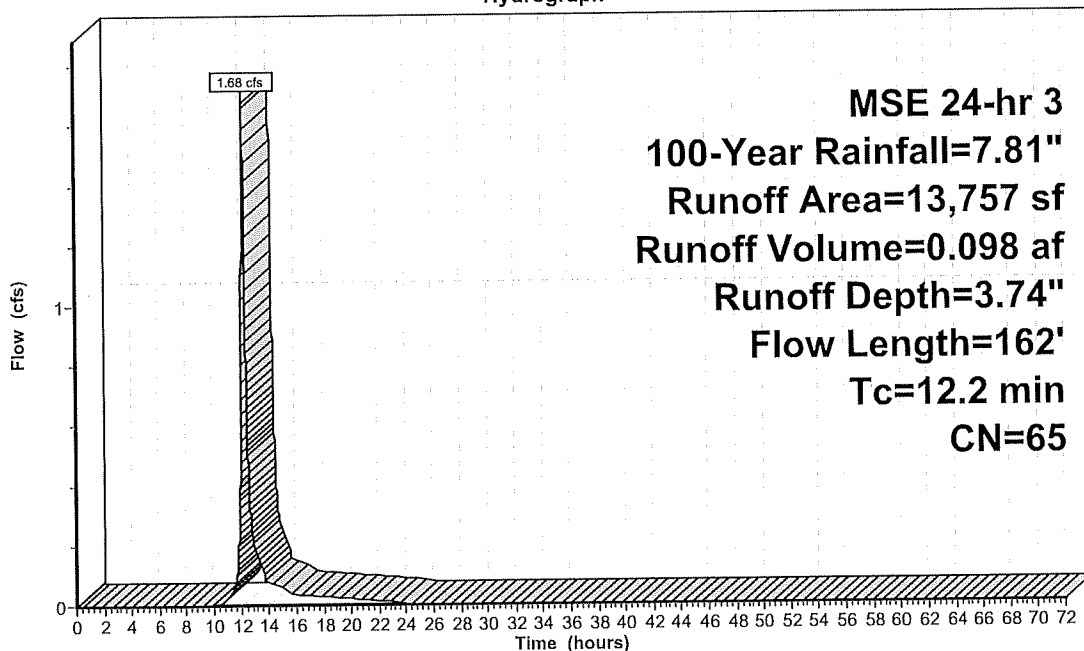
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Description
7,775	39	>75% Grass cover, Good, HSG A
5,982	98	Unconnected pavement, HSG A
13,757	65	Weighted Average
7,775		56.52% Pervious Area
5,982		43.48% Impervious Area
5,982		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	65	0.0178	0.10		Sheet Flow, Grass-Dense Grass: Dense n= 0.240 P2= 3.04"
0.4	24	0.0208	1.02		Sheet Flow, Driveway Smooth surfaces n= 0.011 P2= 3.04"
0.9	73	0.0350	1.31		Shallow Concentrated Flow, Grass - Fair Short Grass Pasture Kv= 7.0 fps
12.2	162	Total			

Subcatchment P1A: Sycamore St South CB-Overland

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 31

Summary for Subcatchment P1B: Sycamore St South CB-Stored

Runoff = 7.41 cfs @ 12.14 hrs, Volume= 0.411 af, Depth= 7.45"

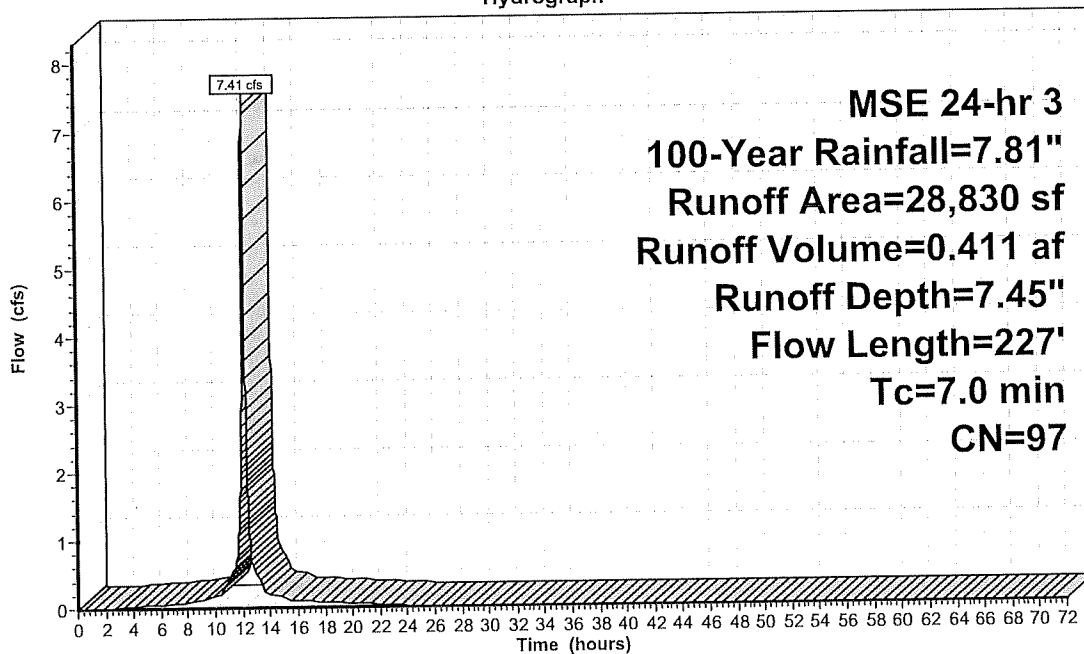
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Description
468	39	>75% Grass cover, Good, HSG A
28,362	98	Unconnected pavement, HSG A
28,830	97	Weighted Average
468		1.62% Pervious Area
28,362		98.38% Impervious Area
28,362		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0264	1.50		Sheet Flow, Paf Smooth surfaces n= 0.011 P2= 3.04"
0.6	79	0.0197	2.26		Shallow Concentrated Flow, Pad Unpaved Kv= 16.1 fps
0.5	48	0.0121	1.77		Shallow Concentrated Flow, Pad Unpaved Kv= 16.1 fps
2.2	227	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P1B: Sycamore St South CB-Stored

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 32

Summary for Subcatchment P2: Sycamore St North CB

Runoff = 0.06 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 1.35"

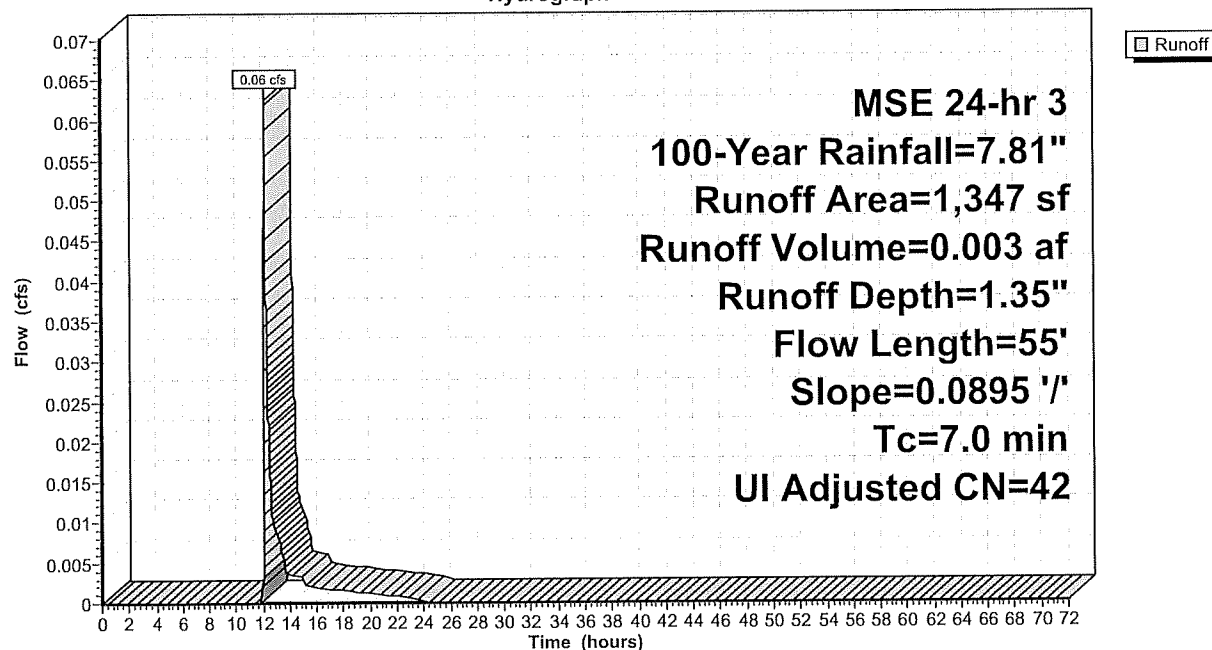
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Adj	Description
1,226	39		>75% Grass cover, Good, HSG A
121	98		Unconnected pavement, HSG A
1,347	44	42	Weighted Average, UI Adjusted
1,226			91.02% Pervious Area
121			8.98% Impervious Area
121			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	55	0.0895	0.18		Sheet Flow, Grass - Dense
					Grass: Dense n= 0.240 P2= 3.04"
5.0	55	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P2: Sycamore St North CB

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 33

Summary for Subcatchment P3: Runoff East

Runoff = 0.17 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 1.45"

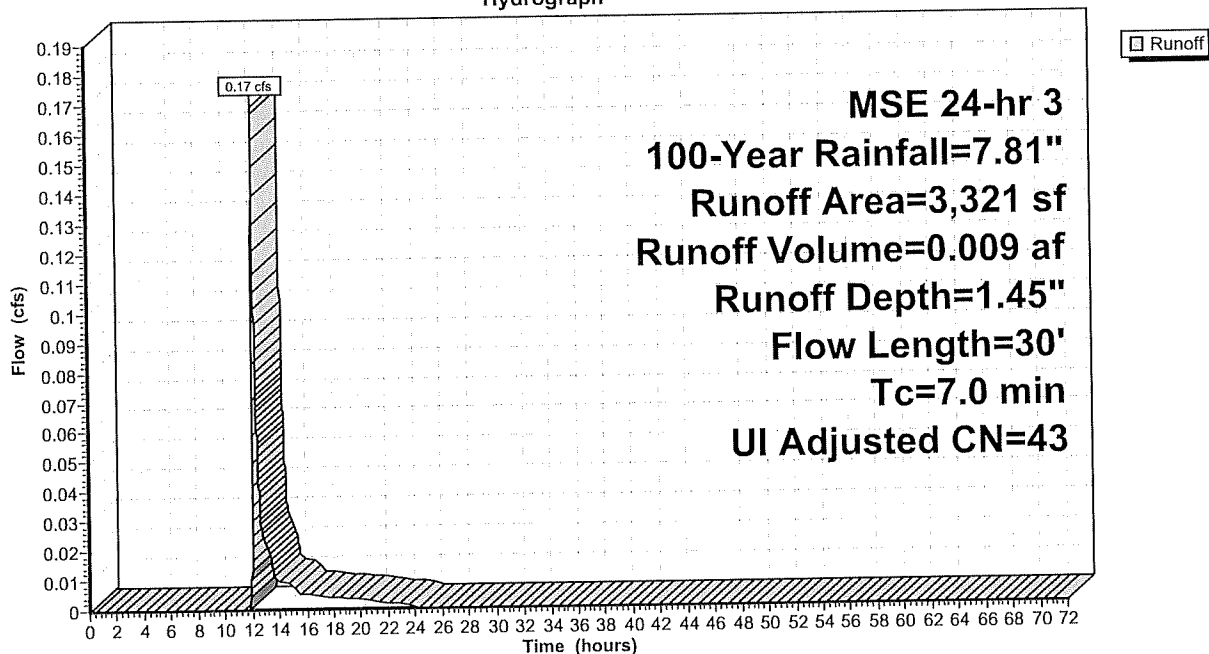
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.81"

Area (sf)	CN	Adj	Description
2,881	39		>75% Grass cover, Good, HSG A
440	98		Unconnected pavement, HSG A
3,321	47	43	Weighted Average, UI Adjusted
2,881			86.75% Pervious Area
440			13.25% Impervious Area
440			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0206	0.96		Sheet Flow, Pad Smooth surfaces n= 0.011 P2= 3.04"
1.3	12	0.1182	0.15		Sheet Flow, Grass - Dense Grass: Dense n= 0.240 P2= 3.04"
1.6	30	Total, Increased to minimum Tc = 7.0 min			

Subcatchment P3: Runoff East

Hydrograph



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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 34

Summary for Pond 1P: Subsurface Basin

Inflow Area = 0.662 ac, 98.38% Impervious, Inflow Depth = 7.45" for 100-Year event
 Inflow = 7.41 cfs @ 12.14 hrs, Volume= 0.411 af
 Outflow = 2.58 cfs @ 12.29 hrs, Volume= 0.411 af, Atten= 65%, Lag= 9.2 min
 Discarded = 0.05 cfs @ 7.39 hrs, Volume= 0.120 af
 Primary = 2.53 cfs @ 12.29 hrs, Volume= 0.291 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 652.48' @ 12.29 hrs Surf.Area= 2,882 sf Storage= 8,194 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 154.5 min (900.2 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	648.25'	4,118 cf	15.58'W x 184.95'L x 5.50'H Field A 15,852 cf Overall - 5,557 cf Embedded = 10,295 cf x 40.0% Voids
#2A	649.00'	5,557 cf	ADS_StormTech MC-3500 d +Capx 50 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 50 Chambers in 2 Rows Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf
		9,675 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	648.25'	0.800 in/hr Exfiltration over Surface area
#2	Primary	649.25'	4.0" Round Culvert L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 649.25' / 648.00' S= 0.0500 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.09 sf
#3	Primary	651.60'	10.0" Round Culvert L= 25.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 651.60' / 648.80' S= 0.1120 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Discarded OutFlow Max=0.05 cfs @ 7.39 hrs HW=648.31' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=2.53 cfs @ 12.29 hrs HW=652.48' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 0.74 cfs @ 8.43 fps)

↑ **3=Culvert** (Inlet Controls 1.79 cfs @ 3.28 fps)

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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 35

Pond 1P: Subsurface Basin - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech®MC-3500 d rev 03/14 with Cap volume)

Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf

Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap

Cap Storage= +14.9 cf x 2 x 2 rows = 59.6 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

25 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 182.95' Row Length +12.0" End Stone x 2 = 184.95' Base Length

2 Rows x 77.0" Wide + 9.0" Spacing x 1 + 12.0" Side Stone x 2 = 15.58' Base Width

9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

50 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 2 Rows = 5,557.2 cf Chamber Storage

15,851.8 cf Field - 5,557.2 cf Chambers = 10,294.6 cf Stone x 40.0% Voids = 4,117.8 cf Stone Storage

Chamber Storage + Stone Storage = 9,675.0 cf = 0.222 af

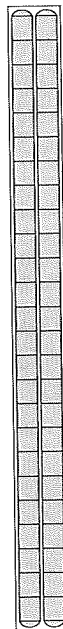
Overall Storage Efficiency = 61.0%

Overall System Size = 184.95' x 15.58' x 5.50'

50 Chambers

587.1 cy Field

381.3 cy Stone



#75

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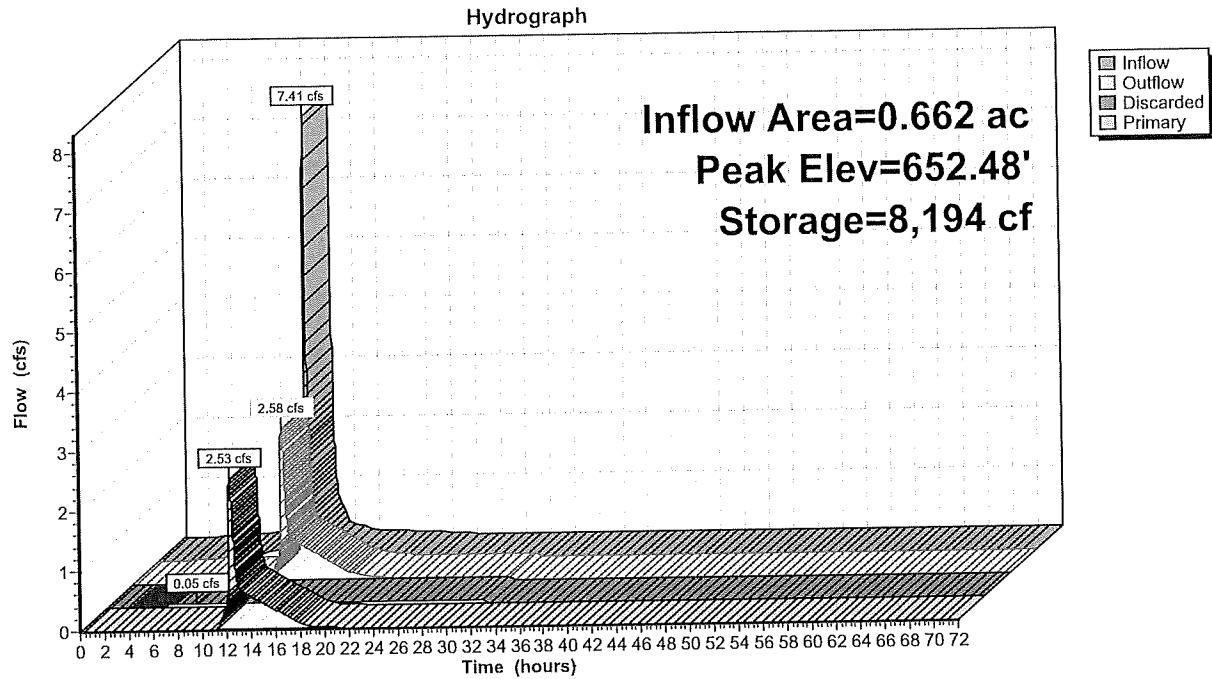
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MSE 24-hr 3 100-Year Rainfall=7.81"

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Page 36

Pond 1P: Subsurface Basin



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MSE 24-hr 3 100-Year Rainfall=7.81"

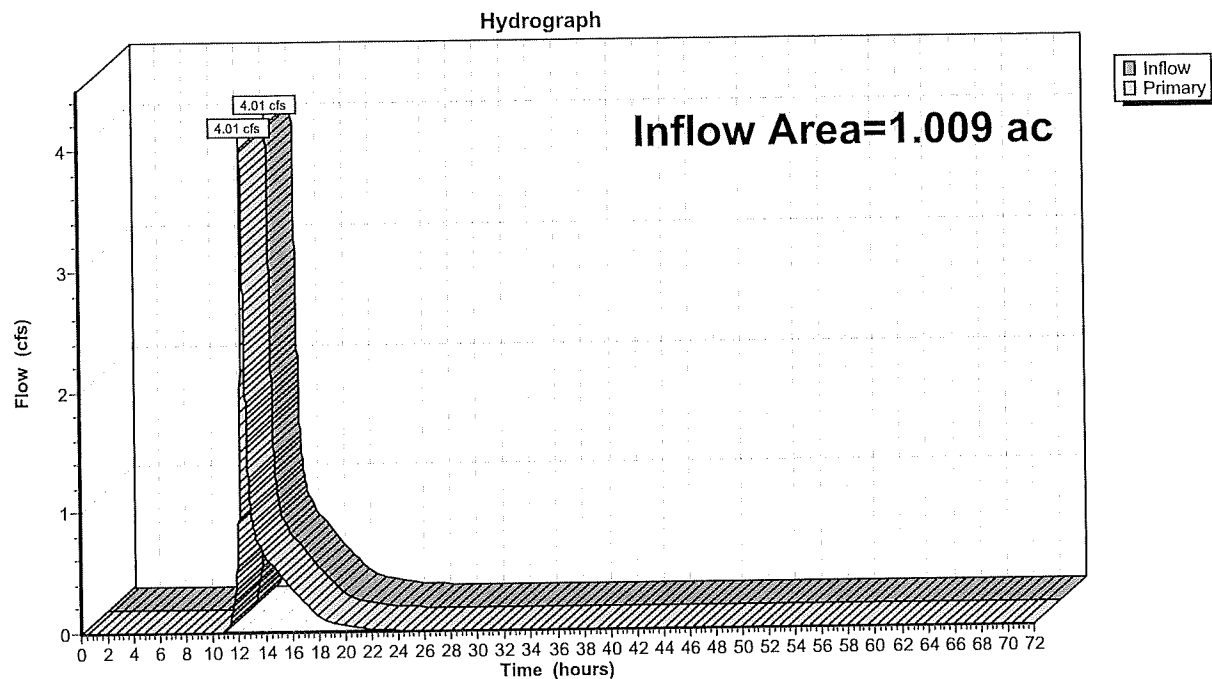
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Page 37

Summary for Link PS: Proposed Sycamore Total

Inflow Area = 1.009 ac, 78.45% Impervious, Inflow Depth = 4.68" for 100-Year event
Inflow = 4.01 cfs @ 12.24 hrs, Volume= 0.393 af
Primary = 4.01 cfs @ 12.24 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PS: Proposed Sycamore Total

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MSE 24-hr 3 100-Year Rainfall=7.81"

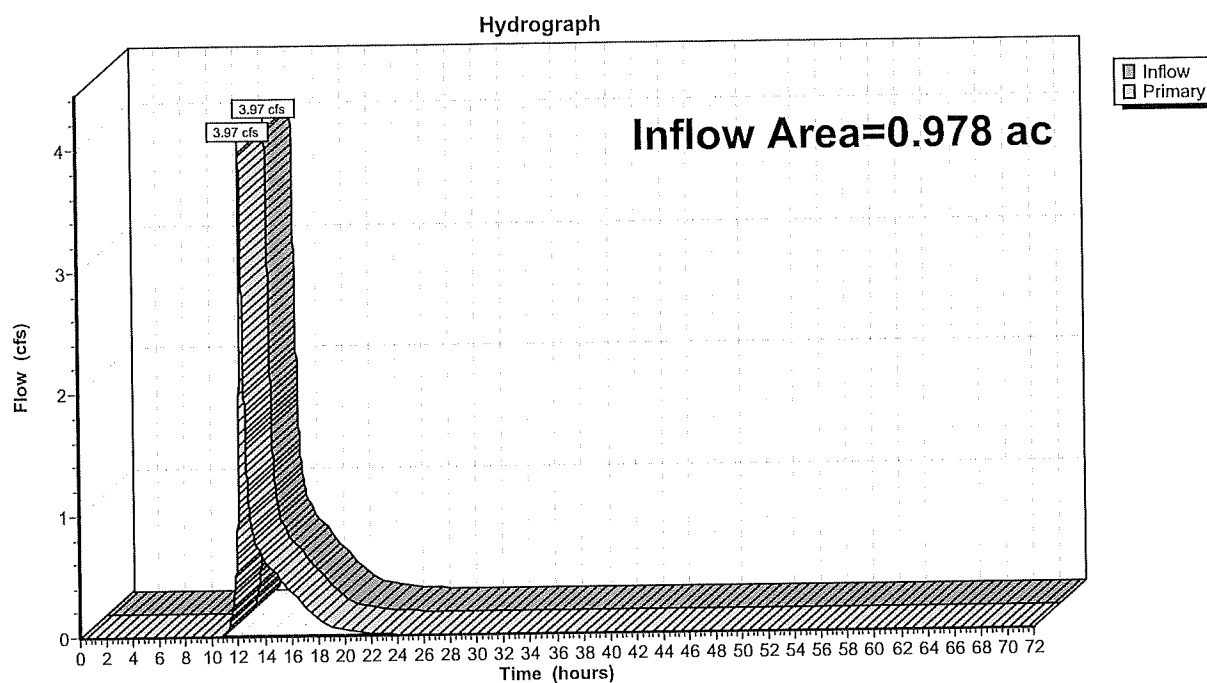
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Page 38

Summary for Link PSS: Sycamore South CB

Inflow Area = 0.978 ac, 80.64% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 3.97 cfs @ 12.24 hrs, Volume= 0.390 af
Primary = 3.97 cfs @ 12.24 hrs, Volume= 0.390 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PSS: Sycamore South CB

WAG-STRM

Prepared by Burns and McDonnell

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MSE 24-hr 3 100-Year Rainfall=7.81"

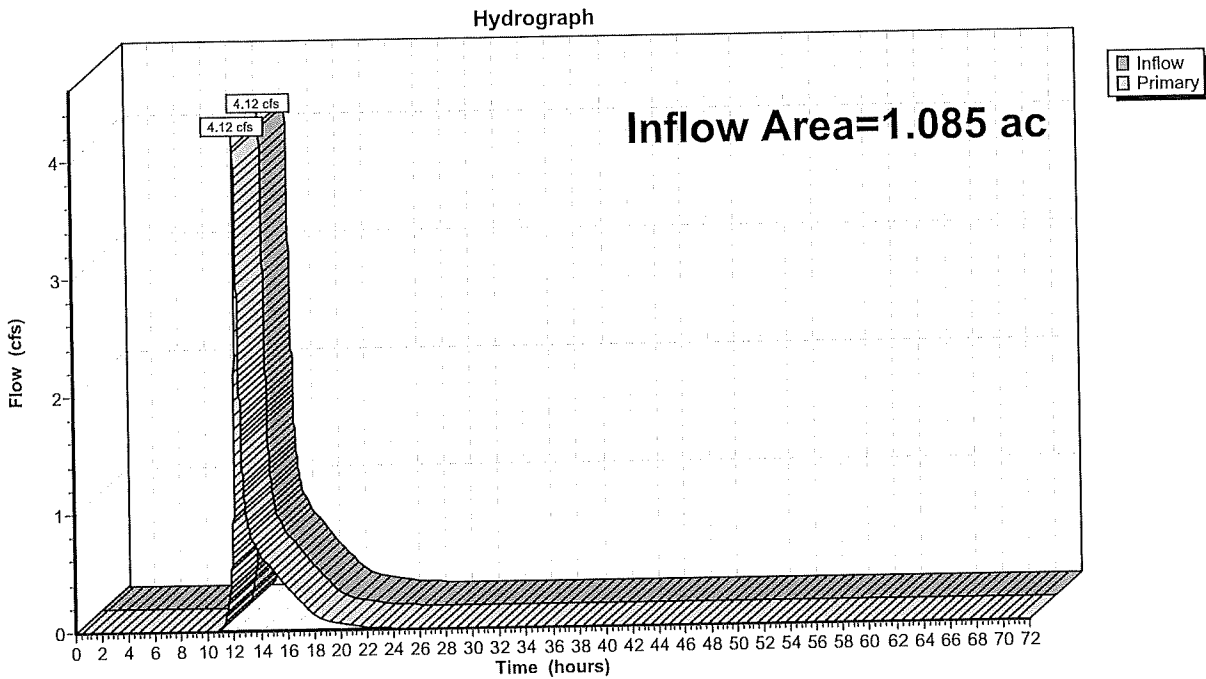
Printed 8/29/2023

Page 39

Summary for Link PT: Proposed Total

Inflow Area = 1.085 ac, 73.87% Impervious, Inflow Depth = 4.45" for 100-Year event
 Inflow = 4.12 cfs @ 12.24 hrs, Volume= 0.402 af
 Primary = 4.12 cfs @ 12.24 hrs, Volume= 0.402 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PT: Proposed Total

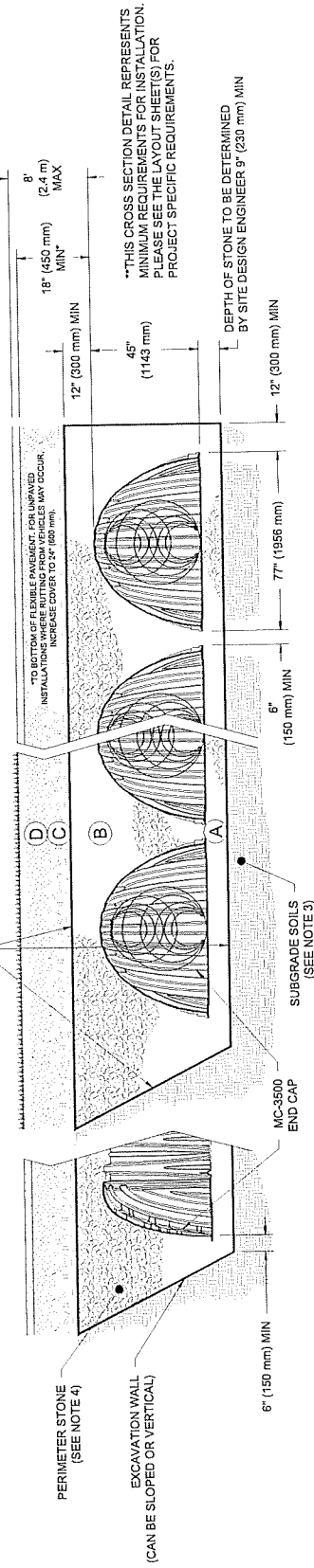
ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M14S1 A-1, A-2-4, A-3 OR AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M431 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M431 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.2,3

PLEASE NOTE:

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE ALL AROUND CLEAN, CRUSHED, ANGULAR STONE IN A & B LAYERS



*FOR COVER DEPTHS GREATER THAN 8.0' (2.4 m) PLEASE CONTACT ADS

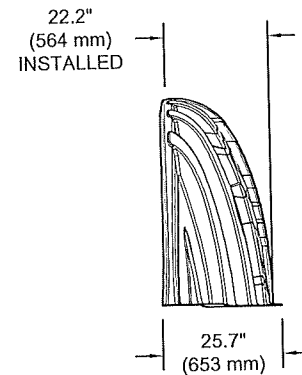
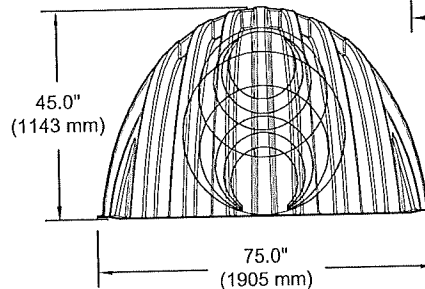
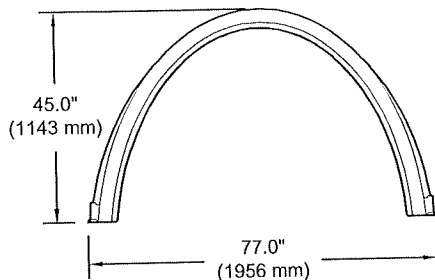
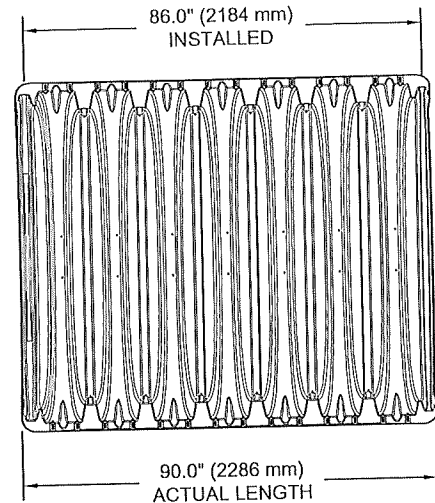
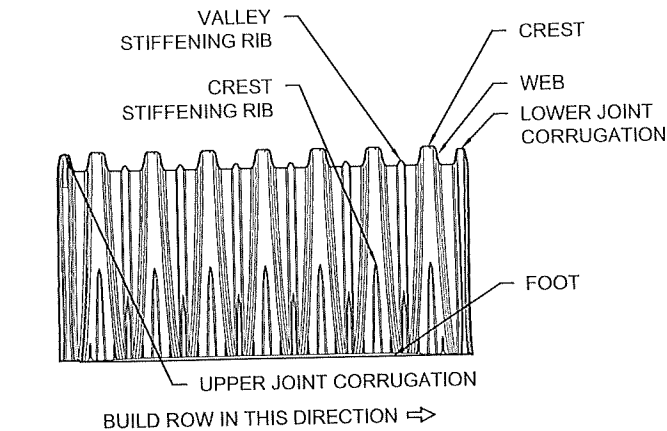
NOTES:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER CLASSIFICATION 45X75 DESIGNATION SS.
- MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/FT² AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

THE DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DIRECTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.		StormTech® Chamber System 888-692-2694 WWW.STORMTECH.COM		ADS 4640 TRUEMAN BLVD HILLIARD, OH 43026		1 OF 1 SHEET	
DATE: 8/30/22		PROJECT #: MC-3500		STANDARD CROSS SECTION		CHECKED: KJ	
DRAWN: KJ		DATE: 8/30/22		PROJECT #: MC-3500		CHECKED: KJ	

MC-3500 TECHNICAL SPECIFICATION

NTS

**NOMINAL CHAMBER SPECIFICATIONS**

SIZE (W X H X INSTALLED LENGTH)

CHAMBER STORAGE

MINIMUM INSTALLED STORAGE*

WEIGHT

77.0" X 45.0" X 86.0" (1956 mm X 1143 mm X 2184 mm)
 109.9 CUBIC FEET (3.11 m³)
 175.0 CUBIC FEET (4.96 m³)
 134 lbs. (60.8 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)

END CAP STORAGE

MINIMUM INSTALLED STORAGE*

WEIGHT

75.0" X 45.0" X 22.2" (1905 mm X 1143 mm X 564 mm)
 14.9 CUBIC FEET (0.42 m³)
 45.1 CUBIC FEET (1.28 m³)
 49 lbs. (22.2 kg)


*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" (152 mm) STONE BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

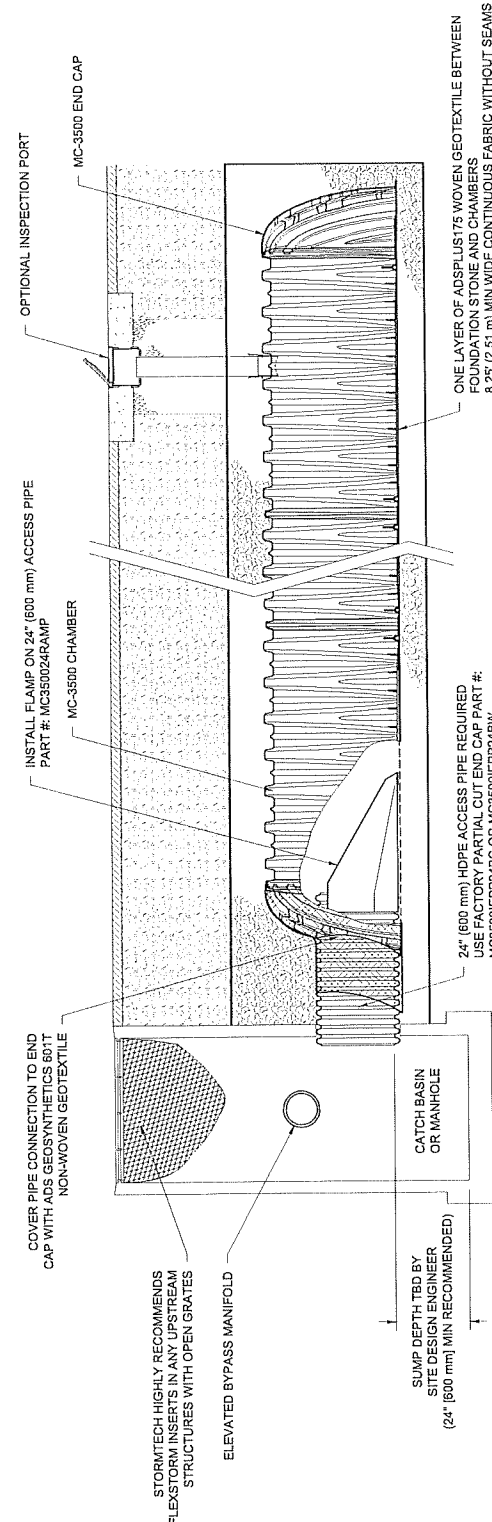
PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"
 END CAPS WITH A WELDED CROWN PLATE END WITH "C"

END CAPS WITH A WELDED CROWN PLATE END WITH "C"					
PART #	STUB	B	C		
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---		
MC3500IEPP06B		---	0.66" (17 mm)		
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---		
MC3500IEPP08B		---	0.81" (21 mm)		
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---		
MC3500IEPP10B		---	0.93" (24 mm)		
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---		
MC3500IEPP12B		---	1.35" (34 mm)		
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---		
MC3500IEPP15B		---	1.50" (38 mm)		
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---		
MC3500IEPP18TW		---	1.77" (45 mm)		
MC3500IEPP18BC					
MC3500IEPP18BW		14.48" (368 mm)	---		
MC3500IEPP24TC	24" (600 mm)				
MC3500IEPP24TW					
MC3500IEPP24BC					
MC3500IEPP24BW	2.06" (52 mm)				
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)		

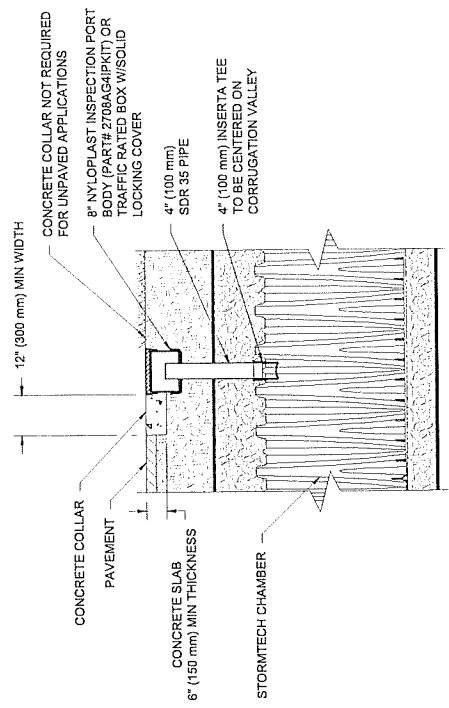
NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

 4640 TRUEMAN BLVD HILLIARD, OH 43026		StormTech® Chamber System 888-892-2694 WWW.STORMTECH.COM		THE DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE GUARANTEE OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCTS SHOWN ON THE DRAWING MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS. THE SITE DESIGN ENGINEER SHALL ASSUME RESPONSIBILITY OF THE SITE DESIGN. EXCEPT FOR THE PRODUCTS SHOWN ON THE DRAWING, THE SITE DESIGN ENGINEER SHALL ASSUME RESPONSIBILITY OF THE SITE DESIGN. EXCEPT FOR THE PRODUCTS SHOWN ON THE DRAWING, THE SITE DESIGN ENGINEER SHALL ASSUME RESPONSIBILITY OF THE SITE DESIGN.	
MC-3500		ISOLATOR ROW PLUS DETAILS		DATE: 8/03/22 DRAWN: KLU CHECKED: KLU	
PROJECT #:		DESCRIPTION		DATE DRAIN CHHD	



MC-3500 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

**4" PVC INSPECTION PORT DETAIL
(MC SERIES CHAMBER)**

INSPECTION & MAINTENANCE

- | | |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STEP 1) | <p>INSPECT ISOLATOR ROW PLUS FOR SEDIMENT</p> <p>A. INSPECTION PORTS (IF PRESENT)</p> <ol style="list-style-type: none"> 1. REMOVE OPEN LID ON NYLOPLAST INLINE DRAIN 2. REMOVE AND CLEAN FLYOPLAST FILTER, IF INSTALLED 3. USE A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG 4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL) 5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3. <p>B. ALL ISOLATOR PLUS ROWS</p> <ol style="list-style-type: none"> 1. REMOVE FLYOPLAST STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS 2. REMOVE FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE 3. IF MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY <ol style="list-style-type: none"> 1) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MAN-HOLE 2) IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3. <p>B.3.</p> |
| STEP 2) | <p>CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS</p> <ol style="list-style-type: none"> 1. A FIRED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED 2. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN 3. VACUUM STRUCTURE SUMP AS REQUIRED |
| STEP 3) | <p>REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.</p> |
| STEP 4) | <p>INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.</p> |

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Houston County, Minnesota**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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#84

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Contents

Preface.....	2
How Soil Surveys Are Made.....	5
Soil Map.....	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Houston County, Minnesota.....	13
1016—Udorthents, loamy.....	13
W—Water.....	13
References.....	15

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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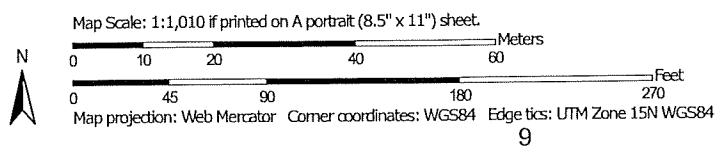
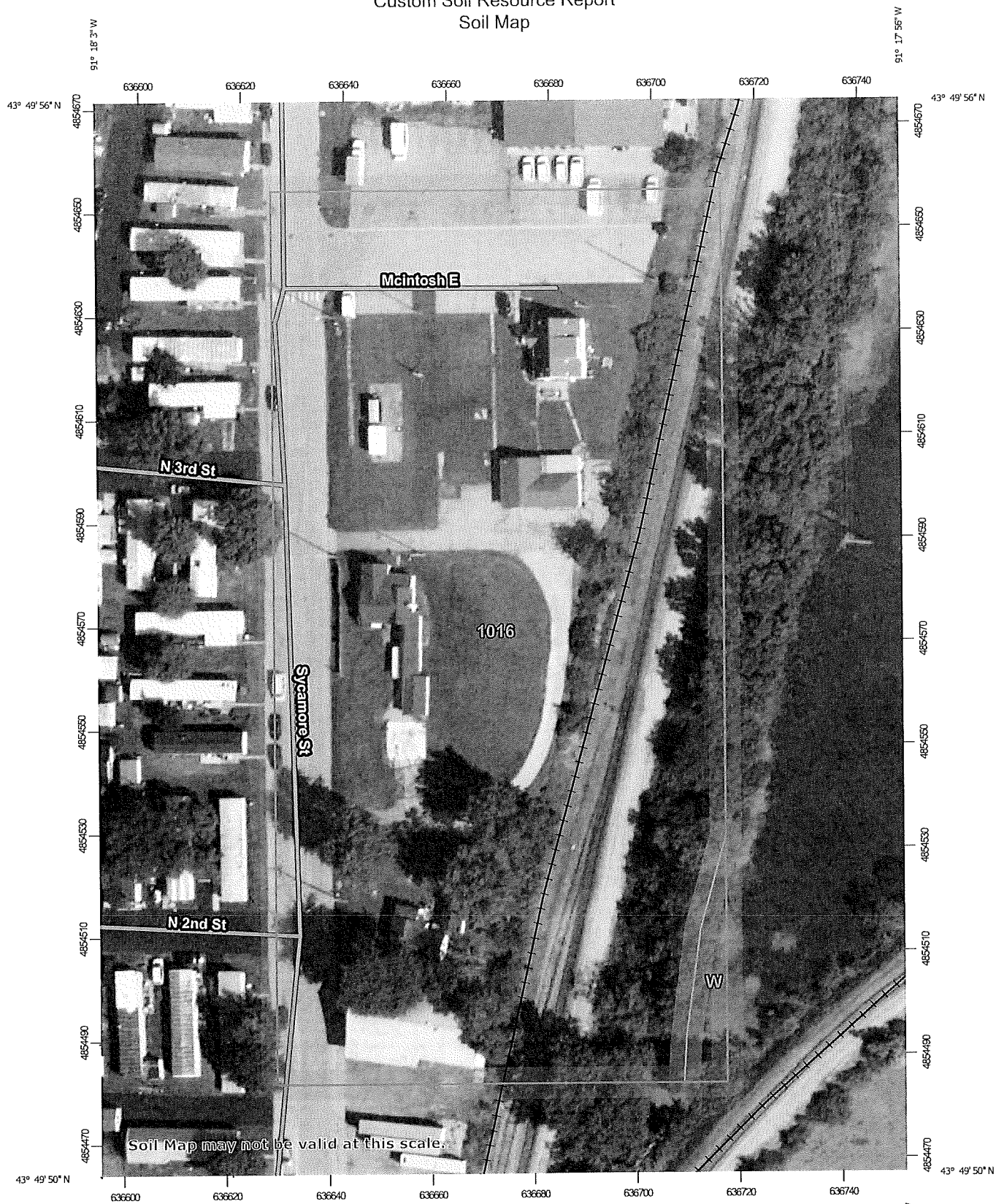
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

#91

Custom Soil Resource Report Soil Map



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,900.

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: Houston County, Minnesota
Survey Area Data: Version 17, Sep 6, 2022

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

Date(s) aerial images were photographed: Jul 31, 2020—Sep 2, 2020

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.

MAP LEGEND

 Area of Interest (AOI)	 Soil Map Unit Polygons	 Water Features
 Area of Interest (AOI)	 Soil Map Unit Lines	 Streams and Canals
 Soils	 Soil Map Unit Points	 Transportation
 Special Point Features	 Blowout	 Rails
 Blowout	 Borrow Pit	 Interstate Highways
 Borrow Pit	 Clay Spot	 US Routes
 Clay Spot	 Closed Depression	 Major Roads
 Closed Depression	 Gravel Pit	 Local Roads
 Gravel Pit	 Gravelly Spot	 Background
 Gravelly Spot	 Landfill	 Aerial Photography
 Landfill	 Lava Flow	
 Lava Flow	 Marsh or swamp	
 Marsh or swamp	 Mine or Quarry	
 Mine or Quarry	 Miscellaneous Water	
 Miscellaneous Water	 Perennial Water	
 Perennial Water	 Rock Outcrop	
 Rock Outcrop	 Saline Spot	
 Saline Spot	 Sandy Spot	
 Sandy Spot	 Severely Eroded Spot	
 Severely Eroded Spot	 Sinkhole	
 Sinkhole	 Slide or Slip	
 Slide or Slip	 Sodic Spot	
 Sodic Spot		

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1016	Udorthents, loamy	3.7	98.3%
W	Water	0.1	1.7%
Totals for Area of Interest		3.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

#94

Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Custom Soil Resource Report

Houston County, Minnesota

1016—Udorthents, loamy

Map Unit Setting

National map unit symbol: fccn
Elevation: 660 to 1,310 feet
Mean annual precipitation: 31 to 39 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 120 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy**Setting**

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Variable soil material

Typical profile

C - 0 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
 (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Hydrologic Soil Group: A
Forage suitability group: Sloping Upland, Calcareous (G105XS010MN)
Other vegetative classification: Sloping Upland, Calcareous (G105XS010MN)

W—Water**Map Unit Setting**

National map unit symbol: fch6
Elevation: 660 to 1,310 feet
Mean annual precipitation: 30 to 38 inches

Custom Soil Resource Report

Mean annual air temperature: 43 to 50 degrees F

Frost-free period: 145 to 205 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

References

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelpdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

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#99

TO: Planning Commission Members

FROM: Jason Ludwigson, Sustainability Coordinator

DATE: August 30th, 2023

RE: Final Plat Horse Track Meadows North

Attached is the final plat for the Horse Track Meadows North Development.

**CITY OF LA CRESCENT ZONING AUTHORITY
APPLICATION FOR FINAL PLAT**

The undersigned being the owner(s) of record (optionee(s) with regard to enforceable exclusion options to purchase) of the hereinafter described premises hereby makes application for a:
FINAL PLAT

TO WIT:

The City of La Crecent hearby applies for a Final Plat for the Horse Track Meadows North property.

the lands to which this application has reference are described as follows, to wit:

Please see attached for legal description.

Attached is a sketch of the site plan showing North arrow and other relevant data with reference hereto. I (we) understand that additional data may be requested by the City of La Crescent Planning Commission with regard hereto.

Dated: 08-30-2023

(Owners (s)) (Optionee(s))

**CITY OF LA CRESCENT
NOTICE OF PUBLIC HEARING
FINAL PLAT APPLICATION HORSE TRACK MEADOWS NORTH**

Notice is hereby given that the Planning Commission of the City Zoning Authority will hold a public hearing at the La Crescent Community Building, 336 South 1st St, in said City on Tuesday, September 5, 2023 at 5:50 p.m. to consider the application for a final plat. The final plat request concerns certain premises situated in said City described as follows, to wit: Parcel number 25.2229.000, 1787 County 6, Houston County, La Crescent.

Complete legal description is on file in the Building Department for review:

All persons having an interest in the matter will be given opportunity to be heard with reference thereto.

Dated: August 18, 2023

By order of the City Zoning Authority

Jason Ludwigson
Sustainability Coordinator
P. O. Box 142
La Crescent, MN 55947

OFFICIAL PLAT

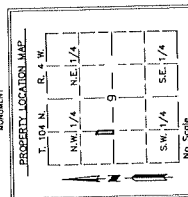
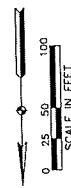
[illegible]

UTILITY EASEMENT DEFINED
An unobstructed easement for the construction and maintenance of all necessary overhead, underground or surface public utilities, including rights to conduct drainage and trimming on said easement.

U.E. = UTILITY EASEMENT

BEARING SYSTEM USED:

ALL BEARINGS ARE IN RELATIONSHIP
WITH THE HOUSTON COUNTY COORDINATE SYSTEM
(NAD 83, ADJUSTED 1995) WITH THE SOUTH LINE OF
THE NW 1/4 HAVING A BEARING OF N89°52'43"E.



whks
engineers • planners • and services

HORSE TRACK MEADOWS NORTH

INSTRUMENT OF DEDICATION

KNOW ALL PERSONS BY THESE PRESENTS: That the City of La Crescent, a Minnesota Municipal Corporation, being owner of the following described property situated in the County of Houston, State of Minnesota, to wit:

A piece or parcel of land lying in the Southwest Quarter of the Northwest Quarter of Section 9, Township 104 North, Range 4 West, of the Fifth Principal Meridian and described as follows, to wit: Starting at the Northwest corner of said Section 9, then South along the Section line a distance of 1296.6 feet to the center of the Pine Creek Road, then South 71 degrees 20 minutes 20 seconds East along said road a distance of 78.9 feet to an iron pipe on the South Right-of-Way line of the Pine Creek Road which is the point of beginning, then Northwest along the Southerly Right-of-Way line of the Pine Creek Road a distance of 153 feet to an iron pipe, then South a distance of 696.3 feet to an iron pipe, then East a distance of 132 feet to an iron pipe on the 1/16 line fence, then north along said 1/16 line fence to the point of beginning.

Containing 2.00 acres more or less.

Has caused the same to be surveyed and platted as HORSE TRACK MEADOW NORTH and do hereby dedicate to the public for public use the thoroughfares and also dedicate the easements as shown on this plat for drainage and utility purposes.

In witness whereof said CITY OF LA CRESCENT, a Minnesota Municipal Corporation, has caused these presents to be signed by its proper officer this ____ day of _____, 20__.

By _____ its _____

STATE OF MINNESOTA
COUNTY OF HOUSTON

The foregoing instrument was acknowledged before me this ____ day of _____, 20__ by _____ the _____ CITY OF LA CRESCENT, a Minnesota Municipal Corporation.

Notary Public, _____ County, Minnesota

My Commission Expires _____

CITY COUNCIL, CITY OF LA CRESCENT, MINNESOTA

This Plat of HORSE TRACK MEADOWS NORTH was approved and accepted by the City Council of the City of La Crescent, Minnesota at a regular meeting held on the ____ day of _____, 20__, at _____, Minn. and said plat is in compliance with the provisions of Minnesota Statutes, Section 503.03.

By: _____, City Clerk

COUNTY SURVEYOR

Pursuant to Chapter 389.09, laws of Minnesota, this plat has been checked and approved, this ____ day of _____, 20__.

Eric Schmitt, Houston County Surveyor

COUNTY ENGINEER

Recommended for approval this ____ day of _____, 20__.

Houston County Engineer

HOUSTON COUNTY AUDITOR/TREASURER

Taxes payable in the year 20__ on the land herein described have been paid; there are no delinquent taxes and transfer has been entered on this ____ day of _____, 20__.

Houston County Auditor/Treasurer

HOUSTON COUNTY RECORDER

Document Number _____

I hereby certify that this instrument was filed in this Office of the County Recorder for record on the ____ day of _____, 20__, at _____ o'clock ____ m. and was duly recorded in Book _____ of Page on page _____.

Houston County Recorder

SURVEYOR'S CERTIFICATE

I hereby certify that I have surveyed and platted the property described on this plat as HORSE TRACK MEADOWS NORTH; that this plat is a correct representation of the boundary survey, that all mathematical data and labels are correctly designated on the plat; that all monuments depicted on the plat have or will be correctly set with my professional skill on the plat; that all water boundaries are correctly depicted on the plat; that all easements shown and labeled on the plat, and that all public ways are shown and labeled on the plat.

Dated this ____ day of _____, 20__.

Timothy A. Huska, Land Surveyor
Minnesota License No. 44350

STATE OF MINNESOTA
COUNTY OF OLUMPTON

The foregoing Surveyor's Certificate was acknowledged before me this ____ day of _____, 20__ by Timothy A. Huska, Minnesota License No. 44350.

Notary Public, _____ County, Minnesota

My Commission Expires _____

whks
SOLUTIONS • FORMS • FIELD JOURNALS

La Crescent Planning Commission
September 2023 Meeting
55 Plus Designation for City Owned Lots – Horse Track Meadows North
Submitted by Council Member Cherryl Jostad

Action Requested

Planning Commission consider recommending to City Council that the five city owned twindo lots of Horse Track Meadows North be designated for 55 plus housing. An additional consideration is that the properties not be used for short term rentals.

Background

After the 8/8/22 Council Meeting during which Council voted to retain the original plan of 10 twin homes for the 5 city-owned lots East of the entrance to Horse Track Meadows, La Crescent Chamber of Commerce Executive Director, Julie Hatlem commented to Council Member Jostad that these twin homes would make a great place for 55+ housing.

Council Member Jostad presented the idea via email to the City Administrator, City Building and Zoning Official, City Attorney, City Development Director and City Engineer on 8/10/22. After a follow up email, as well as a call to City Hall, City Administrator Waller asked if the question should be added to the 9/12/22 agenda. Council Member Jostad agreed it would be worth discussion and action by the full Council.

This item was discussed at the 9/12/22 Council meeting. While the designation was not accepted at that time, members were open to discuss this again at a later date. With the final plat currently under consideration, this seems to be the time to re-look at this opportunity for the City to show strong support for its seniors.

Below is information provided to the Council on 9/12/22, and for consideration by the Planning Commission

Support for 55+ Housing Designation for the 5 lots (10 twin homes) owned by the City:

- **City of La Crescent *Comprehensive Plan* (2016) – Housing**
 - **Issues & Opportunities:**
 - “According to the survey, regarding the need for housing in various categories, the *highest number of respondents suggested the City needs more senior condominiums and apartments, assisted living facilities for seniors* and affordable housing.” (page 2-4) (italics added)
 - “There are concerns that empty nesters and seniors are staying in their detached single-family homes longer than they may desire due to the *lack of alternative housing options within the City such as independent*

living senior condominiums, apartments, and assisted living facilities that may be a better fit for their housing needs. This has led to a secondary concern that these homeowners are deferring home maintenance and modernization projects which may be contributing to the deterioration of the City's housing stock. The lack of other senior housing options forces these individuals to look to other communities to meet their housing needs even though they desire to stay in La Crescent." (page 2-4) (italics added)

- **Goals & Objectives:**

- Objective 3 *"There will be an increased supply and diversity of housing options for existing residents wishing to 'age in place' and remain in La Crescent as their housing needs change."* (page 2-5) (italics added)

- **Strategies:**

- Strategy 13 "Maintain a diverse mix of housing types, styles, sizes and affordability. *New subdivisions should generally include housing for all ages and family types*, but with priority to housing that appeals to families with young children. Redevelopment projects should consider opportunities to add unit types not common in the City (e.g. townhomes, which are attached, multi-story units where each unit has its own exterior entrance)." (page 2-7) (italics added)

- **Additional Support for 55+ Designation:**

- Proximity to Wieser Park, which, when fully re-developed, will offer options that may be of interest to 55+ residents:
 - Transit Stop – Access to City Bus Service, including La Crosse
 - Pickleball Courts
 - Walking Trail
 - Wieser Pavillion (this item added 7/11/23)
- Horse Track Meadows walking trail and access to Pine Creek/fishing
- Opportunity for residents of these twin homes to build a sense of 'community'
- Families in Horse Track Meadows (or the surrounding area) may desire to have grandparents live nearby
- Unsolicited inquiry from City resident 9/12/22 who saw this item on the Council agenda – comment "This is an absolutely wonderful idea."
- Other City residents have expressed interest in remaining in the City, but lack the appropriate housing for the next step
 - Voices in the community have stated a desire to continue to live independently, but downsize from larger homes, yards, etc.
- City demonstrating interest in meeting housing needs of aging residents
 - Housing built with 'aging in place' in mind

- Freeing up single-family homes for families
- Per Julie Hatlem, the Chamber of Commerce (in Sept 2022) gets inquiries about 55+ housing

Information Added For August 2023 Planning Commission Meeting:

Planning Commission Findings of Fact Regarding Senior Housing April 1 & 8, 2014 (as recorded in April 28, 2014 City Council Meeting Minutes and adopted unanimously by the Council.)

1. There is a clear and evident need for Senior Housing in La Crescent
2. That a developer with land and financing that does not require approvals exceeding a building permit could proceed on their own timetable.
3. That if a developer requires other approvals such as zoning, parkland, or TIF then a consensus of the type of desired project is essential.
4. A city supported project should include a range of housing types to serve our community with appropriate numbers of units: 36 independent living, 28 assisted living and 16 memory care. In addition it should be designed to serve non-resident needs like senior dining.
The reasons included:
 - a. Some forms of senior housing are more profitable than others so that they are best constructed together to avoid a developer from simply serving the most profitable need
 - b. A full range of housing allows seniors to 'age in place' without the need to relocate. The concept is embedded in the concept of 'communities for lifetime' and suggests attentiveness to programming as well as housing needs.
 - c. Community is formed with more able finding purpose by assisting less able residents.
 - d. There is a need for each of the types of housing
 - e. Such a design provides dining and socialization opportunities for non-resident seniors and congregate dining for independent seniors living in the facility.
 - f. There are advantages to 'scale'. Larger facilities are able to provide a greater number of services to frail and medically needy residents.
 - g. A single project is desirable as multiple smaller projects would take more total available land in our City that already has insufficient land for residential housing.
5. There is immediacy to the need for senior housing but the immediacy should not blind the city to long-term advantage of developing a project that might take longer to achieve but meet a great percentage of community need.
 - a. The discussion was of a balance between meeting the need and supporting a less desirable development. This could involve a choice of a less desirable location or waiting for a more desirable location. Or it could involve a choice

- between a development option that did not have the number of units, mix of units or desired amenities as needed,
- b. The City has a role in helping to advance Senior Housing. This role is no different than any other high priority community development or economic development opportunities.
 - c. This topic of how to get 'what the community needs' and 'how to get it fast' may lead to the greatest opportunity for tension as we move forward.
6. That the builder/designer, developer, and facility operator are all important to a quality project. Each should be represented in presentations and evaluation of options.
7. A for-profit senior housing project is anticipated.
8. A central location for senior housing is desirable.
- a. There was considerable discussion about site and what 'seniors desire'. There was general, but certainly not unanimous, agreement that a central location could be beneficial for non-resident seniors and could energize the Central Business District if located in or near the urban core. There was certain agreement that less expensive rural land at the edge of town, though it was once the trend, is not desirable for La Crescent nor desired by our residents.
 - b. The topic of the Timm land and Veterans Park was discussed. First a concept drawing should be refined to determine if the site is even feasible. It was acknowledged that the City Council would have to determine if parkland could be made available and if parkland used for Senior Housing should or must be replaced. This determination has many facets including uses that are in the Park and Recreation Plan and need that might come from displacing baseball diamonds if the Elementary School were to be relocated. Again, the City has a significant role in land discussions and evaluations.

MINUTES, REGULAR MEETING
PLANNING COMMISSION, CITY OF LA CRESCENT, MINNESOTA
JUNE 6th, 2023

The Planning Commission met at 5:30 p.m., on June 6th, 2023 in the City Council Chambers at City Hall. Upon a roll call taken and tallied by the Sustainability Coordinator, the following members were present: Greg Husmann, Dave Coleman, Dave Hanifil, Chris Langen, and Mike Welch. Jerry Steffes arrived at 5:35. City Sustainability Coordinator, Jason Ludwigson and Community Development Director Larry Kirch were also present. Ryan Stotts was absent. City attorney Skip Wieser and City Council representative Cherryll Jostad was present.

Members recited the Pledge of Allegiance.

Item 4. Approval of April 4th 2023 Meeting Minutes

Mike Welch made a motion to accept the minutes from the April 4th meeting. Dave Coleman seconded the motion.

Upon a roll call vote taken and tallied by the Sustainability Coordinator, the following Members voted in favor thereof, viz;

Greg Husmann	Yes
Chris Langen	Yes
Jerry Steffes	Yes
Dave Coleman	Yes
Dave Hanifil	Yes
Mike Welch	Yes

and none voted against the same. The motion was declared duly carried.

Item 5. Hearing Conditional Use Permit Wagon Wheel Electric Substation

Chair Husmann opened the public meeting at 5:35. Attorney Wieser address the option for the applicant to address the Conditional Use Permit, Preliminary Plat, and Variance at one time. Brian Sullivan representing Xcel Energy addressed the Planning Commission about the applications for the Conditional Use Permit, Preliminary Plat, and Variance. Brian gave an overview of the site history and projected future electrical needs for the community. Ross Lexvold, Adam Literski, and Dustin Wilson representing Xcel Energy

addressed the Planning Commission about the applications for the Conditional Use Permit, Preliminary Plat, and Variance. Public comment was received by Dick Wieser and John Radecki related to the Conditional Use Permit application for the Wagon Wheel Substation. Planning commission members presented questions about the Conditional Use Permit to the applicant. Larry Kirch presented an overview of the staff report prepared by the city for the Conditional Use Permit application. Tim Hruska with WHKS, attending via Zoom, commented that raising the road at the current Xcel substation site would be estimated at 2-3 years.

Jerry Steffes made a motion to continue the meeting the Conditional Use Permit for the Wagon Wheel Electrical Substation. Dave Hanifil seconded the motion. Upon further discussion Jerry Steffes withdrew the motion and Dave Hanifil withdrew his second. (1hr 13min)

Jerry Steffes made a motion to deny the Conditional Use Permit for the Wagon Wheel Electrical Substation. Dave Hanifil seconded the motion. The followings conditions and findings were included in the motion.

Conditions of approval and findings:

1. It is in a residential area.
2. The substation would be higher than the 10-foot fence.
3. The screenings may be hazardous to emergency personnel.
4. Other options may be available.

Upon a roll call vote taken and tallied by the Sustainability Coordinator, the following Members voted in favor thereof, viz;

Greg Husmann	No
Chris Langen	No
Jerry Steffes	Yes
Dave Coleman	No
Dave Hanifil	Yes
Mike Welch	No

The motion failed by a vote of 4-2.

Mike Welch made a motion to approve the Conditional Use Permit for the Wagon Wheel Electrical Substation. Dave Coleman seconded the motion. The followings conditions and findings were included in the motion.

Findings:

1. The CUP is consistent with section 2.23 of the stated goals of the Comprehensive Use Plan.
2. The Conditional use is consistent with the Industrial Zoning district.

Conditions of approval:

1. The applicant/developer will abide by all representations made by the applicant/developer, or their agents, made during the permitting process, to the extent those representations were not negated by the Planning Commission or City Council and to the extent they are not inconsistent with the spirit or explicit conditions of the conditional use permit.
2. That the applicant/developer complies with all applicable federal, state, and local regulations.
3. Applicant complies with submitted screening, restoration, and fence plan submitted to the City in accordance with submitted plans.
4. This CUP is conditionally approved pursuant to Chapter 12, ZONING ORDINANCE of the City of La Crescent, Minnesota, Section 12-06, Conditional Use Permits and the use shall be as set forth in accordance with the application and plans attached and associated to this case and all the provisions of the zoning ordinance and city codes applicable to this case.
5. The applicant shall comply with the city's adopted building codes for all interior and exterior building improvements and shall submit for approval interior remodeling plans prepared by a design professional or draftsman qualified to prepare such plans.
6. In accordance with Subd. 4 of Section 12.06, the Planning Commission can require berms, screening, landscaping or other facilities to protect adjacent or nearby property and require landscaping, fencing, screening, or other improvements to protect adjacent or nearby property, therefor tree plantings, landscaping and vegetative screening improvements shall be planted in accordance with Section 12.22 C-1 HIGHWAY COMMERCIAL DISTRICT Subd. 6 E.
7. Any additional site lighting shall be "Dark Sky" compliant, wherein all light sources shall be down-lit, full cutoff fixtures and shielded, and the correlated color temperature ("CCT") shall not exceed 2,700 Kelvins.
10. Any signage to be installed on the property must comply with Chapter 152 of the City Code of Ordinances.
11. Applicant will abide by the representations made by the applicant, or their agents, made during the

permitting process, to the extent those representations were not negated by the Planning Commission or City Council and to the extent they are not inconsistent with spirit or letter explicit conditions of the Conditional Use Permit.

12. Applicant complies with all federal, state, and local regulations.
Upon a roll call vote taken and tallied by the Sustainability Coordinator, the following Members voted in favor thereof, viz;

Greg Husmann	Yes
Chris Langen	Yes
Jerry Steffes	No
Dave Coleman	Yes
Dave Hanifil	No
Mike Welch	Yes

The motion carried by a vote of 4-2.

Item 6. Public Hearing Preliminary Plat Wagon Wheel Electric Substation

Public comment was received by Dick Wieser and John Radecki related to the Preliminary Plat application for the Wagon Wheel Substation. Planning commission members presented questions about the Preliminary Plat application to the applicant.

Mike Welch made a motion to approve the Preliminary Plat for the Wagon Wheel Electrical Substation. Dave Coleman seconded the motion. The followings conditions and findings were included in the motion.

Conditions of Approval:

1. The applicant/developer will abide by all representations made by the applicant/developer, or their agents, made during the permitting process, to the extent those representations were not negated by the Planning Commission or City Council and to the extent they are not inconsistent with the spirit or explicit conditions of the conditional use permit.
2. That the applicant/developer complies with all applicable federal, state, and local regulations.
3. No sitework shall commence until after approval of the final plat.
4. That the alley shown on the preliminary plat is vacated prior to the approval of the final plat.

5. Developer provides additional information requested by WHKS dated May 30, 2023 to satisfaction of City Engineer.

Findings:

1. The property owner proposes to use the property in a reasonable manner permitted by the Zoning Ordinance
2. The request is in harmony with the general purposes and intent of the ordinance and consistent with the comprehensive plan.
3. Developer has demonstrated an increased need for the substation.
4. Developer/applicant has provided sufficient screening for the project by way of their variance application.

Upon a roll call vote taken and tallied by the Sustainability Coordinator, the following Members voted in favor thereof, viz;

Greg Husmann	Yes
Chris Langen	Yes
Jerry Steffes	No
Dave Coleman	Yes
Dave Hanifil	No
Mike Welch	Yes

The motion carried by a vote of 4-2.

Item 7. Meeting Variance for Wagon Wheel Electric Substation

Jason Ludwigson presented an overview of the staff report prepared by the city for the Variance application. Public comment was received by Dick Wieser and John Radecki related to the Variance application for the Wagon Wheel Substation. Planning commission members presented questions about the Variance application to the applicant.

Chris Langen made a motion to approve the Variance for the Wagon Wheel Electrical Substation. Mike Welch seconded the motion. The following conditions and findings were included in the motion.

Conditions of Approval:

1. The applicant/developer will abide by all representations made by the applicant/developer, or their agents, made during the permitting process, to the extent those representations were not negated by the Planning Commission or City Council and to the extent they are not inconsistent with the spirit or explicit conditions of the conditional use permit.
2. That the applicant/developer complies with all applicable federal, state, and local regulations.
3. Applicant complies with screening, restoration, and fence plan prepared by Barr Engineering contained on pages 99-100 of the packet.
4. Applicant receives approval to vacate the alley before La Crescent City Council.
5. Employee parking be provided onsite.
6. Applicant complies with submitted screening, restoration, and fence plan submitted to the City in accordance with submitted plans.
7. The fence complies with applicable setback distances for the Shoreland Mixed-Use/I - Industrial District.
8. The applicant plants trees and shrubs as screening that are native to Minnesota. The area outside the fence shall be planted with low growing fescue grass or a short native prairie mix.
9. The fence be an industrial fence that has a decorative component. The fence uses materials that are durable and is made from recyclable materials or materials that are easily recycled at their end of life.

Upon a roll call vote taken and tallied by the Sustainability Coordinator, the following Members voted in favor thereof, viz;

Greg Husmann	Yes
Chris Langen	Yes
Jerry Steffes	No
Dave Coleman	Yes
Dave Hanifil	No
Mike Welch	Yes

The motion carried by a vote of 4-2.

Jason Ludwigson read the following statement: Upon approval or denial of a variance request by the Board of Adjustment, an applicant or other aggrieved party may file an appeal in writing to the City Council within (10) days of the decision, otherwise the decision by the Board of Adjustment becomes final.

Item 8. Review Planning and Zoning Deadlines and Notice Requirements

Jason Ludwigson and Larry Kirch reviewed the Planning and Zoning Deadlines and Notice Requirements document with the members.

Item 9: Beekeeping Ordinance

Jason Ludwigson reviewed the draft beekeeping ordinances noting that the draft included changes to the language about swarming and number of hives permitted. Discussion followed. No action was taken by the planning commission.

Item 10: Walnut Street Planning Project

Larry Kirch reviewed the Walnut Street Planning project in connection with the Downtown Plan. The city approached the LAPC for a corridor plan. LAPC approved funds for the corridor plan study. Upcoming public input sessions will be held June 13th at the Farmers Market and a public open house meeting at the Community Building Wednesday June 14th from 6-8 p.m. Upcoming input session will also include property owners and business owners.

Item 11. Updates from the city council by Cherryl Jostad

Cherryl provided an update on city council actions that would be relevant to the planning commission.

Members agreed to the next Planning Commission meeting date of August 8th, 2023 at 5:30 p.m. The meeting duly adjourned at 7:31 PM.