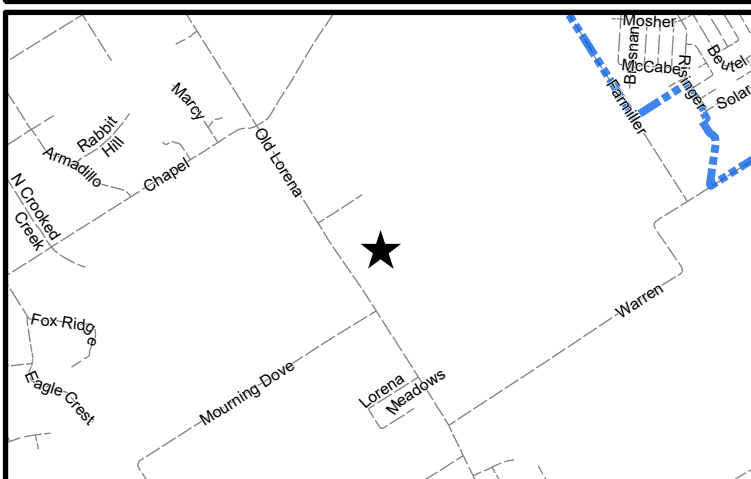


Preliminary Plat of the Prairie View Estates Addition (ETJ)



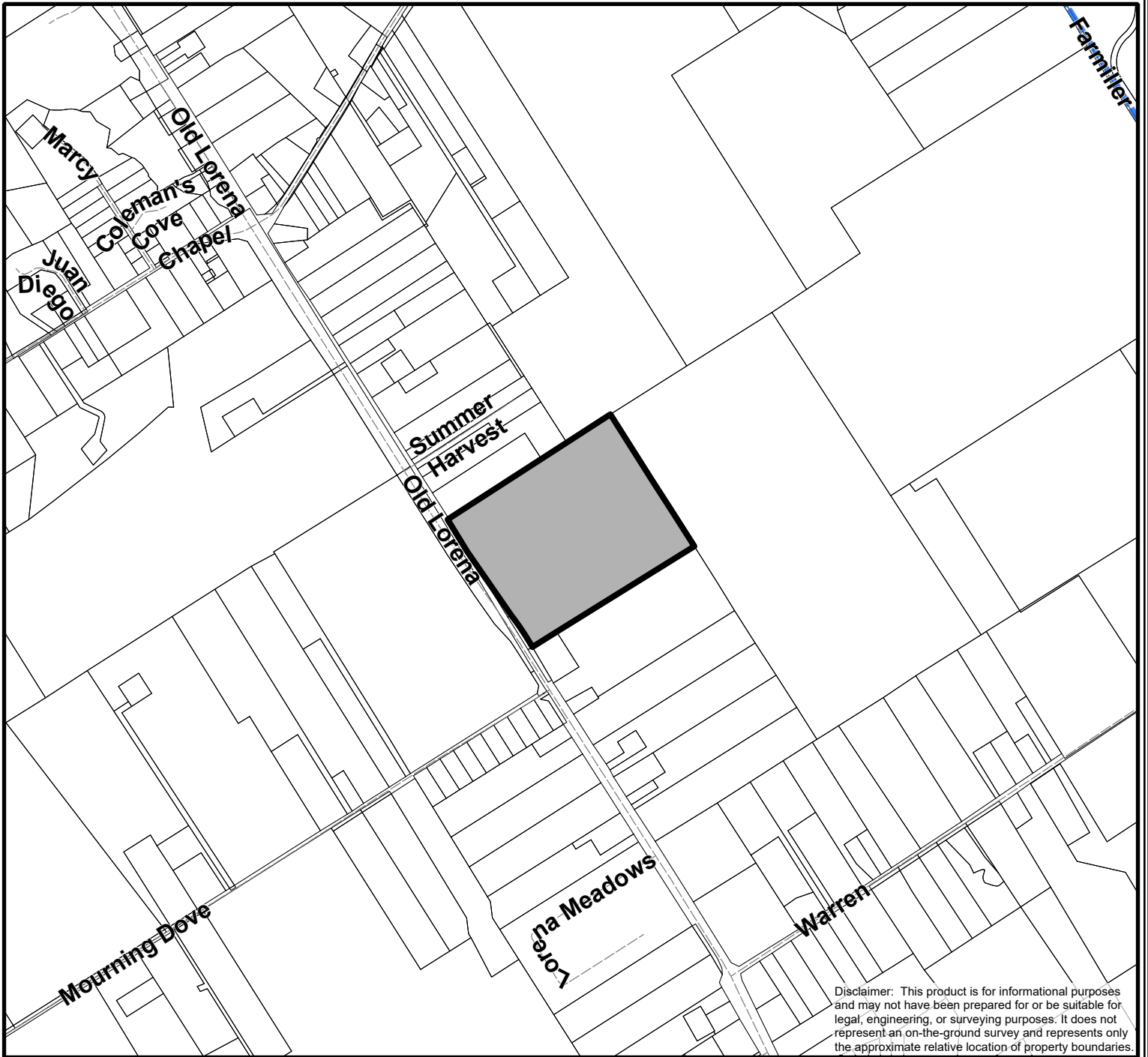
- Waco City Limits
- Prairie View Estates Addition (ETJ)



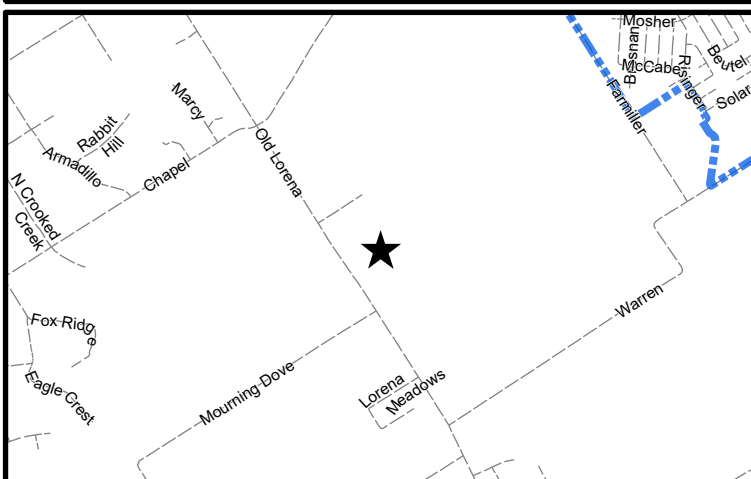
August 2022



Preliminary Plat of the Prairie View Estates Addition (ETJ)



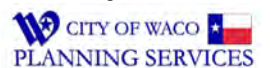
Disclaimer: This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

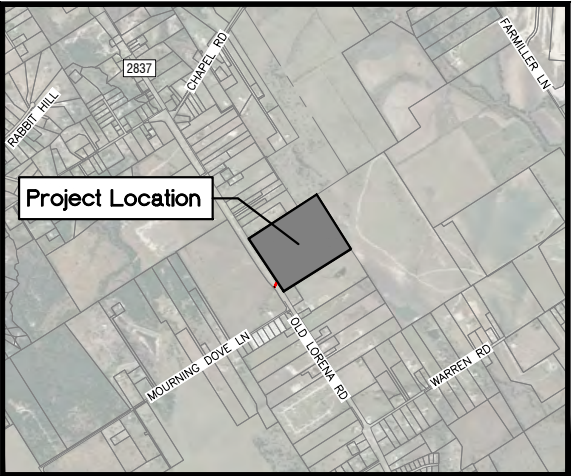


- Waco City Limits
- Prairie View Estates Addition (ETJ)



August 2022





SITE VICINITY MAP = N.T.S.

OWNER/DEVELOPER:

PAUL BARBIERI
MID-TEX DEVELOPERS, LLC
5279 N. HWY 6, WACO, TEXAS 76712

REGISTERED PROFESSIONAL LAND SURVEYOR:

CELCO SURVEYING
301 MAIN PLAZA, SUITE 387, NEW BRAUNFELS, TEXAS 78130

REGISTERED PROFESSIONAL ENGINEER:

CLARK ASSOCIATES, PLLC
215 N. MAIN STREET, TEMPLE, TEXAS 76501
F-23184

STATE OF TEXAS

COUNTY OF BELL

I, THE UNDERSIGNED, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, HEREBY CERTIFY THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN THIS PLAT.



Monty L. Clark
10-7-2022
MONTY L. CLARK
REGISTRATION NUMBER 90894

OWNER/DEVELOPER
PAUL BARBIERI, MID-TEX DEVELOPERS, LLC
5279 N. HWY 6, WACO, TEXAS 76712

DATE:

RECOMMENDED FOR PRELIMINARY APPROVAL:

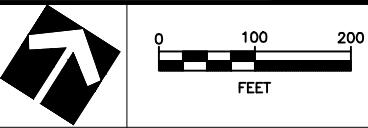
STATE OF TEXAS §
COUNTY OF MCLENNAN §

APPROVAL OF THIS PRELIMINARY PLAT BY THE CITY PLAN COMMISSION AND WACO CITY COUNCIL SHALL BE DEEMED AN EXPRESSION OF APPROVAL OF THE LAYOUT SUBMITTED ON THE PRELIMINARY PLAT AS A GUIDE TO THE FINAL ENGINEERING OF STREETS, WATER, SEWER, AND OTHER REQUIRED IMPROVEMENTS AND UTILITIES AND TO THE PREPARATION OF THE FINAL PLAT. APPROVAL OF THIS PRELIMINARY PLAT SHALL NOT CONSTITUTE AUTOMATIC APPROVAL OF THE FINAL PLAT, NOR BE CONSIDERED AUTHORIZATION TO BEGIN CONSTRUCTION OR SELL LOTS. APPROVAL OF THE PRELIMINARY PLAT SHALL NOT CONSTITUTE A GUARANTEE OR WARRANTY, EITHER IMPLIED OR OTHERWISE THAT ALL OTHER APPLICABLE CODES AND ORDINANCES OF THE CITY OF WACO HAVE BEEN COMPLIED WITH. IT SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER TO ENSURE THAT ALL APPLICABLE REQUIREMENTS OF THE CITY OF WACO RELATIVE TO THE SUBDIVIDING AND DEVELOPMENT OF PROPERTY HAVE BEEN MET.

WITNESS MY HAND THIS THE _____ DAY OF _____, 2022,
THIS PRELIMINARY PLAT WAS DULY APPROVED BY THE CITY OF WACO.

SIGNED:

MICHELLE HICKS
CITY SECRETARY



DEVELOPMENT STATISTICS:

TOTAL ACREAGE: 50.85 AC.
TOTAL RESIDENTIAL LOTS: 42 LOTS
DETENTION TRACT A: 2.15 AC.

PROPOSED STREETS

RIGHT-OF-WAY WIDTH 50'
STREET WIDTH 32'

EASEMENTS

(UNLESS OTHERWISE NOTED)

10' UTILITY EASEMENT ALONG ALL ROAD FRONTAGE

GENERAL NOTES:

1. WATER IS TO BE SUPPLIED BY CITY OF WACO, CCN #10039.
2. ELECTRICITY TO BE SUPPLIED BY ONCOR.
3. PROPOSED LAND USAGE TO BE SINGLE FAMILY RESIDENTIAL.

THE SURVEY AS SHOWN WAS PREPARED FROM AN ON-THE-GROUND SURVEY PERFORMED BY CELCO SURVEYING ON THE 21ST DAY OF MAY 2021. BEARINGS ARE BASED ON THE STATE PLAN COORDINATE SYSTEM, TEXAS CENTRAL ZONE, NAD 83.

PRELIMINARY PLAT SHOWING 50.852 ACRES OF LAND OUT OF THE A.B.J WINFREY SURVEY, ABSTRACT NUMBER 884, IN MCLENNAN COUNTY, TEXAS, AND BEING ALL OF THAT SAME TRACT CONVEYED TO MID-TEX DEVELOPERS, LLC IN A DEED RECORDED IN DOCUMENT NO. 2022019400, OFFICIAL PUBLIC RECORDS OF MCLENNAN COUNTY, TEXAS.



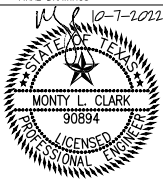
PRAIRIE VIEW ESTATES
NEW RESIDENTIAL DEVELOPMENT
WACO ETJ, TEXAS

PRELIMINARY PLAT
FOR REVIEW PURPOSES ONLY

DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF MONTY L. CLARK P.E. 90894, CLARK ASSOCIATES PLLC FIRM NO: F-23184.
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☐ FOR CONSTRUCTION: FINAL DRAWINGS

Designed	MLC
Drafted	JRC
Project No	222359.00
Plot Date	10-7-2022







0100200
FEET

LEGEND

XX

DRAINAGE AREA DESIGNATION

AREA

DRAINAGE AREA IN ACRES

RATIONAL METHOD EQUATION
 $Q = (C) (I) (A)$

DRAINAGE BASIN AREA DIVIDE

DIRECTIONAL FLOW ARROW


DRAINAGE CALCULATIONS

PRE DEVELOPMENT						
AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	DISCHARGE (cfs)
Area 1	50.85	30	0.30	2	3.12	47.54
Area 1	50.85	30	0.30	5	4.00	60.97
Area 1	50.85	30	0.30	10	4.56	69.48
Area 1	50.85	30	0.30	25	5.37	81.95
Area 1	50.85	30	0.30	50	5.91	90.08
Area 1	50.85	30	0.30	100	6.66	101.55

"C" VALUES	
IMPERVIOUS	0.95
RESIDENTIAL	0.40
AGRICULTURAL/GRASS	0.30

COMPOSITE "C" CALCULATION

COMPOSITE "C" = $\frac{A1 \times C1 + A2 \times C2 + \dots}{A1 + A2 + \dots}$

COVER (ACRES)	A1-PRE
IMPERVIOUS	0.04
SF LOTS	0.00
GRASS	50.81
TOTAL	50.85

TIME OF CONCENTRATION CALCULATIONS

	A1-PRE
SHEET FLOW	100' @ 0.6% 13.74 MIN.
CONCENTRATED FLOW UNPAVED	1651' @ 1.1% 16.12 MIN.
PAVED	-
CHANNEL FLOW	-
TOTAL	29.9 MIN.



CLARK ASSOCIATES
CIVIL ENGINEERING • DESIGN • PLANNING

PRAIRIE VIEW ESTATES
NEW RESIDENTIAL DEVELOPMENT
WACO ETJ, TEXAS

SITE PRE-DEVELOPMENT DRAINAGE MAP

DRAWING STATUS

FOR REVIEW

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FOR CONSTRUCTION

FINAL DRAWINGS

10-7-2022

Designed

MLC

Drafted

JRC

Project No

222359.00

Plot Date

10-7-2022

2

Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

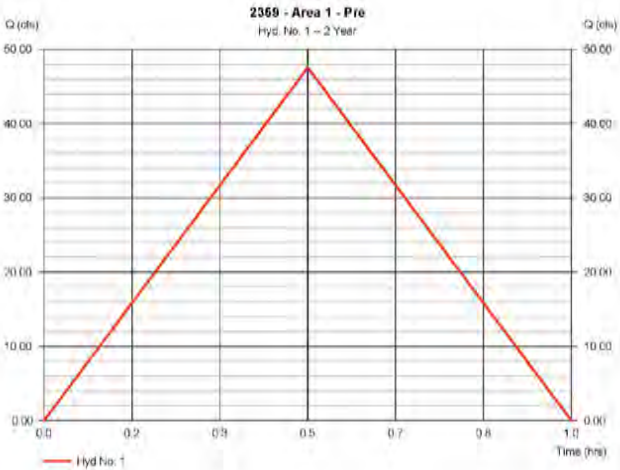
Thursday, 08 / 30 / 2022

Hyd. No. 1

2359 - Area 1 - Pre

Hydrograph type	= Rational	Peak discharge	= 47.54 cfs
Storm frequency	= 2 yrs	Time to peak	= 0.50 hrs
Time interval	= 1 min	Hyd. volume	= 85,568 cuft
Drainage area	= 50.850 ac	Runoff coeff.	= 0.3"
Intensity	= 3.116 in/hr	Tc by TR55	= 30.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = [(0.640 x 6.85) + (50.810 x 0.30)] / 50.850



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

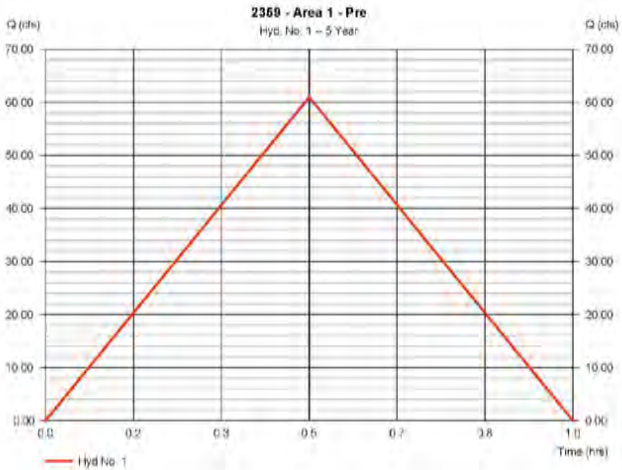
Thursday, 08 / 30 / 2022

Hyd. No. 1

2359 - Area 1 - Pre

Hydrograph type	= Rational	Peak discharge	= 60.97 cfs
Storm frequency	= 5 yrs	Time to peak	= 0.50 hrs
Time interval	= 1 min	Hyd. volume	= 109,753 cuft
Drainage area	= 50.850 ac	Runoff coeff.	= 0.3"
Intensity	= 3.997 in/hr	Tc by TR55	= 30.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = [(0.640 x 6.85) + (50.810 x 0.30)] / 50.850



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

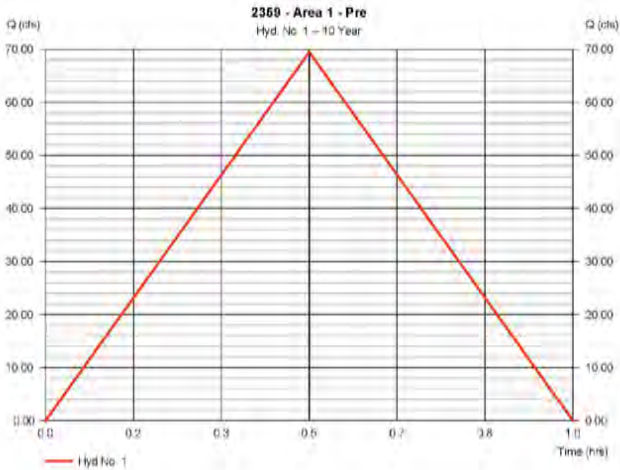
Thursday, 08 / 30 / 2022

Hyd. No. 1

2359 - Area 1 - Pre

Hydrograph type	= Rational	Peak discharge	= 69.48 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.50 hrs
Time interval	= 1 min	Hyd. volume	= 125,063 cuft
Drainage area	= 50.850 ac	Runoff coeff.	= 0.3"
Intensity	= 4.555 in/hr	Tc by TR55	= 30.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = [(0.640 x 6.85) + (50.810 x 0.30)] / 50.850



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

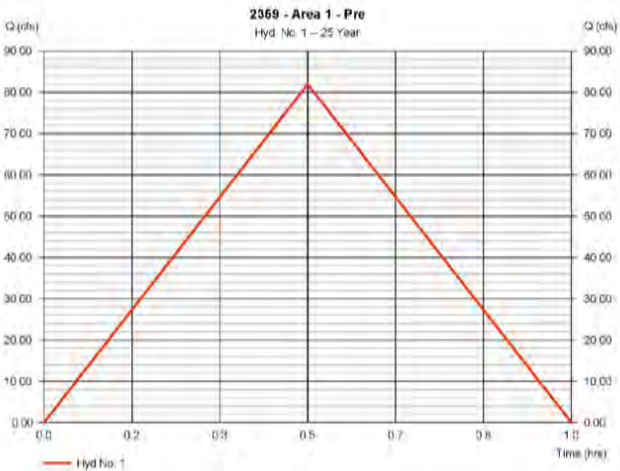
Thursday, 08 / 30 / 2022

Hyd. No. 1

2359 - Area 1 - Pre

Hydrograph type	= Rational	Peak discharge	= 81.95 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.50 hrs
Time interval	= 1 min	Hyd. volume	= 147,516 cuft
Drainage area	= 50.850 ac	Runoff coeff.	= 0.3"
Intensity	= 5.372 in/hr	Tc by TR55	= 30.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = [(0.640 x 6.85) + (50.810 x 0.30)] / 50.850



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

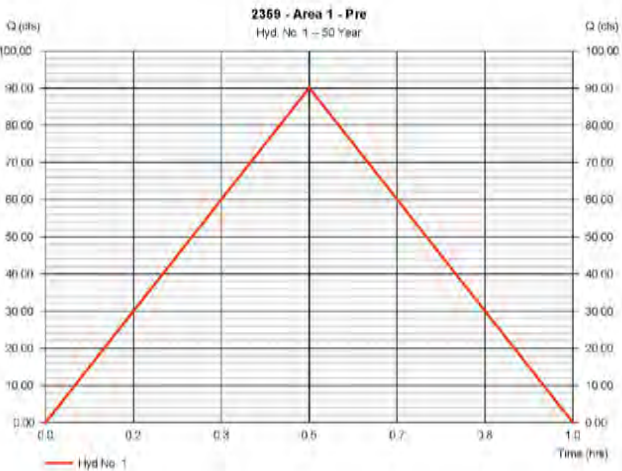
Thursday, 08 / 30 / 2022

Hyd. No. 1

2359 - Area 1 - Pre

Hydrograph type	= Rational	Peak discharge	= 90.08 cfs
Storm frequency	= 50 yrs	Time to peak	= 0.50 hrs
Time interval	= 1 min	Hyd. volume	= 162,148 cuft
Drainage area	= 50.850 ac	Runoff coeff.	= 0.3"
Intensity	= 5.905 in/hr	Tc by TR55	= 30.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = [(0.640 x 6.85) + (50.810 x 0.30)] / 50.850



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

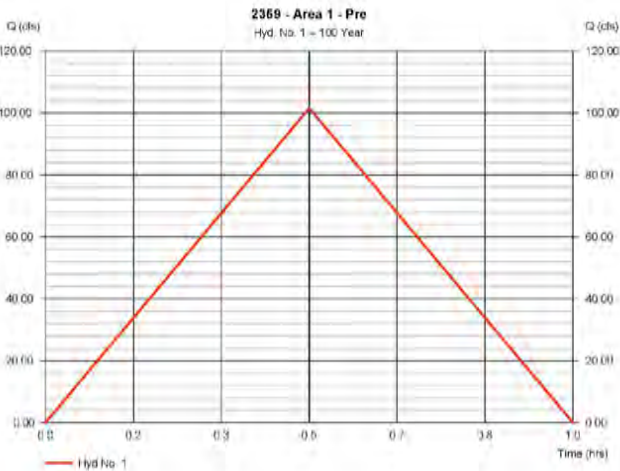
Thursday, 08 / 30 / 2022

Hyd. No. 1

2359 - Area 1 - Pre

Hydrograph type	= Rational	Peak discharge	= 101.55 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.50 hrs
Time interval	= 1 min	Hyd. volume	= 182,787 cuft
Drainage area	= 50.850 ac	Runoff coeff.	= 0.3"
Intensity	= 6.857 in/hr	Tc by TR55	= 30.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = [(0.640 x 6.85) + (50.810 x 0.30)] / 50.850



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT
WACO, TX, TEXAS

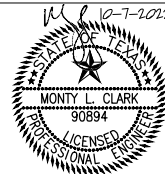
PRE-DEVELOPMENT
DRAINAGE CALCULATIONS

DRAWING STATUS

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MONTY L. CLARK, P.E., 90894, CLARK ASSOCIATES PLLC, FIRM NO: F-23184.
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CAN BE CONSIDERED COMPLETE.

☐ FOR CONSTRUCTION
FINAL DRAWINGS

Designed	MLC
Drafted	JRC
Project No	222359.00
Plot Date	10-7-2022





DRAINAGE CALCULATIONS

POST DEVELOPMENT						
AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	DISCHARGE (cfs)
Area 1	38.17	20	0.46	2	3.98	69.84
Area 1	38.17	20	0.46	5	5.06	88.79
Area 1	38.17	20	0.46	10	5.75	100.88
Area 1	38.17	20	0.46	25	6.77	118.88
Area 1	38.17	20	0.46	50	7.41	130.01
Area 1	38.17	20	0.46	100	8.38	147.10
Area 2	2.71	17	0.40	2	4.35	4.72
Area 2	2.71	17	0.40	5	5.52	5.98
Area 2	2.71	17	0.40	10	6.26	6.79
Area 2	2.71	17	0.40	25	7.38	7.99
Area 2	2.71	17	0.40	50	8.05	8.73
Area 2	2.71	17	0.40	100	9.12	9.89
Area 3	9.97	23	0.40	2	3.67	14.62
Area 3	9.97	23	0.40	5	4.68	18.65
Area 3	9.97	23	0.40	10	5.32	21.21
Area 3	9.97	23	0.40	25	6.27	25.00
Area 3	9.97	23	0.40	50	6.87	27.29
Area 3	9.97	23	0.40	100	7.76	30.95

"C" VALUES	
IMPERVIOUS	0.95
RESIDENTIAL	0.40
AGRICULTURAL/GRASS	0.30

COMPOSITE "C" CALCULATION

COMPOSITE "C" = $\frac{A1 \times C1 + A2 \times C2 + \dots}{A1 + A2 + \dots}$

	A1-POST	A2-POST	A3-POST
COVER (ACRES)			
IMPERVIOUS	4.57	0.00	0.00
RESIDENTIAL	3.07	2.71	9.97
AGRICULTURAL/GRASS	30.53	0.00	0.00
TOTAL	38.17	2.71	9.97

TIME OF CONCENTRATION CALCULATIONS

	A1-POST	A2-POST	A3-POST
SHEET FLOW	100'@1.00% 11.42 MIN.	100'@0.70% 13.17 MIN.	100'@0.70% 13.17 MIN.
CONCENTRATED FLOW UNPAVED	-	337'@0.74% 4.05 MIN.	1244'@1.00% 9.58 MIN.
PAVED	1150'@2.20% 6.36 MIN.	-	-
PAVED	225'@1.00% 1.84 MIN.	-	-
CHANNEL FLOW	-	-	-
TOTAL	19.62 MIN.	17.22 MIN.	22.75 MIN.

LEGEND

DRAINAGE DESIGN CRITERIA

XX — DRAINAGE AREA DESIGNATION
AREA — DRAINAGE AREA IN ACRES

RATIONAL METHOD EQUATION
 $Q = (C) (I) (A)$

DRAINAGE BASIN AREA DIVIDE
— | — | — | — | — | —

DIRECTIONAL FLOW ARROW
→

CLARK ASSOCIATES
CIVIL ENGINEERING • DESIGN • PLANNING

PRAIRIE VIEW ESTATES
NEW RESIDENTIAL DEVELOPMENT
WACO, TX, TEXAS

SITE POST-DEVELOPMENT DRAINAGE MAP

DRAWING STATUS

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☐ FOR CONSTRUCTION
FINAL DRAWINGS

Designed	MLC
Drafted	JRC
Project No	222359.00
Plot Date	10-7-2022

4

Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/8/2022			
Hyd. No. 6			
2324 POST-DEVELOPMENT AREA 1			
Hydrograph type	= Rational	Peak discharge	= 91.47 cfs
Storm frequency	= 2 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 109,769 cuft
Drainage area	= 42,590 ac	Runoff coeff.	= 0.54*
Intensity	= 3.977 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(5,920 x 0.85) + (4,090 x 0.30) + (25,620 x 0.40) + (60,960 x 0.85)] / 42,590



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/8/2022			
Hyd. No. 6			
2324 POST-DEVELOPMENT AREA 1			
Hydrograph type	= Rational	Peak discharge	= 155.72 cfs
Storm frequency	= 25 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 186,863 cuft
Drainage area	= 42,590 ac	Runoff coeff.	= 0.54*
Intensity	= 6.771 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(5,920 x 0.85) + (4,090 x 0.30) + (25,620 x 0.40) + (60,960 x 0.85)] / 42,590



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/8/2022			
Hyd. No. 6			
2324 POST-DEVELOPMENT AREA 1			
Hydrograph type	= Rational	Peak discharge	= 116.31 cfs
Storm frequency	= 5 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 139,569 cuft
Drainage area	= 42,590 ac	Runoff coeff.	= 0.54*
Intensity	= 5.057 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(5,920 x 0.85) + (4,090 x 0.30) + (25,620 x 0.40) + (60,960 x 0.85)] / 42,590



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/8/2022			
Hyd. No. 6			
2324 POST-DEVELOPMENT AREA 1			
Hydrograph type	= Rational	Peak discharge	= 170.30 cfs
Storm frequency	= 50 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 204,359 cuft
Drainage area	= 42,590 ac	Runoff coeff.	= 0.54*
Intensity	= 7.405 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(5,920 x 0.85) + (4,090 x 0.30) + (25,620 x 0.40) + (60,960 x 0.85)] / 42,590



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/8/2022			
Hyd. No. 6			
2324 POST-DEVELOPMENT AREA 1			
Hydrograph type	= Rational	Peak discharge	= 132.14 cfs
Storm frequency	= 10 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 155,563 cuft
Drainage area	= 42,590 ac	Runoff coeff.	= 0.54*
Intensity	= 5.745 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(5,920 x 0.85) + (4,090 x 0.30) + (25,620 x 0.40) + (60,960 x 0.85)] / 42,590



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/8/2022			
Hyd. No. 6			
2324 POST-DEVELOPMENT AREA 1			
Hydrograph type	= Rational	Peak discharge	= 192.68 cfs
Storm frequency	= 100 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 231,212 cuft
Drainage area	= 42,590 ac	Runoff coeff.	= 0.54*
Intensity	= 8.378 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(5,920 x 0.85) + (4,090 x 0.30) + (25,620 x 0.40) + (60,960 x 0.85)] / 42,590



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT

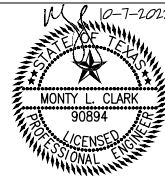
WACO, TEXAS

POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 1

DRAWING STATUS

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☐ FOR CONSTRUCTION FINAL DRAWINGS		Designed	MLC
		Drafted	JRC
		Project No	222359.00
		Plot Date	10-7-2022



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/8/2022

Hyd. No. 7

2324 POST-DEVELOPMENT AREA 2

Hydrograph type	= Rational	Peak discharge	= 46.49 cfs
Storm frequency	= 2 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 61,361 cuft
Drainage area	= 24,700 ac	Runoff coeff.	= 0.5*
Intensity	= 3.784 in/hr	Tc by TR55	= 22.47 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4,286 x 6.85) + (20,420 x 6.40)] / 24,700



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/8/2022

Hyd. No. 7

2324 POST-DEVELOPMENT AREA 2

Hydrograph type	= Rational	Peak discharge	= 79.37 cfs
Storm frequency	= 25 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 104,770 cuft
Drainage area	= 24,700 ac	Runoff coeff.	= 0.5*
Intensity	= 6.427 in/hr	Tc by TR55	= 22.47 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4,286 x 6.85) + (20,420 x 6.40)] / 24,700



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/8/2022

Hyd. No. 7

2324 POST-DEVELOPMENT AREA 2

Hydrograph type	= Rational	Peak discharge	= 59.23 cfs
Storm frequency	= 5 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 78,185 cuft
Drainage area	= 24,700 ac	Runoff coeff.	= 0.5*
Intensity	= 4.798 in/hr	Tc by TR55	= 22.47 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4,286 x 6.85) + (20,420 x 6.40)] / 24,700



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/8/2022

Hyd. No. 7

2324 POST-DEVELOPMENT AREA 2

Hydrograph type	= Rational	Peak discharge	= 86.90 cfs
Storm frequency	= 50 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 114,711 cuft
Drainage area	= 24,700 ac	Runoff coeff.	= 0.5*
Intensity	= 7.037 in/hr	Tc by TR55	= 22.47 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4,286 x 6.85) + (20,420 x 6.40)] / 24,700



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/8/2022

Hyd. No. 7

2324 POST-DEVELOPMENT AREA 2

Hydrograph type	= Rational	Peak discharge	= 67.34 cfs
Storm frequency	= 10 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 88,885 cuft
Drainage area	= 24,700 ac	Runoff coeff.	= 0.5*
Intensity	= 5.452 in/hr	Tc by TR55	= 22.47 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4,286 x 6.85) + (20,420 x 6.40)] / 24,700



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/8/2022

Hyd. No. 7

2324 POST-DEVELOPMENT AREA 2

Hydrograph type	= Rational	Peak discharge	= 98.23 cfs
Storm frequency	= 100 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 129,660 cuft
Drainage area	= 24,700 ac	Runoff coeff.	= 0.5*
Intensity	= 7.954 in/hr	Tc by TR55	= 22.47 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(4,286 x 6.85) + (20,420 x 6.40)] / 24,700



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT

WACO, TX, TEXAS

POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 2

DRAWING STATUS

THESE DRAWINGS WERE PREPARED UNDER THE AUTHORITY OF
MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC. FIRM NO: F-23184.
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☐ FOR CONSTRUCTION FINAL DRAWINGS	Designed	MLC
	Drafted	JRC
	Project No	222359.00
	Plot Date	10-7-2022
		6

Hydrograph Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® by Autodesk, Inc. v2020.4
Tuesday, 10/14/2022

Hyd. No. 8
2324 POST-DEVELOPMENT AREA 3

Hydrograph type	= Rational	Peak discharge	= 21.34 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 12,804 cuft
Drainage area	= 6.080 ac	Runoff coeff.	= 0.62*
Intensity	= 5.981 in/hr	Tc by TR55	= 10.24 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.650 x 6.85) + (2.540 x 0.30) + (3.450 x 0.05)] / 0.980



Hydrograph Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® by Autodesk, Inc. v2020.4
Tuesday, 10/14/2022

Hyd. No. 8
2324 POST-DEVELOPMENT AREA 3

Hydrograph type	= Rational	Peak discharge	= 26.71 cfs
Storm frequency	= 5 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 16,024 cuft
Drainage area	= 6.080 ac	Runoff coeff.	= 0.62*
Intensity	= 7.085 in/hr	Tc by TR55	= 10.24 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.650 x 6.85) + (2.540 x 0.30) + (3.450 x 0.05)] / 0.980



Hydrograph Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® by Autodesk, Inc. v2020.4
Tuesday, 10/14/2022

Hyd. No. 8
2324 POST-DEVELOPMENT AREA 3

Hydrograph type	= Rational	Peak discharge	= 30.21 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 18,127 cuft
Drainage area	= 6.080 ac	Runoff coeff.	= 0.62*
Intensity	= 8.014 in/hr	Tc by TR55	= 10.24 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.650 x 6.85) + (2.540 x 0.30) + (3.450 x 0.05)] / 0.980



Hydrograph Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® by Autodesk, Inc. v2020.4
Tuesday, 10/14/2022

Hyd. No. 8
2324 POST-DEVELOPMENT AREA 3

Hydrograph type	= Rational	Peak discharge	= 35.56 cfs
Storm frequency	= 25 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 21,335 cuft
Drainage area	= 6.080 ac	Runoff coeff.	= 0.62*
Intensity	= 9.433 in/hr	Tc by TR55	= 10.24 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.650 x 6.85) + (2.540 x 0.30) + (3.450 x 0.05)] / 0.980



Hydrograph Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® by Autodesk, Inc. v2020.4
Tuesday, 10/14/2022

Hyd. No. 8
2324 POST-DEVELOPMENT AREA 3

Hydrograph type	= Rational	Peak discharge	= 38.60 cfs
Storm frequency	= 50 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 23,163 cuft
Drainage area	= 6.080 ac	Runoff coeff.	= 0.62*
Intensity	= 10.241 in/hr	Tc by TR55	= 10.24 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.650 x 6.85) + (2.540 x 0.30) + (3.450 x 0.05)] / 0.980



Hydrograph Report

Hydroflow Hydrographs Extension for AutoCAD® Civil 3D® by Autodesk, Inc. v2020.4
Tuesday, 10/14/2022

Hyd. No. 8
2324 POST-DEVELOPMENT AREA 3

Hydrograph type	= Rational	Peak discharge	= 44.05 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 26,428 cuft
Drainage area	= 6.080 ac	Runoff coeff.	= 0.62*
Intensity	= 11.685 in/hr	Tc by TR55	= 10.24 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (Area/C) = [(0.650 x 6.85) + (2.540 x 0.30) + (3.450 x 0.05)] / 0.980



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT

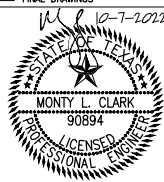
WACO, TX, TEXAS

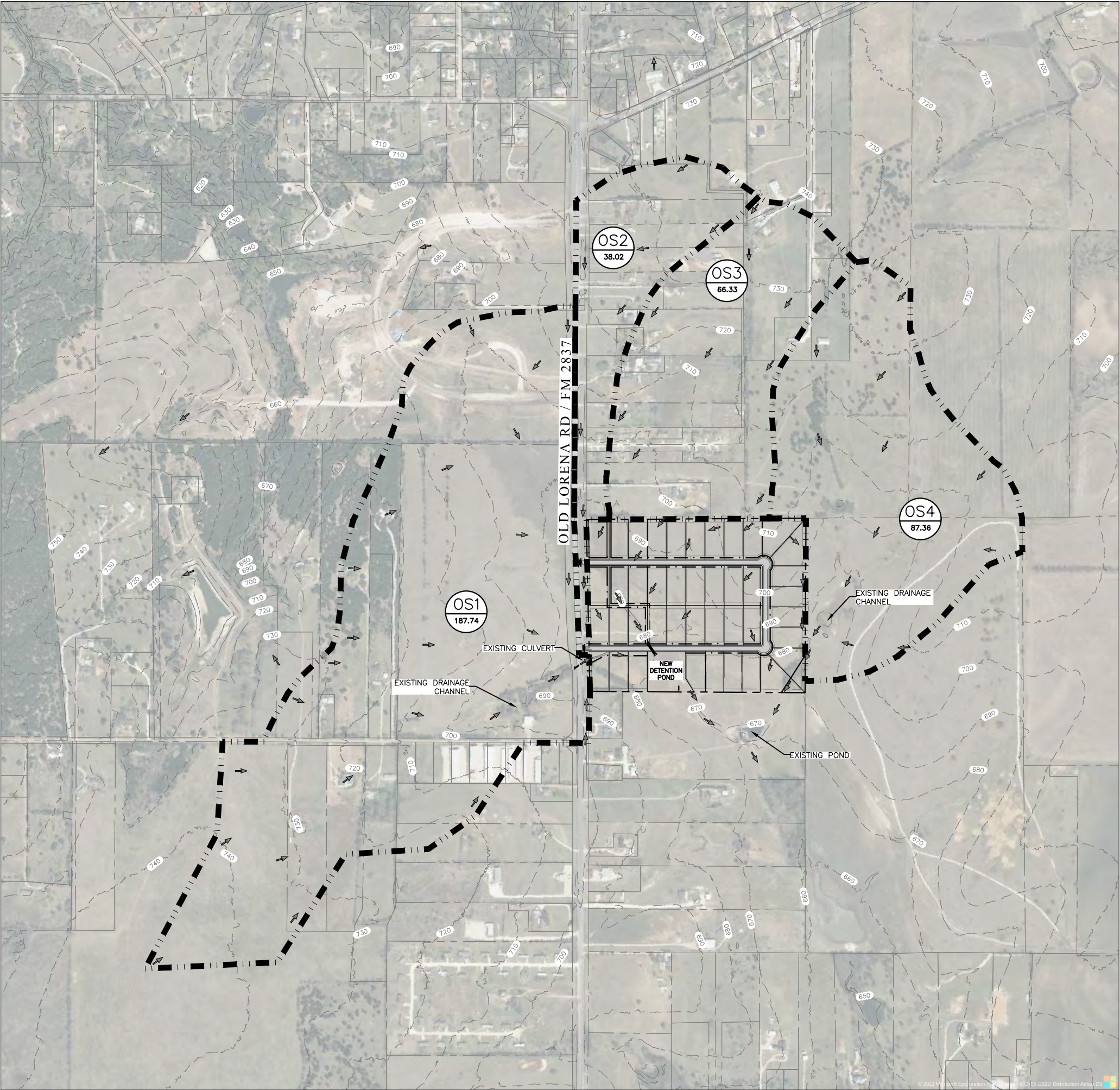
POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 3

DRAWING STATUS

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☐ FOR CONSTRUCTION FINAL DRAWINGS	Designed	MLC
	Drafted	JRC
	Project No	222359.00
	Plot Date	10-7-2022





DRAINAGE CALCULATIONS

POST DEVELOPMENT						
AREA DESIGNATION	AREA (acres)	Tc (min.)	COEF. OF RUNOFF	FREQ.	INTEN. (in./hr.)	DISCHARGE (cfs)
Offsite 1	187.74	51	0.33	2	2.19	135.84
Offsite 1	187.74	51	0.33	5	2.84	176.05
Offsite 1	187.74	51	0.33	10	3.25	201.48
Offsite 1	187.74	51	0.33	25	3.84	237.96
Offsite 1	187.74	51	0.33	50	4.25	263.50
Offsite 1	187.74	51	0.33	100	4.78	296.11
Offsite 2	38.02	52	0.40	2	2.16	32.90
Offsite 2	38.02	52	0.40	5	2.81	42.65
Offsite 2	38.02	52	0.40	10	3.21	48.82
Offsite 2	38.02	52	0.40	25	3.79	57.67
Offsite 2	38.02	52	0.40	50	4.20	63.87
Offsite 2	38.02	52	0.40	100	4.72	71.77
Offsite 3	66.33	42	0.35	2	2.50	58.10
Offsite 3	66.33	42	0.35	5	3.23	75.02
Offsite 3	66.33	42	0.35	10	3.69	85.72
Offsite 3	66.33	42	0.35	25	4.36	101.19
Offsite 3	66.33	42	0.35	50	4.81	111.74
Offsite 3	66.33	42	0.35	100	5.41	125.69
Offsite 4	87.36	47	0.30	2	2.32	60.78
Offsite 4	87.36	47	0.30	5	3.00	78.65
Offsite 4	87.36	47	0.30	10	3.43	89.95
Offsite 4	87.36	47	0.30	25	4.05	106.21
Offsite 4	87.36	47	0.30	50	4.48	117.48
Offsite 4	87.36	47	0.30	100	5.04	132.06

"C" VALUES	
IMPERVIOUS	0.95
RESIDENTIAL	0.40
AGRICULTURAL/GRASS	0.30

COMPOSITE "C" CALCULATION

COMPOSITE "C" = $\frac{A1 \times C1 + A2 \times C2}{A1 + A2}$

COVER (ACRES)	OS1	OS2	OS3	OS4
IMPERVIOUS	0.00	0.00	0.00	0.00
RESIDENTIAL	60.58	38.02	31.95	0.00
AGRICULTURAL/GRASS	127.16	0.00	34.38	87.36
TOTAL	187.74	38.02	66.33	87.36

TIME OF CONCENTRATION CALCULATIONS

	OS1	OS2	OS3	OS4
SHEET FLOW	300'@1.5% 23.39 MIN.	300'@0.95% 31.03 MIN.	300'@1.56% 25.45 MIN.	300'@1.16% 28.65 MIN.
CONCENTRATED FLOW UNPAVED	2990'@1.45% 25.65 MIN.	1675'@1.56% 13.85 MIN.	1300'@2.09% 9.29 MIN.	2815'@2.60% 18.03 MIN.
	=	=	445'@3.15% 2.59 MIN.	=
PAVED	=	=	=	=
CHANNEL FLOW	1030'@3.85% 2.34 MIN.	2075'@3.47% 6.80 MIN.	1055'@1.68% 4.63 MIN.	=
TOTAL	51.4 MIN.	51.7 MIN.	42.0 MIN.	46.70 MIN.

LEGEND

DRAINAGE DESIGN CRITERIA

DRAINAGE AREA DESIGNATION

DRAINAGE AREA IN ACRES

RATIONAL METHOD EQUATION

$Q = (C) (I) (A)$

DRAINAGE BASIN AREA DIVIDE

DIRECTIONAL FLOW ARROW

CLARK ASSOCIATES

CIVIL ENGINEERING • DESIGN • PLANNING

PRAIRIE VIEW ESTATES

NEW RESIDENTIAL DEVELOPMENT

WACO ETJ, TEXAS

SITE POST-DEVELOPMENT DRAINAGE MAP

DRAWING STATUS

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☐ FOR CONSTRUCTION: FINAL DRAWINGS

Designed	MLC
Drafted	JRC
Project No	222359.00
Plot Date	10-7-2022

10-7-2022

8

Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022
Hyd. No. 7				
2359 - Offsite 1				
Hydrograph type	= Rational	Peak discharge	= 135.84 cfs	
Storm frequency	= 2 yrs	Time to peak	= 0.85 hrs	
Time interval	= 1 min	Hyd. volume	= 415,677 cuft	
Drainage area	= 187,740 ac	Runoff coeff.	= 0.33*	
Intensity	= 2.193 in/hr	Tc by TR55	= 51.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = (127.180 x 0.30) + (60.080 x 0.40) / 187,740				



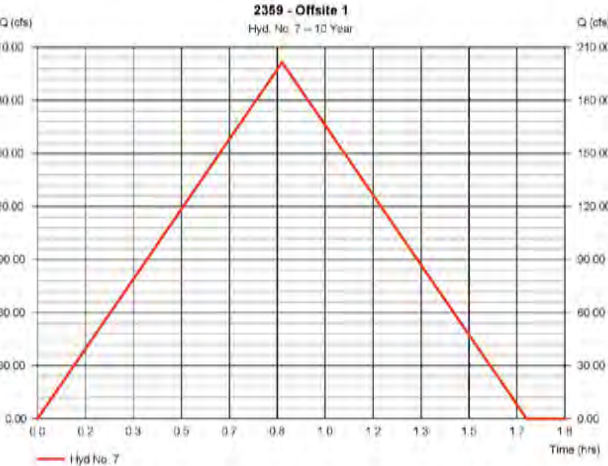
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022
Hyd. No. 7				
2359 - Offsite 1				
Hydrograph type	= Rational	Peak discharge	= 176.05 cfs	
Storm frequency	= 5 yrs	Time to peak	= 0.85 hrs	
Time interval	= 1 min	Hyd. volume	= 538,715 cuft	
Drainage area	= 187,740 ac	Runoff coeff.	= 0.33*	
Intensity	= 2.842 in/hr	Tc by TR55	= 51.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = (127.180 x 0.30) + (60.080 x 0.40) / 187,740				



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022
Hyd. No. 7				
2359 - Offsite 1				
Hydrograph type	= Rational	Peak discharge	= 201.48 cfs	
Storm frequency	= 10 yrs	Time to peak	= 0.85 hrs	
Time interval	= 1 min	Hyd. volume	= 616,531 cuft	
Drainage area	= 187,740 ac	Runoff coeff.	= 0.33*	
Intensity	= 3.252 in/hr	Tc by TR55	= 51.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = (127.180 x 0.30) + (60.080 x 0.40) / 187,740				

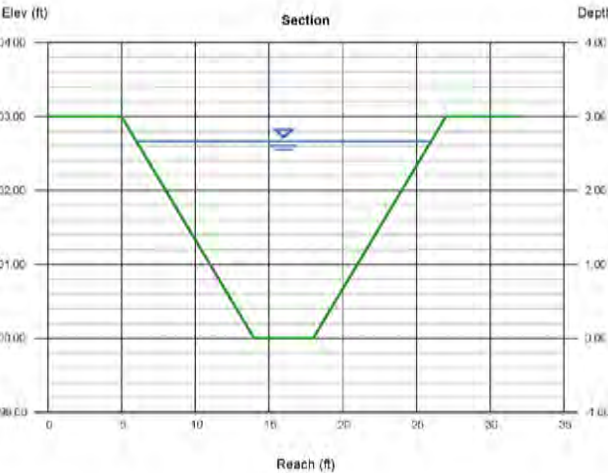


Channel Report

Hydroflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Oct 6, 2022

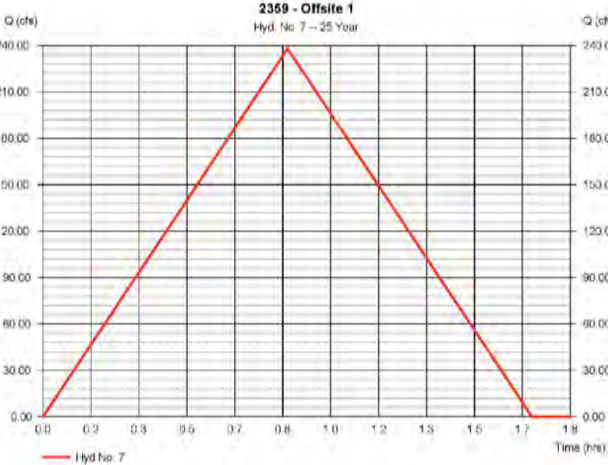
OFF SITE AREA 1 - PROPOSED DRAINAGE CHANNEL

Trapezoidal		Highlighted	
Bottom Width (ft)	= 4.00	Depth (ft)	= 2.66
Side Slopes (Z:1)	= 3:00, 3:00	Q (cfs)	= 296.11
Total Depth (ft)	= 3.00	Area (sqft)	= 31.87
Invert Elev (ft)	= 100.00	Velocity (ft/s)	= 9.29
Slope (%)	= 2.00	Wetted Perim (ft)	= 20.82
N-Value	= 0.030	Crit Depth, Yc (ft)	= 3.00
Calculations		Top Width (ft)	= 19.98
Compute by:	Known Q	EGL (ft)	= 4.00
Known Q (cfs)	= 296.11		



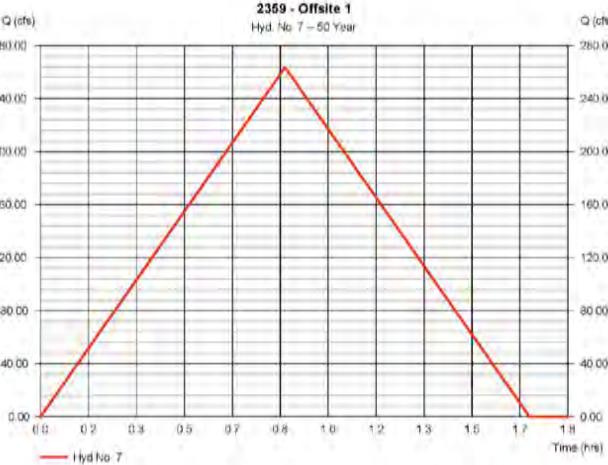
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022
Hyd. No. 7				
2359 - Offsite 1				
Hydrograph type	= Rational	Peak discharge	= 237.96 cfs	
Storm frequency	= 25 yrs	Time to peak	= 0.85 hrs	
Time interval	= 1 min	Hyd. volume	= 728,165 cuft	
Drainage area	= 187,740 ac	Runoff coeff.	= 0.33*	
Intensity	= 3.841 in/hr	Tc by TR55	= 51.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = (127.180 x 0.30) + (60.080 x 0.40) / 187,740				



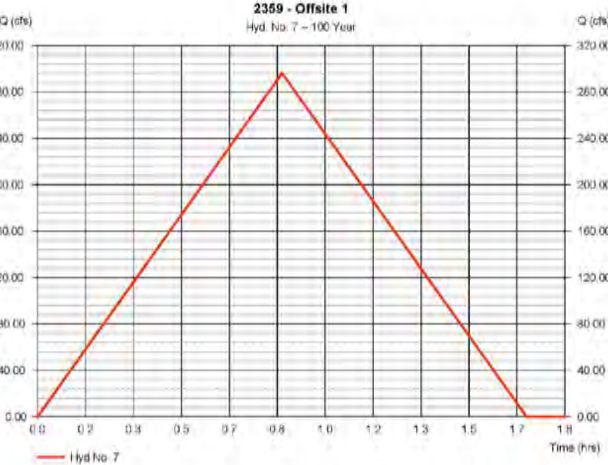
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022
Hyd. No. 7				
2359 - Offsite 1				
Hydrograph type	= Rational	Peak discharge	= 263.50 cfs	
Storm frequency	= 50 yrs	Time to peak	= 0.85 hrs	
Time interval	= 1 min	Hyd. volume	= 806,320 cuft	
Drainage area	= 187,740 ac	Runoff coeff.	= 0.33*	
Intensity	= 4.253 in/hr	Tc by TR55	= 51.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = (127.180 x 0.30) + (60.080 x 0.40) / 187,740				



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022
Hyd. No. 7				
2359 - Offsite 1				
Hydrograph type	= Rational	Peak discharge	= 296.11 cfs	
Storm frequency	= 100 yrs	Time to peak	= 0.85 hrs	
Time interval	= 1 min	Hyd. volume	= 906,104 cuft	
Drainage area	= 187,740 ac	Runoff coeff.	= 0.33*	
Intensity	= 4.780 in/hr	Tc by TR55	= 51.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = (127.180 x 0.30) + (60.080 x 0.40) / 187,740				



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT

WACO, TX, TEXAS
POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 3

DRAWING STATUS

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FINAL DRAWINGS

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Project No	222359.00
Plot Date	10-7-2022
9	

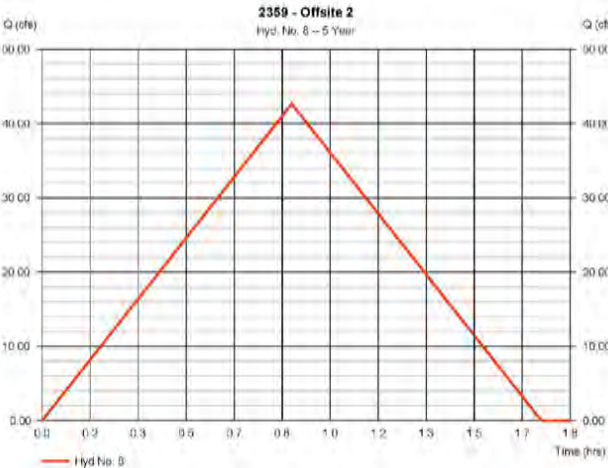
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/16/2022
Hyd. No. 8				
2359 - Offsite 2				
Hydrograph type	= Rational	Peak discharge	= 32.90 cfs	
Storm frequency	= 2 yrs	Time to peak	= 0.87 hrs	
Time interval	= 1 min	Hyd. volume	= 102.650 cuft	
Drainage area	= 38.020 ac	Runoff coeff.	= 0.4"	
Intensity	= 2.183 in/hr	Tc by TR55	= 52.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = + (38.020 x 0.43) / 38.020				



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/16/2022
Hyd. No. 8				
2359 - Offsite 2				
Hydrograph type	= Rational	Peak discharge	= 42.65 cfs	
Storm frequency	= 5 yrs	Time to peak	= 0.87 hrs	
Time interval	= 1 min	Hyd. volume	= 133.081 cuft	
Drainage area	= 38.020 ac	Runoff coeff.	= 0.4"	
Intensity	= 2.805 in/hr	Tc by TR55	= 52.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = + (38.020 x 0.43) / 38.020				



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/16/2022
Hyd. No. 8				
2359 - Offsite 2				
Hydrograph type	= Rational	Peak discharge	= 48.82 cfs	
Storm frequency	= 10 yrs	Time to peak	= 0.87 hrs	
Time interval	= 1 min	Hyd. volume	= 152.329 cuft	
Drainage area	= 38.020 ac	Runoff coeff.	= 0.4"	
Intensity	= 3.210 in/hr	Tc by TR55	= 52.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = + (38.020 x 0.43) / 38.020				



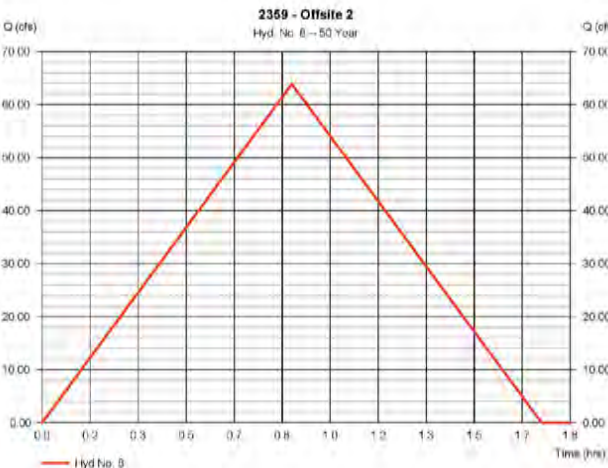
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/16/2022
Hyd. No. 8				
2359 - Offsite 2				
Hydrograph type	= Rational	Peak discharge	= 57.67 cfs	
Storm frequency	= 25 yrs	Time to peak	= 0.87 hrs	
Time interval	= 1 min	Hyd. volume	= 179.920 cuft	
Drainage area	= 38.020 ac	Runoff coeff.	= 0.4"	
Intensity	= 3.792 in/hr	Tc by TR55	= 52.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = + (38.020 x 0.43) / 38.020				



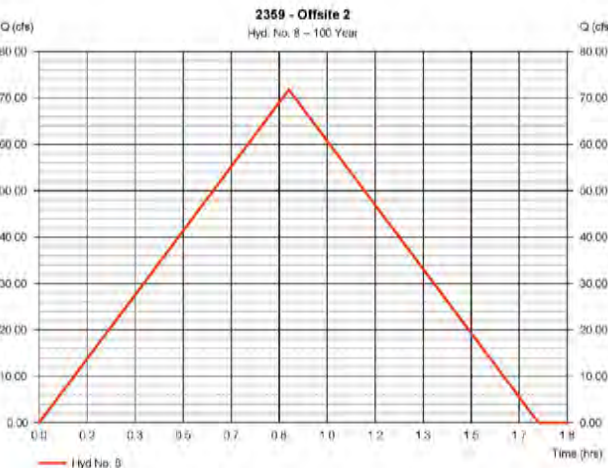
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/16/2022
Hyd. No. 8				
2359 - Offsite 2				
Hydrograph type	= Rational	Peak discharge	= 63.87 cfs	
Storm frequency	= 50 yrs	Time to peak	= 0.87 hrs	
Time interval	= 1 min	Hyd. volume	= 199.298 cuft	
Drainage area	= 38.020 ac	Runoff coeff.	= 0.4"	
Intensity	= 4.200 in/hr	Tc by TR55	= 52.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = + (38.020 x 0.43) / 38.020				



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/16/2022
Hyd. No. 8				
2359 - Offsite 2				
Hydrograph type	= Rational	Peak discharge	= 71.77 cfs	
Storm frequency	= 100 yrs	Time to peak	= 0.87 hrs	
Time interval	= 1 min	Hyd. volume	= 223.932 cuft	
Drainage area	= 38.020 ac	Runoff coeff.	= 0.4"	
Intensity	= 4.719 in/hr	Tc by TR55	= 52.00 min	
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1	
* Composite (AreaC) = + (38.020 x 0.43) / 38.020				



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT

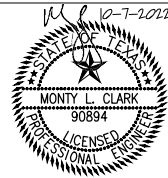
WACO, TX, TEXAS

POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 3

DRAWING STATUS

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MONTY L. CLARK, P.E. 90894, CLARK ASSOCIATES PLLC, FIRM NO: F-23184.
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☐ FOR CONSTRUCTION FINAL DRAWINGS	Designed	MLC
	Drafted	JRC
	Project No	222359.00
	Plot Date	10-7-2022



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/6/2022			
Hyd. No. 9			
2359 - Offsite 3			
Hydrograph type	= Rational	Peak discharge	= 59.10 cfs
Storm frequency	= 2 yrs	Time to peak	= 0.70 hrs
Time interval	= 1 min	Hyd. volume	= 145,412 cuft
Drainage area	= 66,330 ac	Runoff coeff.	= 0.35*
Intensity	= 2,503 in/hr	Tc by TR55	= 42.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

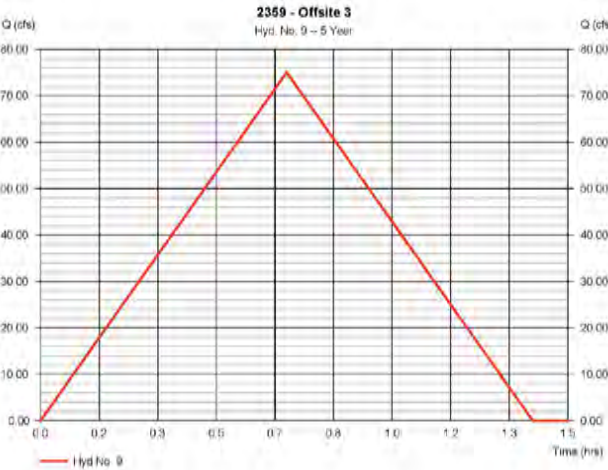
* Composite (AreaC) = $\frac{1}{2} (24,350 \times 0.30) + (31,950 \times 0.40) / 66,330$



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/6/2022			
Hyd. No. 9			
2359 - Offsite 3			
Hydrograph type	= Rational	Peak discharge	= 75.02 cfs
Storm frequency	= 5 yrs	Time to peak	= 0.70 hrs
Time interval	= 1 min	Hyd. volume	= 189,058 cuft
Drainage area	= 66,330 ac	Runoff coeff.	= 0.35*
Intensity	= 3,232 in/hr	Tc by TR55	= 42.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = $\frac{1}{2} (24,350 \times 0.30) + (31,950 \times 0.40) / 66,330$



Hydrograph Report

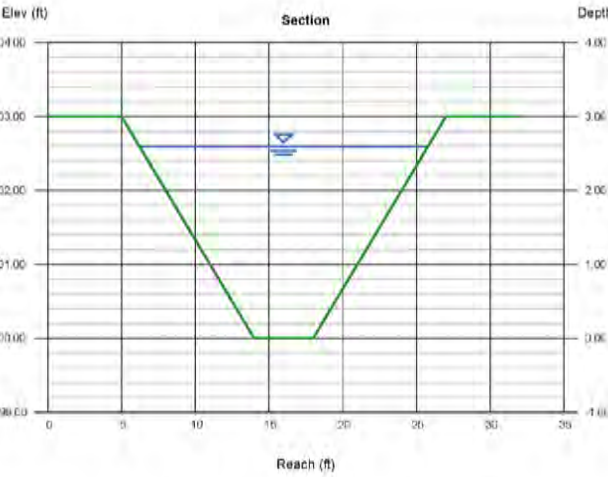
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/6/2022			
Hyd. No. 9			
2359 - Offsite 3			
Hydrograph type	= Rational	Peak discharge	= 85.72 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.70 hrs
Time interval	= 1 min	Hyd. volume	= 215,014 cuft
Drainage area	= 66,330 ac	Runoff coeff.	= 0.35*
Intensity	= 3,892 in/hr	Tc by TR55	= 42.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = $\frac{1}{2} (24,350 \times 0.30) + (31,950 \times 0.40) / 66,330$



Channel Report

Hydroflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.			
Thursday, Oct 6 2022			
OFF SITE AREA 2 AND 3 - PROPOSED CHANNEL			
Trapezoidal		Highlighted	
Bottom Width (ft)	= 4.00	Depth (ft)	= 2.59
Side Slopes (Z:1)	= 3.00, 3.00	Q (cfs)	= 197.46
Total Depth (ft)	= 3.00	Area (sqft)	= 30.48
Invert Elev (ft)	= 100.00	Velocity (ft/s)	= 6.48
Slope (%)	= 1.00	Wetted Perim (ft)	= 20.38
N-Value	= 0.030	Crit Depth, Yc (ft)	= 2.49
		Top Width (ft)	= 19.54
		EGL (ft)	= 3.24
Calculations		Compute by:	
Known Q		Known Q	
Compute by:		Known Q	
Known Q (cfs)		= 197.46	



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/6/2022			
Hyd. No. 9			
2359 - Offsite 3			
Hydrograph type	= Rational	Peak discharge	= 101.19 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.70 hrs
Time interval	= 1 min	Hyd. volume	= 255,002 cuft
Drainage area	= 66,330 ac	Runoff coeff.	= 0.35*
Intensity	= 4,359 in/hr	Tc by TR55	= 42.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

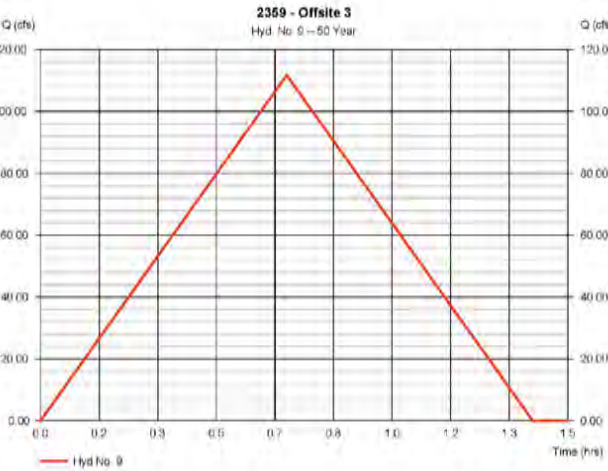
* Composite (AreaC) = $\frac{1}{2} (24,350 \times 0.30) + (31,950 \times 0.40) / 66,330$



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/6/2022			
Hyd. No. 9			
2359 - Offsite 3			
Hydrograph type	= Rational	Peak discharge	= 111.74 cfs
Storm frequency	= 50 yrs	Time to peak	= 0.70 hrs
Time interval	= 1 min	Hyd. volume	= 281,589 cuft
Drainage area	= 66,330 ac	Runoff coeff.	= 0.35*
Intensity	= 4,813 in/hr	Tc by TR55	= 42.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = $\frac{1}{2} (24,350 \times 0.30) + (31,950 \times 0.40) / 66,330$



Hydrograph Report

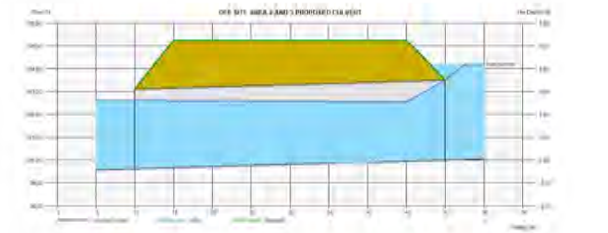
Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4			
Thursday, 10/6/2022			
Hyd. No. 9			
2359 - Offsite 3			
Hydrograph type	= Rational	Peak discharge	= 125.69 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.70 hrs
Time interval	= 1 min	Hyd. volume	= 315,732 cuft
Drainage area	= 66,330 ac	Runoff coeff.	= 0.35*
Intensity	= 5,414 in/hr	Tc by TR55	= 42.00 min
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1

* Composite (AreaC) = $\frac{1}{2} (24,350 \times 0.30) + (31,950 \times 0.40) / 66,330$



Culvert Report

Hydroflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.			
Thursday, Oct 6 2022			
OFF SITE AREA 2 AND 3 PROPOSED CULVERT			
Invert Elev Dn (ft)		Calculations	
= 99.60		Qmin (cfs)	= 187.46
Pipe Length (ft)		Qmax (cfs)	= 197.46
= 40.00		Tailwater Elev (ft)	= (dc+D)/2
Slope (%)		Highlighted	
= 1.00		Qtotal (cfs)	= 197.46
Invert Elev Up (ft)		Qpipe (cfs)	= 197.46
= 100.00		Qovertop (cfs)	= 0.00
Rise (in)		Veloc Dn (ft/s)	= 7.46
= 42.0		Veloc Up (ft/s)	= 8.80
Shape		HGL Dn (ft)	= 102.62
= Circular		HGL Up (ft)	= 102.54
Span (in)		Hw Elev (ft)	= 104.19
= 42.0		Hw/D (ft)	= 1.20
No. Barrels		Flow Regime	= Inlet Control
= 3			
n-Value			
= 0.013			
Culvert Type			
= Circular Concrete			
Culvert Entrance			
= Square edge w/headwall (C)			
Coeff. K1, M, C, Y, k			
= 0.0098, 2.0, 0.0398, 0.67, 0.5			
Embankment			
Top Elevation (ft)			
= 105.25			
Top Width (ft)			
= 30.00			
Crest Width (ft)			
= 50.00			



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT
WACO, TX, TEXAS

POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 3

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☐ FOR CONSTRUCTION FINAL DRAWINGS		Designed	MLC
		Drafted	JRC
		Project No	222359.00
		Plot Date	10-7-2022
		11	

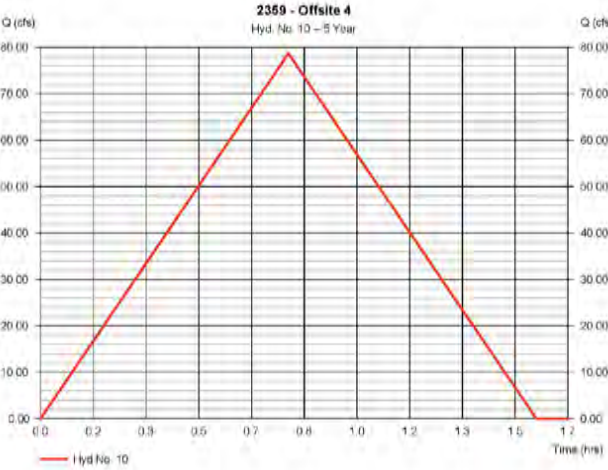
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022			
Hyd. No. 10							
2359 - Offsite 4							
Hydrograph type	= Rational	Peak discharge	= 60.78 cfs				
Storm frequency	= 2 yrs	Time to peak	= 0.78 hrs				
Time interval	= 1 min	Hyd. volume	= 171,399 cuft				
Drainage area	= 87,360 ac	Runoff coeff.	= 0.3*				
Intensity	= 2.319 in/hr	Tc by TR55	= 47.00 min				
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1				
* Composite (Area/C) = + (87,360 x 0.30) / 87,360							



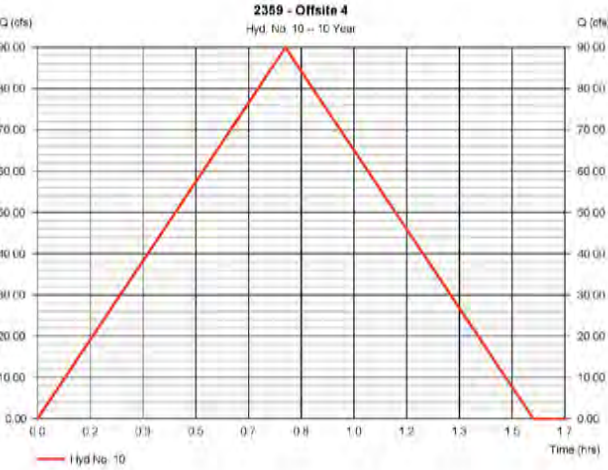
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022			
Hyd. No. 10							
2359 - Offsite 4							
Hydrograph type	= Rational	Peak discharge	= 78.65 cfs				
Storm frequency	= 5 yrs	Time to peak	= 0.78 hrs				
Time interval	= 1 min	Hyd. volume	= 221,796 cuft				
Drainage area	= 87,360 ac	Runoff coeff.	= 0.3*				
Intensity	= 3.001 in/hr	Tc by TR55	= 47.00 min				
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1				
* Composite (Area/C) = + (87,360 x 0.30) / 87,360							



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022			
Hyd. No. 10							
2359 - Offsite 4							
Hydrograph type	= Rational	Peak discharge	= 89.95 cfs				
Storm frequency	= 10 yrs	Time to peak	= 0.78 hrs				
Time interval	= 1 min	Hyd. volume	= 253,658 cuft				
Drainage area	= 87,360 ac	Runoff coeff.	= 0.3*				
Intensity	= 3.432 in/hr	Tc by TR55	= 47.00 min				
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1				
* Composite (Area/C) = + (87,360 x 0.30) / 87,360							



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4 Thursday, 10/6/2022

Hyd. No. 10

2359 - Offsite 4

Hydrograph type

Storm frequency

Time interval

Drainage area

Intensity

IDF Curve

= Rational

= 25 yrs

= 1 min

= 87,360 ac

= 4.053 in/hr

= McLennan County IDF

Peak discharge

Time to peak

Hyd. volume

Runoff coeff.

Tc by TR55

Asc/Rec limb fact

= 106.21 cfs

= 0.78 hrs

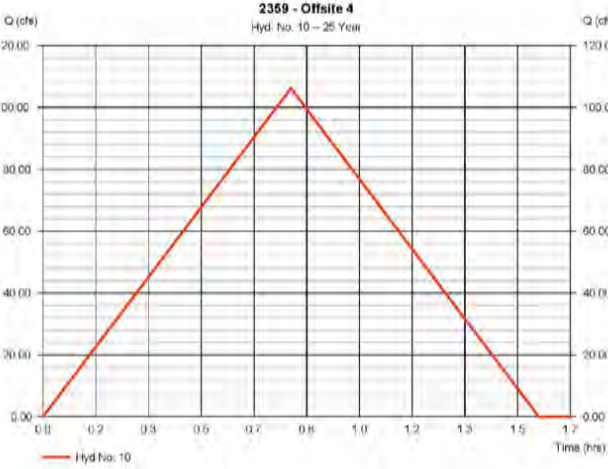
= 299,525 cuft

= 0.3*

= 47.00 min

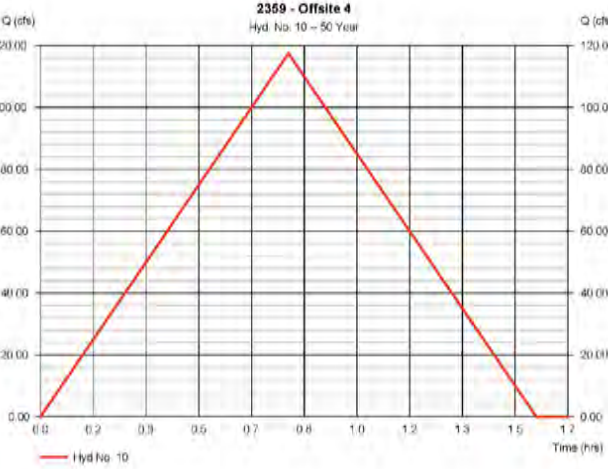
= 1/1

* Composite (Area/C) = + (87,360 x 0.30) / 87,360



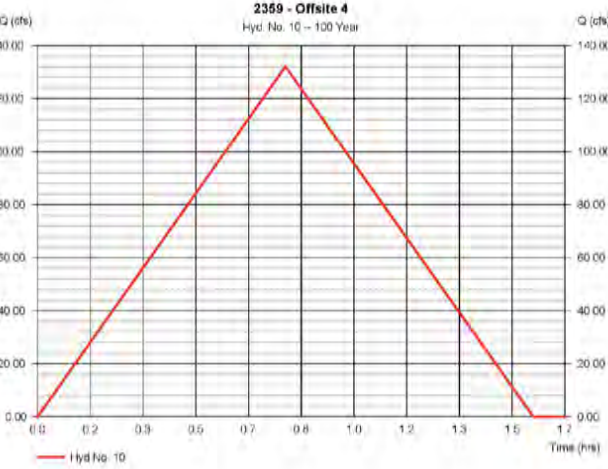
Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022			
Hyd. No. 10							
2359 - Offsite 4							
Hydrograph type	= Rational	Peak discharge	= 117.48 cfs				
Storm frequency	= 50 yrs	Time to peak	= 0.78 hrs				
Time interval	= 1 min	Hyd. volume	= 331,282 cuft				
Drainage area	= 87,360 ac	Runoff coeff.	= 0.3*				
Intensity	= 4.482 in/hr	Tc by TR55	= 47.00 min				
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1				
* Composite (Area/C) = + (87,360 x 0.30) / 87,360							



Hydrograph Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4				Thursday, 10/6/2022			
Hyd. No. 10							
2359 - Offsite 4							
Hydrograph type	= Rational	Peak discharge	= 132.06 cfs				
Storm frequency	= 100 yrs	Time to peak	= 0.78 hrs				
Time interval	= 1 min	Hyd. volume	= 372,415 cuft				
Drainage area	= 87,360 ac	Runoff coeff.	= 0.3*				
Intensity	= 5.039 in/hr	Tc by TR55	= 47.00 min				
IDF Curve	= McLennan County IDF	Asc/Rec limb fact	= 1/1				
* Composite (Area/C) = + (87,360 x 0.30) / 87,360							



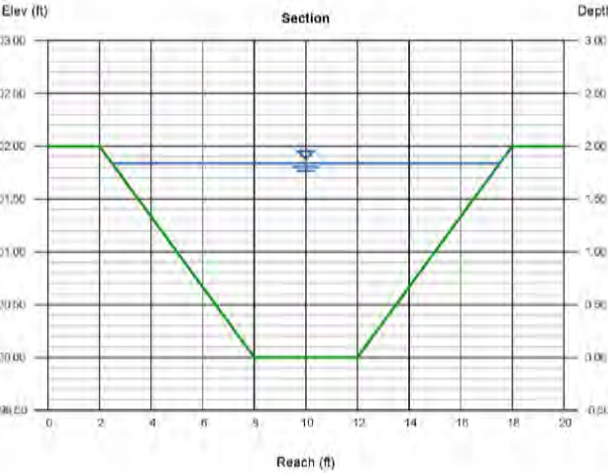
Channel Report

Hydroflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

Thursday, Oct 6, 2022

OFF SITE AREA 4 - PROPOSED CHANNEL

Trapezoidal		Highlighted	
Bottom Width (ft)	= 4.00	Depth (ft)	= 1.84
Side Slopes (Z:1)	= 3:00, 3:00	Q (cfs)	= 132.08
Total Depth (ft)	= 2.00	Area (sqft)	= 17.52
Invert Elev (ft)	= 100.00	Velocity (ft/s)	= 7.54
Slope (%)	= 2.00	Wetted Perim (ft)	= 15.64
N-Value	= 0.030	Crit Depth, Yc (ft)	= 2.00
		Top Width (ft)	= 15.04
		EGL (ft)	= 2.72
Calculations			
Compute by:	Known Q		
Known Q (cfs)	= 132.08		



PRAIRIE VIEW
ESTATES
NEW RESIDENTIAL DEVELOPMENT

WACO, TX, TEXAS
POST-DEVELOPMENT
DRAINAGE CALCULATIONS -
SHEET 3

DRAWING STATUS

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☐ FOR CONSTRUCTION FINAL DRAWINGS		Designed	MLC
		Drafted	JRC
		Project No	222359.00
		Plot Date	10-7-2022
		12	



0100200

FEET

LEGEND

EXISTING WATER MAIN

PROPOSED 8" PVC C900 DR18 WATER MAIN

PROPOSED FIRE HYDRANT

PROPOSED STORM SEWER



CLARK ASSOCIATES

CIVIL ENGINEERING • DESIGN • PLANNING

PRAIRIE VIEW ESTATES

NEW RESIDENTIAL DEVELOPMENT

WACO ETJ, TEXAS

TOPOGRAPHIC UTILITY MAP

DRAWING STATUS

FOR REVIEW

FOR CONSTRUCTION

10-7-2022

10-7-2022

MLC

JRC

222359.00

10-7-2022

13

This topographic utility map illustrates the proposed infrastructure for the Prairie View Estates residential development. The map features a grid of lots organized into five blocks: Block 1 (lots 1-8), Block 2 (lots 1-9), Block 3 (lots 1-3), Block 4 (lots 1-9), and Block 5 (lots 1-9). Key roads include Old Lorena Rd/FM 2837 to the west, Prairie View Dr running horizontally through the center, and Country View Dr running vertically to the east. A new 3-barrel storm sewer culvert is shown crossing Prairie View Dr, with a new detention pond (Block 3 Lot 4, 2.15 AC) and a new detention pond outlet structure located south of it. The map also indicates existing water mains, proposed 8-inch PVC C900 DR18 water mains, and proposed fire hydrants. Various easements, including a new drainage easement and a 0.60-acre drainage easement, are marked. Surrounding landowners and their acreages are noted: Peacock Oren M Jr (6.0 AC), Peacock Elizabeth W (6.0 AC), Peacock Oren Et Ux (64.95 AC), Miller John Wade & Kristi Lynn (169.48 AC), SY2 Captive Holdings LLC (69.58 AC), McMahon David B & Jaynette A McMahon (2.12 AC), and McMahon David B. & Jaynette A McMahon (22.62 AC). The map includes property lines, right-of-way (R.O.W.) lines, and bearings/distances for various boundaries.

STANDARD PRELIMINARY PLAT REVIEW

☒ First Submittal Date: 7/25/22 Review Due Date: 8/18/22
☒ **Resubmittal** **Date: 10/10/22** **Review Due Date: 10/25/22**

Subdivision Name: Preliminary Plat of the Prairie View Estates Addition

PID: 131241 & 131244
District ETJ
CSS Number: 22-00027-S-SUBD
Job Number: 222359.00

Staff has reviewed the preliminary plat for compliance with the subdivision regulations (City of Waco Appendix B – Subdivisions). A list of comments is provided below to notify the developer of deficiencies in the plat and actions needed to correct the plat. City staff recommends City Plan Commission to Approve the plat. City Plan Commission with staff's recommendation will approve the plat, approve the plat with conditions, or disapprove the plat. The meeting for consideration by the City Plan Commission will be **October 25, 2022** in the Waco Convention Center, Bosque Theatre, 100 Washington Ave. Waco, Texas 76701, at 7:00 p.m.

A response is required for the list of the comments provided. A pre-response meeting is recommended to address the comments listed. Once a response has been provided to City Staff, City Plan Commission shall determine whether to approve, conditionally approve, or disapprove the applicant's response.

If the plat and required studies are approved or approved with the condition of infrastructure being built to meet City of Waco Construction Standards and Specifications by the City Plan Commission, the plat will then be submitted by City Council for action. The City Council will then either approve the plat, approve the plat with condition (s), or disapprove the plat.

Planning:

Preliminary plat approval

Section 3.302, A

Y N N/A

☒ ☐ ☐ A legible, accurately scaled plat of the entire subdivision, including all adjacent land owned by the developer.

- | | | | |
|-------------------------------------|--------------------------|--------------------------|--|
| ☒ | ☐ | ☐ | Plat submitted in digital format. Digital files shall be in a current version of AutoCAD (.dwg) or in Digital Exchange Format (.dxf) and shall be oriented to within ten feet of correct Texas State Plane Coordinates, NAD83. |
| ☒ | ☐ | ☐ | Plat prepared by a Registered Professional Land Surveyor or a Registered Professional Engineer. |

Plat shows:

- | | | | |
|-------------------------------------|--------------------------|--------------------------|--|
| ☒ | ☐ | ☐ | The subdivision boundary as determined by a boundary survey or by recorded description of the property |
| ☒ | ☐ | ☐ | The street and lot layout and the proposed use of the property |
| ☒ | ☐ | ☐ | Proposed and existing easements |
| ☒ | ☐ | ☐ | Utilities: sewers, water lines, gas mains |
| ☒ | ☐ | ☐ | Water courses & ravines |
| ☒ | ☐ | ☐ | Bridges & culverts |
| ☒ | ☐ | ☐ | Existing structures |
| ☒ | ☐ | ☐ | Drainage areas in acreage |
| ☒ | ☐ | ☐ | Other features pertinent to subdivision (sidewalks, detention areas, green spaces, parks, number of lots and blocks stated on the plat, dimensions of lots and blocks) |
| ☒ | ☐ | ☐ | Proposed and dedicated right-of-way, including widths |
| ☒ | ☐ | ☐ | The proposed legal description of the subdivision |
| ☒ | ☐ | ☐ | The proposed name of the subdivision |
| ☒ | ☐ | ☐ | The date of the plat and of any revisions |
| ☒ | ☐ | ☐ | The scale to which the plat was drawn |
| ☒ | ☐ | ☐ | Computed total acreage |
| ☒ | ☐ | ☐ | A north arrow |
| ☒ | ☐ | ☐ | The name and address, signature, and date of signature of the owner of the property |

- | | | | |
|-------------------------------------|--------------------------|--------------------------|---|
| ☒ | ☐ | ☐ | The words shown on the plat "PRELIMINARY PLAT FOR REVIEW PURPOSES ONLY" |
| ☒ | ☐ | ☐ | The Texas Natural Resource Conservation Commission (TNRCC) or Texas Commission on Environmental Quality (TCEQ) water certification of convenience and necessity file number |
| ☒ | ☐ | ☐ | The electric service cooperative that serves the area. |
-

Section 3.302, B

- | | | |
|-------------------------------------|--------------------------|--|
| ☒ | ☐ | A topographical map of the entire subdivision, and of a one hundred (100) foot wide strip surrounding the subdivision, showing contours at two (2) foot intervals with all elevations referenced to city approved datum. (Topographic information is necessary only for subdivisions exceeding two (2) acres in gross area and/or having unusual topography.) Topographic information may be included on the plat described in 3.302(A) above or placed on a separate map drawn to the same scale as the above plat. The topographic map shall be either an actual on-the-ground survey, material obtained from Engineering Services of the City of Waco, or an aerial survey approved by Engineering Services. A note shall be placed on the plat stating which method was used to provide the topographical map. |
|-------------------------------------|--------------------------|--|
-

Section 3.302, C

A location map showing:

- | | | |
|-------------------------------------|--------------------------|---|
| ☒ | ☐ | The proposed subdivision in relation to existing streets and/or other easily recognizable geographic features |
| ☒ | ☐ | A north arrow |
| ☒ | ☐ | The proposed name of the subdivision. |

Environmental Health:

Section 3.302, D

For sites not served by public sanitary sewer, the subdivider shall submit a report by an independent registered professional engineer indicating sufficient soil tests have been conducted and that the said engineer has determined the environmental suitability of each lot for safe operation of an on-site sewage facility (OSSF). The report shall determine a minimum lot size,

density, and type of proposed disposal system. This report is to be submitted to the city engineer and utility services environmental coordinator (Environmental Health Manager) for approval and shall comply with all Texas Natural Resource Conservation Commission (TNRCC) and/or Texas Commission on Environmental Quality (TCEQ) regulations.

- ☐ ☐ ☒ Suitability Study Submitted
- ☐ ☐ ☒ Subdivision Review Fee Paid

Traffic, Utilities, Engineering, Floodplain:

Section 3.302, E

Studies and analyses to determine infrastructure capacity and requirements for the following:

- ☒ Utilities – Water
- Not Required
- ☒ Utilities – Sewer
- Not Required
- ☒ Traffic Impact Analysis
- Not Required
- ☒ Stormwater/drainage
- Submitted
- ☒ Flood
- Not Required

Staff Recommendations:

Planning	Approve
Engineering	Approve
Utilities	Approve
Traffic	Approve

Conditions for Approval:

Engineering:

E1. Include all offsite drainage areas in hydrologic and hydraulic analyses for site.

City conditions satisfied.

E2. Include FM 2837 and Wade property drainage areas in analysis.

City conditions satisfied.

E3. For preliminary plat approval, justify adequate easement width dedications to convey flow. Assume existing offsite ponds are full or non-existent in determination of peak discharge values.

City conditions satisfied.

E4. Clarify how flow from FM 2837 culvert is directed to proposed pond (by right of way or easement).

City conditions satisfied.

Planning:

P1. Please include the detention pond in the lots rather than 'Tract A'.

City conditions satisfied.

P2. Please correct label for City of Waco ROW – Old Lorena Rd is a state ROW.

City conditions satisfied.

Informative only - no response required for preliminary plat approval:

- Design engineer advised to coordinate with City of Waco Utilities to determine proposed water impact/capacity.
- Property owner is responsible for providing all OSSF planning materials and \$50 review fee (per TCEQ Chapter 285) to the Waco-McLennan County Public Health District before final plat can be approved.
- At final plat, water line construction plans should address the following items:
 - Storm crossing needs to be as close to 90 degrees as possible when it crosses the water line.
 - Need to note cut in tees for new connections.
 - Need inline GV every 1,000 LFT of main
 - Need inline GV on existing main to isolate between connections
- Developer must submit a traffic impact analysis study to the Texas Department of Transportation.

- This development will be subject to Impact Fees which are assessed at platting and collected during permitting.
- Streets constructed in the Waco ETJ are not automatically adopted by McLennan County into maintenance, for more information, contact Luke Lammert, Asst. County Engineer, (254) 757-5028.
- Please add the following certification to the final plat:

"The following statement certifies that an engineering suitability report prepared by _____, on the _____ day of ____, _____, has been submitted and accepted for this subdivision plat. Individual On-Site Sewage Facility designs must be submitted for approval for each lot, and built to Texas Commission on Environmental Quality (TCEQ) regulations prior to occupation of the residence. This subdivision plat approved and accepted by City of Waco Utility Services for the Waco-McLennan County Health District on this the day of _____."

David Litke, Environmental Health Manager

- Final plats must adhere to McLennan County requirements for recording. Requirements can be found at: <https://www.co.mclennan.tx.us/180/Plat-Filing>.
- Street names are not required on the preliminary plat, however, must be approved before recording the final plat. *Sec 5.205, A: New streets shall be named so as to provide continuity with the names of existing, connecting streets. Names identical or similar to names of existing streets shall not be approved. The developer shall confirm all proposed street names with McLennan County Emergency Assistance District (911) so as to avoid duplication. The city council shall have the final authority to designate the name of a proposed street. The developer shall provide and install street name signs at the cost of the developer, in accordance with City standards and specifications.* Please contact Sonia Davis at sdavis@mcead911.org for street name approval.