A STORMWATER DETENTION ANALYSIS

OF THE PROPOSED DEVELOPMENT OF

FRONTIER MIDDLE SCHOOL ADDITION

IN

CITY OF O'FALLON, MISSOURI

FOR

WENTZVILLE R – IV SCHOOL DISTRICT
280 INTERSTATE DRIVE
WENTZVILLE, MO 63385

BAX PROJECT NO. 03-12495H

January 30, 2020

Prepared by:
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2-17-2020

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INTRODUCTION:

This report is an addition to the Stormwater Analysis Report by Bax Engineering dated May 26, 2011. Three of the six watersheds on the site were modified with the proposed addition to Frontier Middle School. Watershed A, which leads to the Northern Existing Dry Detention Basin, Watershed E, and Watershed F remain the same which is the reason the Northern Basin is not reanalyzed in this report.

The partially developed site is located in the City of O'Fallon, Missouri and is comprised of 25.36 acres of land. Located near Fox Wood Drive and Highway DD, this site shall be analyzed for the construction of the proposed Frontier Middle School Addition which disturbs approximately 5.74 acres of land. On this site, the Southern Existing Dry Detention Basin is modified to provide the additional Stormwater Attenuation required by the City of O'Fallon Design Standards for the development. The Northern Existing Dry Detention Basin is not analyzed as none of the construction in the watershed is tributary to the basin. The storage volume and outflow rates shall be proportioned so that the peak rate of runoff leaving the tract under Postdeveloped Conditions is less than the peak rate of runoff under the Predeveloped Conditions for the 2, 15, 25, and 100 Year 20 Minute Design Storms. The safe passage of the 100 Year 20 Minute Design Storm is also analyzed assuming the low flow slot is blocked.

Water Quality for the proposed addition is provided by the use of Inlet Filters in all the Proposed Grate Inlets and Yard Drains as well as 2 Snout Structure located in YD 10 and YD 11 to treat the roof stormwater not treated by the Inlet Filters.

GENERAL SITE DATA AND RUNOFF CALCULATIONS

The Predeveloped Runoff Factors used for the analysis are:

Land Use	Percent Impervious	PI Factors (cfs/ac)			
		2 year	15 year	25 year	100 year
Greenspace	0-5%	1.15	1.70	2.00	2.29
Pavement	100%	2.39	3.54	4.16	4.77

The Postdeveloped Runoff Factors used for the analysis are:

Land Use	Percent Impervious	PI Factors (cfs/ac)			
		2 year	15 year	25 year	100 year
Greenspace	0-5%	1.15	1.70	2.00	2.29
Pavement/ Building	100%	2.39	3.54	4.16	4.77
Basin	100%	2.39	3.54	4.16	4.77

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WATER QUALITY

To ensure that sedimentation and pollution in receiving streams due to development of this site is minimized, our design will consider the Water Quality Volume requirement as described in "Georgia Stormwater Management Manual Volumes 1, 2 and 3". Water quality volume is defined as "The storage needed to capture and treat the runoff from 90% of the recorded daily rainfall events." Water Quality treatment for this site will be provided by the use of 6 Inlet Filters located in all the Proposed Grate Inlets and Yard Drains as well as 2 Snout Structures located in YD 10 and YD 11 to treat the roof stormwater not treated by the Inlet Filters.

REQUIRED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Greenspace	0%	0.23 ac	-	0.23 ac
Onsite Pavement/Building	100%	2.14 ac	2.14 ac	-
Total		2.37 ac	2.14 ac	0.23

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Greenspace to Inlet Filter	0%	0.23 ac		0.23 ac
Onsite Pav/Building to Inlet Filter	100%	2.63 ac	2.63 ac	-
Onsite Pav/Building to Snout	100%	0.52 ac	0.52 ac	-
Total		3.38 ac	3.15 ac	0.23 ac

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INLET FILTER - GI 6

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Pavement/Building	100%	0.41 ac	0.41 ac	-
Total		0.41 ac	0.41 ac	-

$WQ_v = PR_vA/12$ Where: P = 1.14”
$R_v = 0.05 + 0.009(I)$
I = % Impervious
A_I = Impervious Area = 0.41 ac
A = Watershed Area = 0.41 ac

$I = A_I/A = 0.41 \text{ ac} / 0.41 \text{ ac} = 1.00 = 100.00\%$
$R_v = 0.05 + 0.009(100.00) = 0.950$
$WQ_v = 1.14(0.950)(0.41)/12 = 0.037 \text{ ac-ft} = 1{,}611.72 \text{ ft}^3$

The total water quality volume for this watershed is 1,612 ft^3.

An inlet filter will be installed of GI 6 to treat the runoff from this watershed. A Flex Storm Pure PC+ inlet filter will treat 1.7 cfs while removing more than 80% TSS.

Qa = P*Rv
P = 1.14”
Qa = 1.14*0.950 = 1.083 watershed inches

$$CN = \frac{1000}{[10+5P+10Qa-10\sqrt{(Qa^2+1.25QaP)}]}.$$

CN = 99.51
Ia=(200/CN)-2= 0.010
Ia/P = 0.009
From Chart D.11.1 qu = 1000 csm/in
Qp = qu x A x Qa
A = 0.41 acres → 0.00064 mi^2
Qp = 1000 x .00064 x 1.083 = 0.69 cfs

A Flex Storm inlet filter will be installed which is capable of treating a maximum of 1.70 cfs and removing 80% TSS. (Use 62LHDPCP w/P-HD4-320-320-280-280-PCP)

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INLET FILTER - GI 4

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Pavement/Building	100%	0.73 ac	0.73 ac	-
Total		0.73 ac	0.73 ac	-

$WQ_v = PR_vA/12$ Where: P = 1.14”
$R_v = 0.05 + 0.009(I)$
I = % Impervious
A_I = Impervious Area = 0.73 ac
A = Watershed Area = 0.73 ac

$I = A_I/A = 0.73 \text{ ac} / 0.73 \text{ ac} = 1.00 = 100.00\%$
$R_v = 0.05 + 0.009(100.00) = 0.950$
$WQ_v = 1.14(0.950)(0.73)/12 = 0.0659 \text{ ac-ft} = 2{,}870.60 \text{ ft}^3$

The total water quality volume for this watershed is 2,871 ft^3.

An inlet filter will be installed of GI 4 to treat the runoff from this watershed. A Flex Storm Pure PC+ inlet filter will treat 1.7 cfs while removing more than 80% TSS.

Qa = P*Rv
P = 1.14”
Qa = 1.14*0.950 = 1.083 watershed inches

$$CN = \frac{1000}{[10+5P+10Qa-10\sqrt{(Qa^2+1.25QaP)}]}.$$

CN = 99.51
Ia=(200/CN)-2= 0.010
Ia/P = 0.009
From Chart D.11.1 qu = 1000 csm/in
Qp = qu x A x Qa
A = 0.73 acres → 0.00114 mi^2
Qp = 1000 x .00114 x 1.083 = 1.23 cfs

A Flex Storm inlet filter will be installed which is capable of treating a maximum of 1.70 cfs and removing 80% TSS. (Use 62LHDPCP w/P-HD4-320-320-280-280-PCP)

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INLET FILTER - GI 3

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Greenspace	0%	0.23 ac	-	0.23 ac
Onsite Pavement/Building	100%	0.85 ac	0.78 ac	-
Total		1.01 ac	0.78 ac	0.23 ac

$WQ_v = PR_vA/12$ Where: P = 1.14”
$R_v = 0.05 + 0.009(I)$
I = % Impervious
A_I = Impervious Area = 0.78 ac
A = Watershed Area = 1.01 ac

$I = A_I/A = 0.78 \text{ ac} / 1.01 \text{ ac} = 0.7723 = 77.23\%$
$R_v = 0.05 + 0.009(77.23) = 0.745$
$WQ_v = 1.14(0.745)(1.01)/12 = 0.0715 \text{ ac-ft} = 3{,}114.54 \text{ ft}^3$

The total water quality volume for this watershed is 3,115 ft^3.

An inlet filter will be installed of GI 3 to treat the runoff from this watershed. A Flex Storm Pure PC+ inlet filter will treat 1.7 cfs while removing more than 80% TSS.

Qa = P*Rv
P = 1.14”
Qa = 1.14*0.745 = 0.849 watershed inches

$$CN = \frac{1000}{[10+5P+10Qa-10\sqrt{(Qa^2+1.25QaP)}]}.$$

CN = 97.14
Ia=(200/CN)-2= 0.0589
Ia/P = 0.0517
From Chart D.11.1 qu = 1000 csm/in
Qp = qu x A x Qa
A = 1.01 acres → 0.00158 mi^2
Qp = 1000 x .00158 x 0.849 = 1.34 cfs

A Flex Storm inlet filter will be installed which is capable of treating a maximum of 1.70 cfs and removing 80% TSS. (Use 62LHDPCP w/P-HD4-320-320-280-280-PCP)

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INLET FILTER - YD 8

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Pavement/Building	0.00%	0.63 ac	-	-
Total		0.63 ac	0.63 ac	-

$WQ_v = PR_vA/12$ Where: P = 1.14”
$R_v = 0.05 + 0.009(I)$
I = % Impervious
A_I = Impervious Area = 0.63 ac
A = Watershed Area = 0.63 ac

$I = A_I/A = 0.63 \text{ ac} / 0.63 \text{ ac} = 1.00 = 100\%$
$R_v = 0.05 + 0.009(100) = 0.950$
$WQ_v = 1.14(0.950)(0.63)/12 = 0.0114 \text{ ac-ft} = 2{,}479 \text{ ft}^3$

The total water quality volume for this watershed is 2,479 ft^3.

An inlet filter will be installed of YD 8 to treat the runoff from this watershed. A Flex Storm Pure PC+ inlet filter will treat 1.2 cfs while removing more than 80% TSS.

Qa = P*Rv
P = 1.14”
Qa = 1.14*0.950 = 1.083 watershed inches

$$CN = \frac{1000}{[10+5P+10Qa-10\sqrt{(Qa^2+1.25QaP)}]}.$$

CN = 99.51
Ia=(200/CN)-2= 0.010
Ia/P = 0.009
From Chart D.11.1 qu = 1000 csm/in
Qp = qu x A x Qa
A = 0.63 acres → 0.00098 mi^2
Qp = 1000 x .00098 x 1.083 = 1.06 cfs

A Flex Storm inlet filter will be installed which is capable of treating a maximum of 1.20 cfs and removing 80% TSS. (Use 6215NYPCP)

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INLET FILTER - YD 9

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Pavement/Building	100.00%	0.07 ac	-	-
Total		0.07 ac	0.07 ac	-

$WQ_v = PR_vA/12$ Where: P = 1.14”

$R_v = 0.05 + 0.009(I)$

I = % Impervious

A_I = Impervious Area = 0.07 ac

A = Watershed Area = 0.07 ac

$I = A_I/A$ = 0.07 ac / 0.07 ac = 1.00 = 100%

$R_v = 0.05 + 0.009(100) = 0.950$

$WQ_v = 1.14(0.950)(0.07)/12 = 0.0063$ ac-ft = 274.43 ft^3

The total water quality volume for this watershed is 275 ft^3.

An inlet filter will be installed of YD 9 to treat the runoff from this watershed. A Flex Storm Pure PC+ inlet filter will treat 1.2 cfs while removing more than 80% TSS.

Qa = P*Rv

P = 1.14”

Qa = 1.14*0.950 = 1.083 watershed inches

$$CN = \frac{1000}{[10+5P+10Qa-10\sqrt{(Qa^2+1.25QaP)}]}.$$

CN = 99.51

Ia=(200/CN)-2= 0.010

Ia/P = 0.009

From Chart D.11.1 qu = 1000 csm/in

Qp = qu x A x Qa

A = 0.07 acres → 0.00011 mi^2

Qp = 1000 x .00011 x 1.083 = 0.12 cfs

A Flex Storm inlet filter will be installed which is capable of treating a maximum of 1.20 cfs and removing 80% TSS. (Use 6215NYPCP)

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INLET FILTER - YD 10

PROVIDED TREATMENT AREA

	% Impervious	Total Area	Impervious Area	Pervious Area
Onsite Pavement/Building	100.00%	0.08 ac	0.08 ac	-
Total		0.08 ac	0.08 ac	-

$WQ_v = PR_vA/12$ Where: P = 1.14”

$R_v = 0.05 + 0.009(I)$

I = % Impervious

A_I = Impervious Area = 0.08 ac

A = Watershed Area = 0.08 ac

$I = A_I/A$ = 0.08 ac / 0.08 ac = 100.00 = 100.00%

$R_v = 0.05 + 0.009(100) = 0.950$

$WQ_v = 1.14(0.950)(0.08)/12 = 0.0072$ ac-ft = 313.63 ft^3

The total water quality volume for this watershed is 314 ft^3.

An inlet filter will be installed of YD 10 to treat the runoff from this watershed. A Flex Storm Pure PC+ inlet filter will treat 1.2 cfs while removing more than 80% TSS.

Qa = P*Rv
P = 1.14”
Qa = 1.14*0.95 = 1.083 watershed inches

$$CN = \frac{1000}{[10+5P+10Qa-10\sqrt{(Qa^2+1.25QaP)}]}.$$

CN = 99.51
Ia=(200/CN)-2= 0.010
Ia/P = 0.009
From Chart D.11.1 qu = 1000 csm/in
Qp = qu x A x Qa
A = 0.08 acres → 0.00013 mi^2
Qp = 1000 x .00013 x 1.083 = 0.14 cfs

A Flex Storm inlet filter will be installed which is capable of treating a maximum of 1.20 cfs and removing 80% TSS. (Use 6218NYPCP)

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WATER QUALITY – SNOUT

YD 10

In addition to the Inlet Filters, a Snout will be installed in YD 10. This will provide treatment for the roof water piped directly into the proposed Storm Sewer System as well as re-treat the storm water runoff from the pavement.

The manufacturer specifies that the size of the snout should be based on the outflow pipe from the structure. For a 12” R.C.P. outfall pipe and an 18” Nyloplast Structure, the manufacturer recommends a NP1218R Unit.

The sump depth should be 2.5 to 3 times the inside diameter of the outflow pipe which equates to 2.5’ to 3’. The proposed sump depth is 3’ which adds additional prevention of sediment resuspension as recommended by the manufacturer.

The Sump of the structure will provide 5.30 ft^3 of sediment storage volume.

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WATER QUALITY – SNOUT

MH 11

A Snout will be installed in MH 11 which will provide treatment for the roof water piped directly into the proposed Storm Sewer System.

The manufacturer specifies that the size of the snout should be based on the outflow pipe from the structure. For a 10” R.C.P. outfall pipe and an 18” Nyloplast Structure, the manufacturer recommends a NP1218R Unit.

The sump depth should be 2.5 to 3 times the inside diameter of the outflow pipe as specified by the manufacturer. This equates to 2.08’ to 2.49’ which is below the minimum required sump of 3’. The proposed sump depth is 3’ which adds additional prevention of sediment resuspension as recommended by the manufacturer.

The Sump of the structure will provide 5.30 ft^3 of sediment storage volume.

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DETENTION BASIN CALCULATIONS

PREDEVELOPED CONDITIONS:

The Predeveloped site has 6 separate Discharge Points that are modeled to analyze the peak runoff contributed by the site under the existing condition. The total runoff for each Watershed is calculated using the Rational Method to determine the Predeveloped Runoff Rates leaving the site. The Predeveloped Runoff Rates for the 2, 15, 25, and 100 Year 20 Minute Design Storm are calculated for comparison to the Postdeveloped Runoff Rates to determine the Required Attenuation for the development. Drainage Areas are shown on the accompanying Predeveloped Drainage Area Map.

Discharge Point A

2 Year				
Onsite Greenspace	4.70 ac	x 1.15 cfs/ac	=	5.41 cfs
		Total	=	5.41 cfs
15 Year				
Onsite Greenspace	4.70 ac	x 1.70 cfs/ac	=	7.99 cfs
		Total	=	7.99 cfs
25 Year				
Onsite Greenspace	4.70 ac	x 2.00 cfs/ac	=	9.40 cfs
		Total	=	9.40 cfs
100 Year				
Onsite Greenspace	4.70 ac	x 2.29 cfs/ac	=	10.76 cfs
		Total	=	10.76 cfs

2 year-20 minute storm:	5.41 cfs
15 year-20 minute storm:	7.99 cfs
25 year-20 minute storm:	9.40 cfs
100 year-20 minute storm:	10.76 cfs

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Discharge Point B

2 Year				
Onsite Greenspace	4.96 ac	x 1.15 cfs/ac	=	5.70 cfs
		Total	=	5.70 cfs
15 Year				
Onsite Greenspace	4.96 ac	x 1.70 cfs/ac	=	8.43 cfs
		Total	=	8.43 cfs
25 Year				
Onsite Greenspace	4.96 ac	x 2.00 cfs/ac	=	9.92 cfs
		Total	=	9.92 cfs
100 Year				
Onsite Greenspace	4.96 ac	x 2.29 cfs/ac	=	11.36 cfs
		Total	=	11.36 cfs

2 year-20 minute storm:	5.70 cfs
15 year-20 minute storm:	8.43 cfs
25 year-20 minute storm:	9.92 cfs
100 year-20 minute storm:	11.36 cfs

Discharge Point C

2 Year				
Onsite Greenspace	1.52 ac	x 1.15 cfs/ac	=	1.75 cfs
		Total	=	1.75 cfs
15 Year				
Onsite Greenspace	1.52 ac	x 1.70 cfs/ac	=	2.58 cfs
		Total	=	2.58 cfs
25 Year				
Onsite Greenspace	1.52 ac	x 2.00 cfs/ac	=	3.04 cfs
		Total	=	3.04 cfs
100 Year				
Onsite Greenspace	1.52 ac	x 2.29 cfs/ac	=	3.48 cfs
		Total	=	3.48 cfs

2 year-20 minute storm:	1.75 cfs
15 year-20 minute storm:	2.58 cfs
25 year-20 minute storm:	3.04 cfs
100 year-20 minute storm:	3.48 cfs

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Discharge Point D

2 Year

Onsite Greenspace	12.40 ac	x 1.15 cfs/ac	=	14.26 cfs
		Total	=	14.26 cfs

15 Year

Onsite Greenspace	12.40 ac	x 1.70 cfs/ac	=	21.08 cfs
		Total	=	21.08 cfs

25 Year

Onsite Greenspace	12.40 ac	x 2.00 cfs/ac	=	24.80 cfs
		Total	=	24.80 cfs

100 Year

Onsite Greenspace	12.40 ac	x 2.29 cfs/ac	=	28.40 cfs
		Total	=	28.40 cfs

2 year-20 minute storm:	14.26 cfs
15 year-20 minute storm:	21.08 cfs
25 year-20 minute storm:	24.80 cfs
100 year-20 minute storm:	28.40 cfs

Discharge Point E

2 Year

Onsite Greenspace	0.88 ac	x 1.15 cfs/ac	=	1.01 cfs
		Total	=	1.01 cfs

15 Year

Onsite Greenspace	0.88 ac	x 1.70 cfs/ac	=	1.50 cfs
		Total	=	1.50 cfs

25 Year

Onsite Greenspace	0.88 ac	x 2.00 cfs/ac	=	1.76 cfs
		Total	=	1.76 cfs

100 Year

Onsite Greenspace	0.88 ac	x 2.29 cfs/ac	=	2.02 cfs
		Total	=	2.02 cfs

2 year-20 minute storm:	1.01 cfs
15 year-20 minute storm:	1.50 cfs
25 year-20 minute storm:	1.76 cfs
100 year-20 minute storm:	2.02 cfs

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Discharge Point F

2 Year				
Onsite Greenspace	0.90 ac	x 1.15 cfs/ac	=	1.04 cfs
		Total	=	1.04 cfs
15 Year				
Onsite Greenspace	0.90 ac	x 1.70 cfs/ac	=	1.53 cfs
		Total	=	1.53 cfs
25 Year				
Onsite Greenspace	0.90 ac	x 2.00 cfs/ac	=	1.80 cfs
		Total	=	1.80 cfs
100 Year				
Onsite Greenspace	0.90 ac	x 2.29 cfs/ac	=	2.06 cfs
		Total	=	2.06 cfs

2 year-20 minute storm:	1.04 cfs
15 year-20 minute storm:	1.53 cfs
25 year-20 minute storm:	1.80 cfs
100 year-20 minute storm:	2.06 cfs

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POSTDEVELOPED CONDITIONS:

The Postdeveloped site maintains the same distinct Discharge Points as analyzed under the Predeveloped Condition. The total runoff for each Watershed is calculated using the Rational Method to determine the Postdeveloped Runoff Rates leaving the site. The Postdeveloped Runoff Rates for the 2, 15, 25, and 100 Year 20 Minute Design Storms are calculated for comparison to the previously calculated Predeveloped Runoff to determine the Required Attenuation for the development. Drainage Areas are shown on the accompanying Postdeveloped Drainage Area Map.

Discharge Point A

2 Year				
Onsite Greenspace	6.04 ac x	1.15 cfs/ac	=	6.95 cfs
		Total	=	6.95 cfs
15 Year				
Onsite Greenspace	6.04 ac x	1.70 cfs/ac	=	10.27 cfs
		Total	=	10.27 cfs
25 Year				
Onsite Greenspace	6.04 ac x	2.00 cfs/ac	=	12.08 cfs
		Total	=	12.08 cfs
100 Year				
Onsite Greenspace	6.04 ac x	2.29 cfs/ac	=	13.83 cfs
		Total	=	13.83 cfs

2 year-20 minute storm:	6.95 cfs
15 year-20 minute storm:	10.27 cfs
25 year-20 minute storm:	12.08 cfs
100 year-20 minute storm:	13.83 cfs

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Discharge Point B

2 Year				
Onsite Greenspace	1.07 ac	x 1.15 cfs/ac	=	1.23 cfs
		Total	=	1.23 cfs
15 Year				
Onsite Greenspace	1.07 ac	x 1.70 cfs/ac	=	1.82 cfs
		Total	=	1.82 cfs
25 Year				
Onsite Greenspace	1.07 ac	x 2.00 cfs/ac	=	2.14 cfs
		Total	=	2.14 cfs
100 Year				
Onsite Greenspace	1.07 ac	x 2.29 cfs/ac	=	2.45 cfs
		Total	=	2.45 cfs

2 year-20 minute storm:	1.23 cfs
15 year-20 minute storm:	1.82 cfs
25 year-20 minute storm:	2.14 cfs
100 year-20 minute storm:	2.45 cfs

Discharge Point C

2 Year				
Onsite Greenspace	1.22 ac	x 1.15 cfs/ac	=	1.40 cfs
		Total	=	1.40 cfs
15 Year				
Onsite Greenspace	1.22 ac	x 1.70 cfs/ac	=	2.07 cfs
		Total	=	2.07 cfs
25 Year				
Onsite Greenspace	1.22 ac	x 2.00 cfs/ac	=	2.44 cfs
		Total	=	2.44 cfs
100 Year				
Onsite Greenspace	1.22 ac	x 2.29 cfs/ac	=	2.79 cfs
		Total	=	2.79 cfs

2 year-20 minute storm:	1.40 cfs
15 year-20 minute storm:	2.07 cfs
25 year-20 minute storm:	2.44 cfs
100 year-20 minute storm:	2.79 cfs

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Discharge Point D

2 Year					
Onsite Greenspace	3.45 ac	x	1.15 cfs/ac	=	3.97 cfs
Onsite Pav/Building	12.15 ac	x	2.39 cfs/ac	=	29.04 cfs
Onsite Basin	0.46 ac	x	2.39 cfs/ac	=	1.10 cfs
			Total	=	34.11 cfs
15 Year					
Onsite Greenspace	3.45 ac	x	1.70 cfs/ac	=	5.87 cfs
Onsite Pav/Building	12.15 ac	x	3.54 cfs/ac	=	43.01 cfs
Onsite Basin	0.46 ac	x	3.54 cfs/ac	=	1.63 cfs
			Total	=	50.51 cfs
25 Year					
Onsite Greenspace	3.45 ac	x	2.00 cfs/ac	=	6.90 cfs
Onsite Pav/Building	12.15 ac	x	4.16 cfs/ac	=	50.54 cfs
Onsite Basin	0.46 ac	x	4.16 cfs/ac	=	1.91 cfs
			Total	=	59.35 cfs
100 Year					
Onsite Greenspace	3.45 ac	x	2.29 cfs/ac	=	7.90 cfs
Onsite Pav/Building	12.15 ac	x	4.77 cfs/ac	=	57.96 cfs
Onsite Basin	0.46 ac	x	4.77 cfs/ac	=	2.19 cfs
			Total	=	68.05 cfs

2 year-20 minute storm:	34.11 cfs
15 year-20 minute storm:	50.51 cfs
25 year-20 minute storm:	59.35 cfs
100 year-20 minute storm:	68.05 cfs

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Discharge Point E

2 Year				
Onsite Greenspace	0.67 ac	x 1.15 cfs/ac	=	0.77 cfs
		Total	=	0.77 cfs
15 Year				
Onsite Greenspace	0.67 ac	x 1.70 cfs/ac	=	1.14 cfs
		Total	=	1.14 cfs
25 Year				
Onsite Greenspace	0.67 ac	x 2.00 cfs/ac	=	1.34 cfs
		Total	=	1.34 cfs
100 Year				
Onsite Greenspace	0.67 ac	x 2.29 cfs/ac	=	1.53 cfs
		Total	=	1.53 cfs

2 year-20 minute storm:	0.77 cfs
15 year-20 minute storm:	1.14 cfs
25 year-20 minute storm:	1.34 cfs
100 year-20 minute storm:	1.53 cfs

Discharge Point F

2 Year				
Onsite Greenspace	0.30 ac	x 1.15 cfs/ac	=	0.35 cfs
		Total	=	0.35 cfs
15 Year				
Onsite Greenspace	0.30 ac	x 1.70 cfs/ac	=	0.51 cfs
		Total	=	0.51 cfs
25 Year				
Onsite Greenspace	0.30 ac	x 2.00 cfs/ac	=	0.60 cfs
		Total	=	0.60 cfs
100 Year				
Onsite Greenspace	0.30 ac	x 2.29 cfs/ac	=	0.69 cfs
		Total	=	0.69 cfs

2 year-20 minute storm:	0.35 cfs
15 year-20 minute storm:	0.51 cfs
25 year-20 minute storm:	0.60 cfs
100 year-20 minute storm:	0.69 cfs

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DIFFERENTIAL RUNOFF

The Differential Runoff for each discharge point is determined by subtracting the Predeveloped Runoff rate from the Postdeveloped Runoff rate. A positive Differential Runoff demonstrates the need for stormwater detention within that watershed. Due to the fact that the watershed boundaries changed on this site from Predeveloped to Postdeveloped, calculations show that Discharge Point #1 and Discharge Point #4 require detention. The remaining 4 Discharge Points show a negative Differential Runoff which means that no detention is required.

Discharge Point A

Design Storm	Postdeveloped Runoff	Predeveloped Runoff	Differential Runoff
2 yr	6.95 cfs	5.41 cfs	1.54 cfs
15 yr	10.27 cfs	7.99 cfs	2.28 cfs
25 yr	12.08 cfs	9.40 cfs	2.68 cfs
100 yr	13.83 cfs	10.76 cfs	3.07 cfs

*Detention must be provided upstream of Discharge Point A and is with the Northern Dry Detention Basin. See Report dated May 26, 2011.

Discharge Point B

Design Storm	Postdeveloped Runoff	Predeveloped Runoff	Differential Runoff
2 yr	1.23 cfs	5.70 cfs	-4.47 cfs
15 yr	1.82 cfs	8.43 cfs	-6.61 cfs
25 yr	2.14 cfs	9.92 cfs	-7.78 cfs
100 yr	2.45 cfs	11.36 cfs	-8.91 cfs

Discharge Point C

Design Storm	Postdeveloped Runoff	Predeveloped Runoff	Differential Runoff
2 yr	1.40 cfs	1.75 cfs	-0.35 cfs
15 yr	2.07 cfs	2.58 cfs	-0.51cfs
25 yr	2.44 cfs	3.04 cfs	-0.60 cfs
100 yr	2.79 cfs	3.48 cfs	-0.69 cfs

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Discharge Point D

Design Storm	Postdeveloped Runoff	Predeveloped Runoff	Differential Runoff
2 yr	34.11 cfs	14.26 cfs	19.85 cfs
15 yr	50.51 cfs	21.08 cfs	29.43 cfs
25 yr	59.35 cfs	24.80 cfs	34.55 cfs
100 yr	68.05 cfs	28.40 cfs	39.65 cfs

*Detention must be provided upstream of Discharge Point D.

Discharge Point E

Design Storm	Postdeveloped Runoff	Predeveloped Runoff	Differential Runoff
2 yr	0.77 cfs	1.01 cfs	-0.24 cfs
15 yr	1.14 cfs	1.50 cfs	-0.36 cfs
25 yr	1.34 cfs	1.76 cfs	-0.42 cfs
100 yr	1.53 cfs	2.02 cfs	-0.49 cfs

Discharge Point F

Design Storm	Postdeveloped Runoff	Predeveloped Runoff	Differential Runoff
2 yr	0.35 cfs	1.04 cfs	-0.69 cfs
15 yr	0.51 cfs	1.53 cfs	-1.02 cfs
25 yr	0.60 cfs	1.80 cfs	-1.20 cfs
100 yr	0.69 cfs	2.06 cfs	-1.37 cfs

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TIME OF CONCENTRATION:

Time of Concentration is defined as the time needed for stormwater to flow from the most remote point in a watershed to the proposed Detention Facility. With that said, the most remote point of flow on this site tributary to the Detention Facility lies on the Northern quadrant of the site. Flows will travel approximately 158 feet overland to the existing storm system where the runoff is carried approximately 1,288 feet to the Southern Existing Dry Detention Basin. Time of Concentration is estimated as follows:

Discharge Point D

T(overland): L = 158 feet
Elevation difference = 6.50 feet
Surface Coefficient = 0.40 (Pavement)

T(overland) = 1.45*0.4 = 0.58 minutes:
See figure 1 in Appendix A

T(storm system): L = 1,288 feet
Average Velocity = 7 ft/s

T(storm system) = 1,288(ft) / 7(ft/s) /60 (s/min) = 3.07 min

Total time = 0.58 + 3.07 = 3.65 min => **use 3 minute**

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Basin Peak Inflow

Southern Existing Dry Detention Basin

2 Year					
Onsite Greenspace	2.88 ac	x	1.15 cfs/ac	=	3.31 cfs
Onsite Pavement/Building	12.10 ac	x	2.39 cfs/ac	=	28.92 cfs
Onsite Basin	0.46 ac	x	2.39 cfs/ac	=	1.10 cfs
			Total	=	33.33 cfs
15 Year					
Onsite Greenspace	2.88 ac	x	1.70 cfs/ac	=	4.90 cfs
Onsite Pavement/Building	12.10 ac	x	3.54 cfs/ac	=	42.83 cfs
Onsite Basin	0.46 ac	x	3.54 cfs/ac	=	1.63 cfs
			Total	=	49.36 cfs
25 Year					
Onsite Greenspace	2.88 ac	x	2.00 cfs/ac	=	5.76 cfs
Onsite Pavement/Building	12.10 ac	x	4.16 cfs/ac	=	50.34 cfs
Onsite Basin	0.46 ac	x	4.16 cfs/ac	=	1.91 cfs
			Total	=	58.01 cfs
100 Year					
Onsite Greenspace	2.88 ac	x	2.29 cfs/ac	=	6.60 cfs
Onsite Pavement/Building	12.10 ac	x	4.77 cfs/ac	=	57.72 cfs
Onsite Basin	0.46 ac	x	4.77 cfs/ac	=	2.19 cfs
			Total	=	66.51 cfs

2 year-20 minute storm:	33.33 cfs
15 year-20 minute storm:	49.36 cfs
25 year-20 minute storm:	58.01 cfs
100 year-20 minute storm:	66.51 cfs

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ALLOWABLE RELEASE RATE

Allowable Release Rate is defined as the maximum amount of stormwater that can be released from the proposed basin in any given storm duration. This calculation can be done by taking the Basin Inflow and subtracting it by the Differential Runoff Rate for each design storm. The following table is the representation of the Allowable Release Rate for this site:

SOUTHERN DRY DETENTION BASIN

STORM	BASIN INFLOW	-	DIFFERENTIAL RUNOFF RATE	=	ALLOWABLE RELEASE RATE
2 yr	33.33 cfs	-	19.85 cfs	=	13.48 cfs
15 yr	49.36 cfs	-	29.43 cfs	=	19.93 cfs
25 yr	58.01 cfs	-	34.55 cfs	=	23.46 cfs
100 yr	66.51 cfs	-	39.65 cfs	=	26.86 cfs

STORM ROUTING CALCULATIONS AND RESULTS

The computer program PONDPACK was used in routing the 2, 15, 25 and 100 Year Design Storms through the Southern Existing Dry Detention Basin within the site. The routing calculations can be found in Appendix B for the 2, 15, 25 and 100 year storms for the watershed and also the calculations for safe passage for the 100 year storm assuming the low flow slot is blocked (LFB). As found in the routing calculations, the results are as follows:

Southern Existing Dry Detention Basin

STORM (20 MIN)	PEAK INFLOW	ALLOWABLE RELEASE RATE	CALCULATED RELEASE	PEAK ELEVATION
2 yr	33.33 cfs	13.48 cfs	12.99 cfs	584.44 ft
15 yr	49.36 cfs	19.93 cfs	19.23 cfs	585.57 ft
25 yr	58.01 cfs	23.46 cfs	23.34 cfs	586.08 ft
100 yr	66.51 cfs	26.86 cfs	25.72 cfs	586.55 ft
100 yr LFB	66.51 cfs	N/A	65.52 cfs	587.89 ft

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SEDIMENT STORAGE CALCULATIONS

The City of O'Fallon Design Standards require that all detention basins are designed to accommodate two years of sediment storage. This is accomplished by routing the design storms through the outfall structure and determining the 100 year, 20 minute high-water elevation. Using the annual sediment storage nomograph included in the Appendix of this report, we calculate the volume of sediment delivered to the proposed Detention Basin over a two year period. By adding the volume of sediment to the storage volume required for the 100 year, 20 minute storm, we can calculate the crest elevation of the standpipe which must be above the volume required for the 100 year, 20 minute storm and the volume required sediment storage when added together. Pond pack has been used to calculate this elevation and the results are as follows:

Southern Dry Detention Basin

100 Year, 20 Minute Storage	= 58,350.00 ft^3
Volume Achieved at Elevation	= 586.55 ft
2 Year Sediment Storage Volume	= 4,015 ft^3
Required Storage Volume	= 62,365.00 ft^3
Volume Achieved at Elevation	= 586.76 ft
Crest of Outfall Structure and Sill	= 586.78 ft

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SUMMARY:

Southern Existing Dry Detention Basin	Flow Rate	High Water
2 Year	12.99 cfs	584.44 ft
15 Year	19.23 cfs	585.57 ft
25 Year	23.34 cfs	586.08 ft
100 Year	25.72 cfs	586.55 ft
100 Year –LOW FLOW BLOCKED	65.52 cfs	587.89 ft

LOW FLOW SLOT	9” W x 22” H
ELEVATION	579.70 ft
UPPER FLOW SLOT	16” W x 15” H
ELEVATION	584.50 ft
STRUCTURE TYPE	Precast Double Area Inlet Base
CREST ELEVATION	586.78 ft
TOP OF BASIN BERM	589.00 ft
FREEBOARD	1.11 ft

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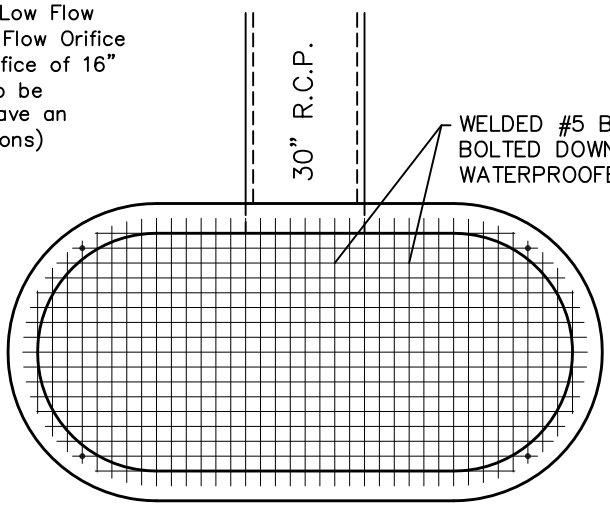
Appendix A

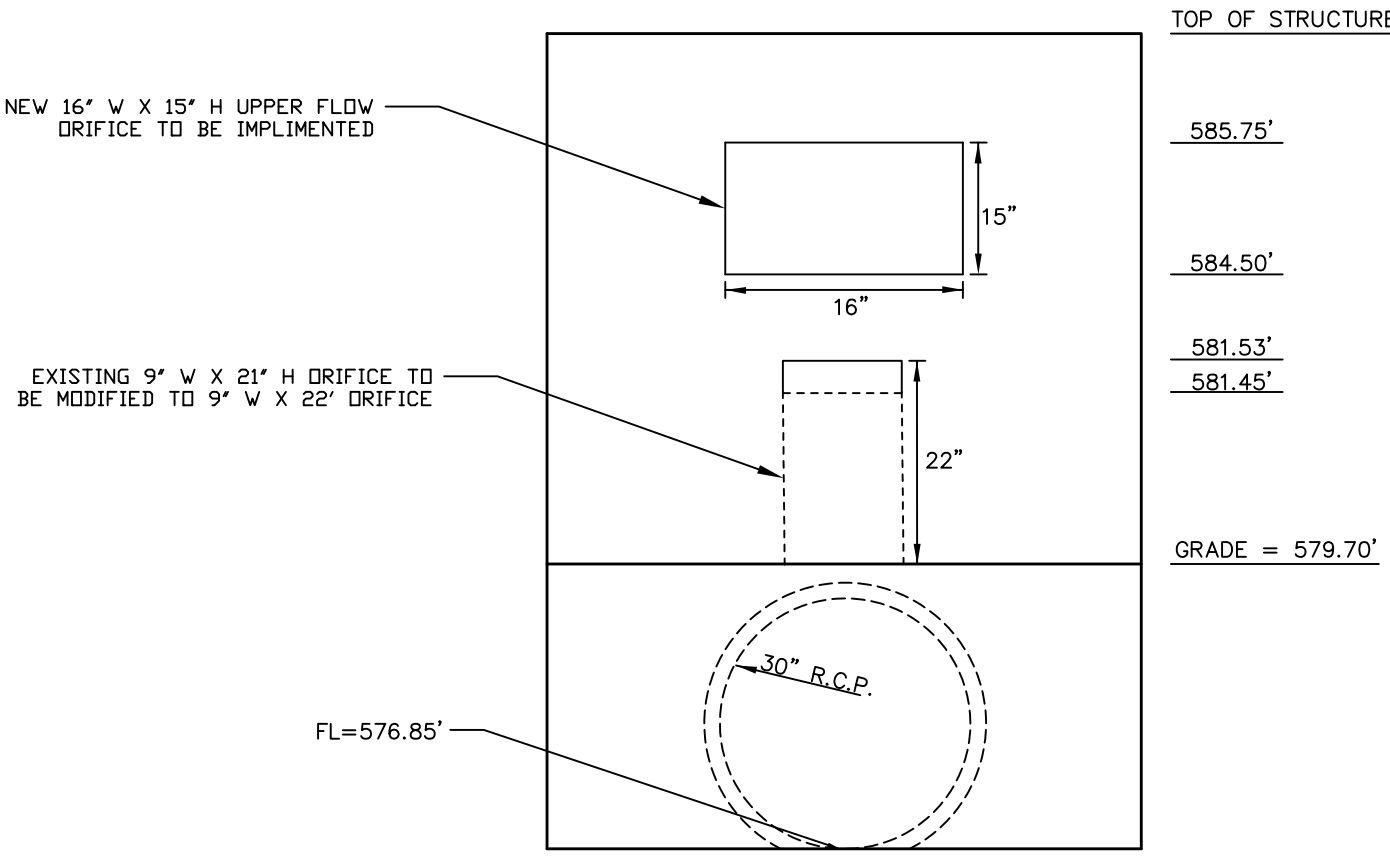
-Structure Details

-Misc Figures

The Existing Overflow Structure is a Standard Double Untrapped Street Inlet Precast Concrete (without top). See M.S.D. Detail 37. Existing 9" W x 21" H Low Flow Orifice to be modified to 9" W x 22" H Low Flow Orifice with a flowline of 579.70'. An Upper Flow Orifice of 16" W x 15" H with a flowline of 584.50' will also be implemented. The top of the structure will have an elevation of 586.78'. (See Detention Calculations)



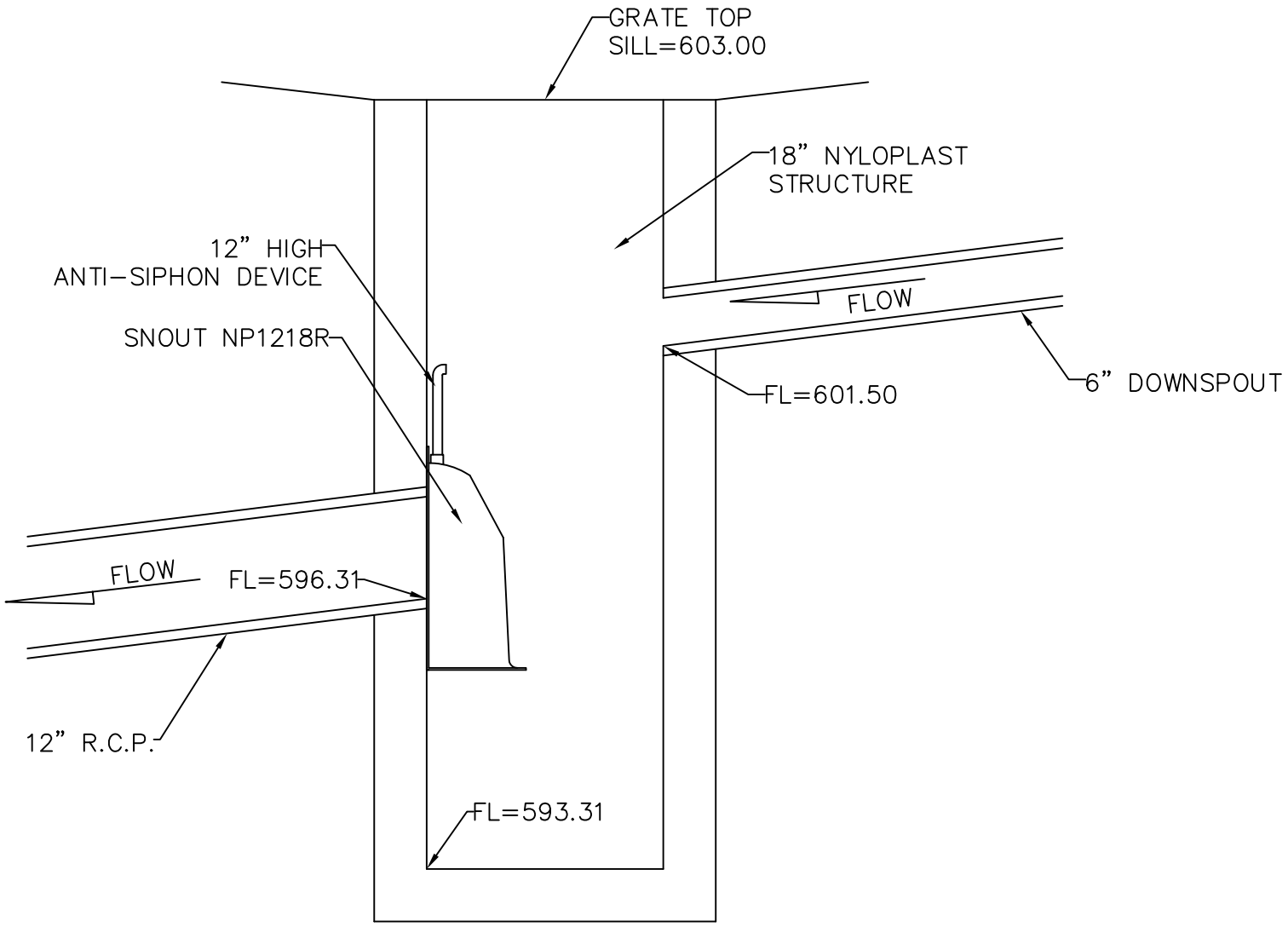
TOP VIEW
N.T.S.



2 YR 20 MIN HW = 584.44'
15 YR 20 MIN HW = 585.57'
25 YR 20 MIN HW = 586.08'
100 YR 20 MIN = 586.55'
100 YR 24 HR, LFB HW = 587.89'

SOUTHERN EXISTING DRY DETENTION BASIN OVERFLOW STRUCTURE

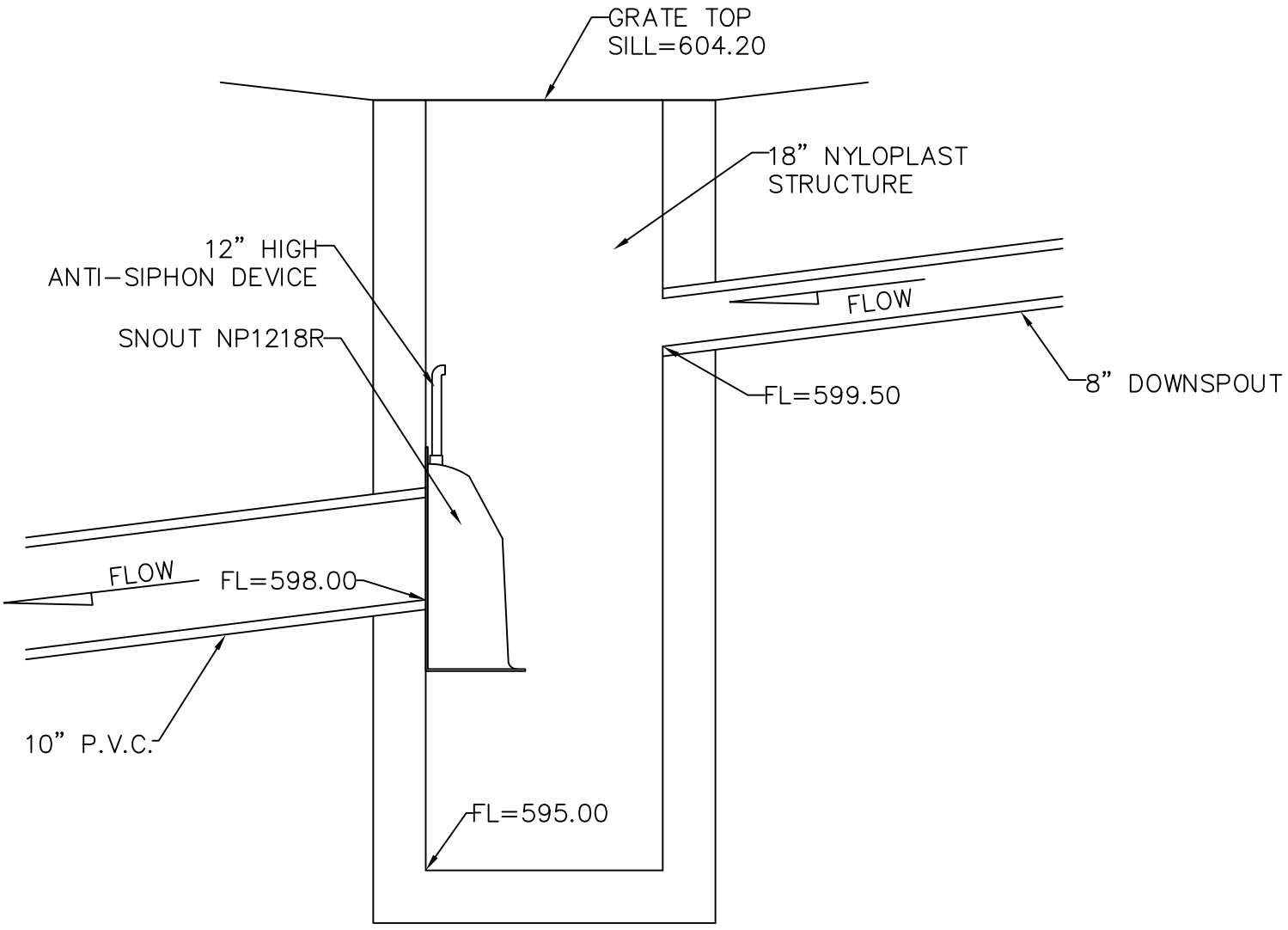
N.T.S.



SIDE VIEW

SNOUT DETAIL YD 10

NOT TO SCALE



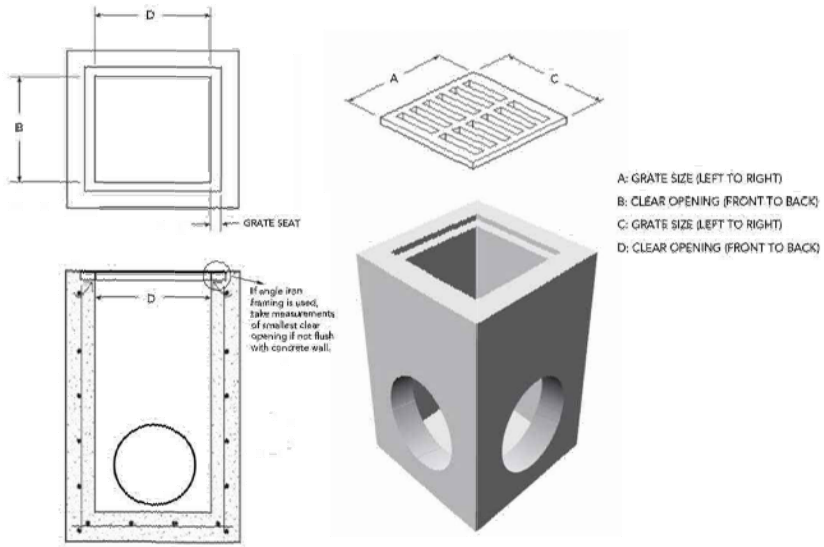
SIDE VIEW

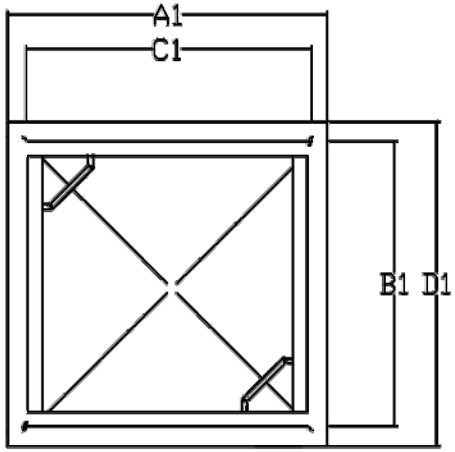
SNOUT DETAIL YD 11

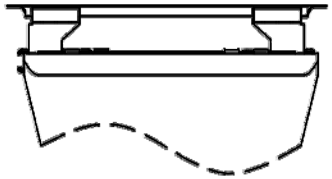
NOT TO SCALE

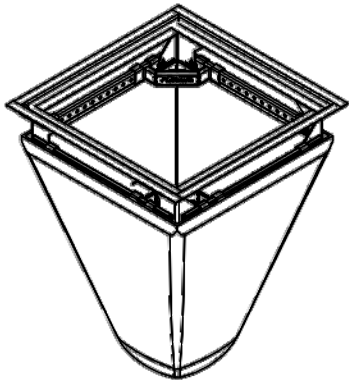
FLEXSTORM P/Ns 62LHDPC & 62LHDPCP

HD4 INLET TYPE: SQUARE/RECT PRECAST OPENING WITH 4 SEAT GRATE SUPPORT









Pure Frame with PC Bag		Field Inlet Dimensions		Flexstorm Framing Dims				Flexstorm Ratings (Flow at 50% Max)			Pure Frame with PC+ Bag	
		Grate Size (A x C)	Clear Opening (B x D)	B1	D1	A1	C1	Bag Capacity (ft^3)	PC/PC+ Flow Rate (CFS)	Bypass (CFS)		
ADS P/N	Flexstorm Item Code										ADS P/N	Flexstorm Item Code
62LHDPC	P-HD4-268-268-243-243-PC	26.76 X 26.76	24 .26 X 24.26	22.0	21.6	25.5	25.5	3.0	1.4	4.7	62LHDPCP	P-HD4-268-268-243-243-PCP
62LHDPC	P-HD4-338-218-304-184-PC	33.75 x 21.75	30.375 x 18.375	30.0	15.5	33.5	18.1	3.0	1.4	4.9	62LHDPCP	P-HD4-338-218-304-184-PCP
62LHDPC	P-HD4-280-280-245-245-PC	28 x 28	24.5 x 24.5	24.0	21.5	27.5	24.3	3.3	1.5	4.9	62LHDPCP	P-HD4-280-280-245-245-PCP
62LHDPC	P-HD4-358-179-336-156-PC	35.75x 17.87	33.62 x 15.62	32.0	12.5	35.5	17.6	2.5	1.5	4.8	62LHDPCP	P-HD4-358-179-336-156-PCP
62LHDPC	P-HD4-338-218-314-194-PC	33.75 x 21.75	31.375 x 19.375	30.0	16.5	33.5	21.5	3.2	1.6	5.0	62LHDPCP	P-HD4-338-218-314-194-PCP
62LHDPC	P-HD4-279-279-258-258-PC	27.875 x 27.875	25.75 x 25.75	24.0	23.0	27.5	27.6	3.5	1.5	5.1	62LHDPCP	P-HD4-279-279-258-258-PCP
62LHDPC	P-HD4-280-280-259-259-PC	28 X 28	25.87 X 25.87	24.5	23.0	28.0	27.8	3.6	1.5	5.1	62LHDPCP	P-HD4-280-280-259-259-PCP
62LHDPC	P-HD4-360-200-340-180-PC	36 x 20	34 x 18	32.5	16.0	36.0	19.8	3.1	1.6	5.1	62LHDPCP	P-HD4-360-200-340-180-PCP
62LHDPC	P-HD4-290-290-261-261-PC	29 x 29	26.1 x 26.1	25.5	23.0	29.0	28.8	3.7	1.6	5.2	62LHDPCP	P-HD4-290-290-261-261-PCP
62LHDPC	P-HD4-319-259-304-246-PC	31.87 x 25.87	30.375 x 24.62	28.0	21.5	31.5	25.6	3.8	1.6	5.3	62LHDPCP	P-HD4-319-259-304-246-PCP
62LHDPC	P-HD4-360-240-335-215-PC	36 x 24	33.5 x 21.5	32.5	18.5	36.0	23.8	3.8	1.6	5.5	62LHDPCP	P-HD4-360-240-335-215-PCP
62LHDPC	P-HD4-368-238-340-220-PC	36.75 x 23.75	34 x 22	32.0	19.0	36.5	23.5	3.9	1.7	5.5	62LHDPCP	P-HD4-368-238-340-220-PCP
62LHDPC	P-HD4-300-300-280-280-PC	30 x 30	28 x 28	26.5	25.0	30.0	29.8	4.2	1.7	5.6	62LHDPCP	P-HD4-300-300-280-280-PCP
62LHDPC	P-HD4-320-320-280-280-PC	32x32	28x28	27.5	25.0	31.0	27.8	4.4	1.7	5.7	62LHDPCP	P-HD4-320-320-280-280-PCP
62LHDPC	P-HD4-360-240-341-221-PC	36 x 24	34.125 x 22.125	32.5	19.0	36.0	23.8	3.9	1.7	5.6	62LHDPCP	P-HD4-360-240-341-221-PCP
62LHDPC	P-HD4-360-240-345-225-PC	36 x 24	34.5 x 22.5	32.5	19.5	36.0	23.8	4.0	1.7	5.6	62LHDPCP	P-HD4-360-240-345-225-PCP
62LHDPC	P-HD4-450-225-406-180-PC	45 x 22.5	40.58 x 18	40.0	15.0	43.5	17.8	3.8	1.7	5.9	62LHDPCP	P-HD4-450-225-406-180-PCP
62LHDPC	P-HD4-390-239-375-224-PC	39 x 23.87	37.5 x 22.375	36.5	19.5	39.0	23.6	4.4	1.8	5.9	62LHDPCP	P-HD4-390-239-375-224-PCP
62LHDPC	P-HD4-359-279-340-260-PC	35.87 x 27.87	34 x 26	32.0	23.0	35.5	27.6	4.7	1.8	5.9	62LHDPCP	P-HD4-359-279-340-260-PCP
62LHDPC	P-HD4-400-280-360-240-PC	40x28	36x24	35.5	21.0	39.0	23.8	4.7	1.8	6.1	62LHDPCP	P-HD4-400-280-360-240-PCP

NOTES:

1. RATINGS SHOWN ARE FOR STANDARD 22" BAG DEPTH; "SHORT" 12" DEPTH BAGS ARE AVAILABLE WITH -S SUFFIX; RATINGS REDUCED BY ~50%.

2. THE FOLLOWING REQUIRES ADDITIONAL REVIEW

-GRATES WITH EXTENDED BOTTOMS

-ANY OBSTRUCTED INLET OPENINGS

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SIZE	FRAME TYPE	DWG NO	REV
C	HD4	HD4-62LHD-PC	A

SCALE

SHEET 1 OF 1

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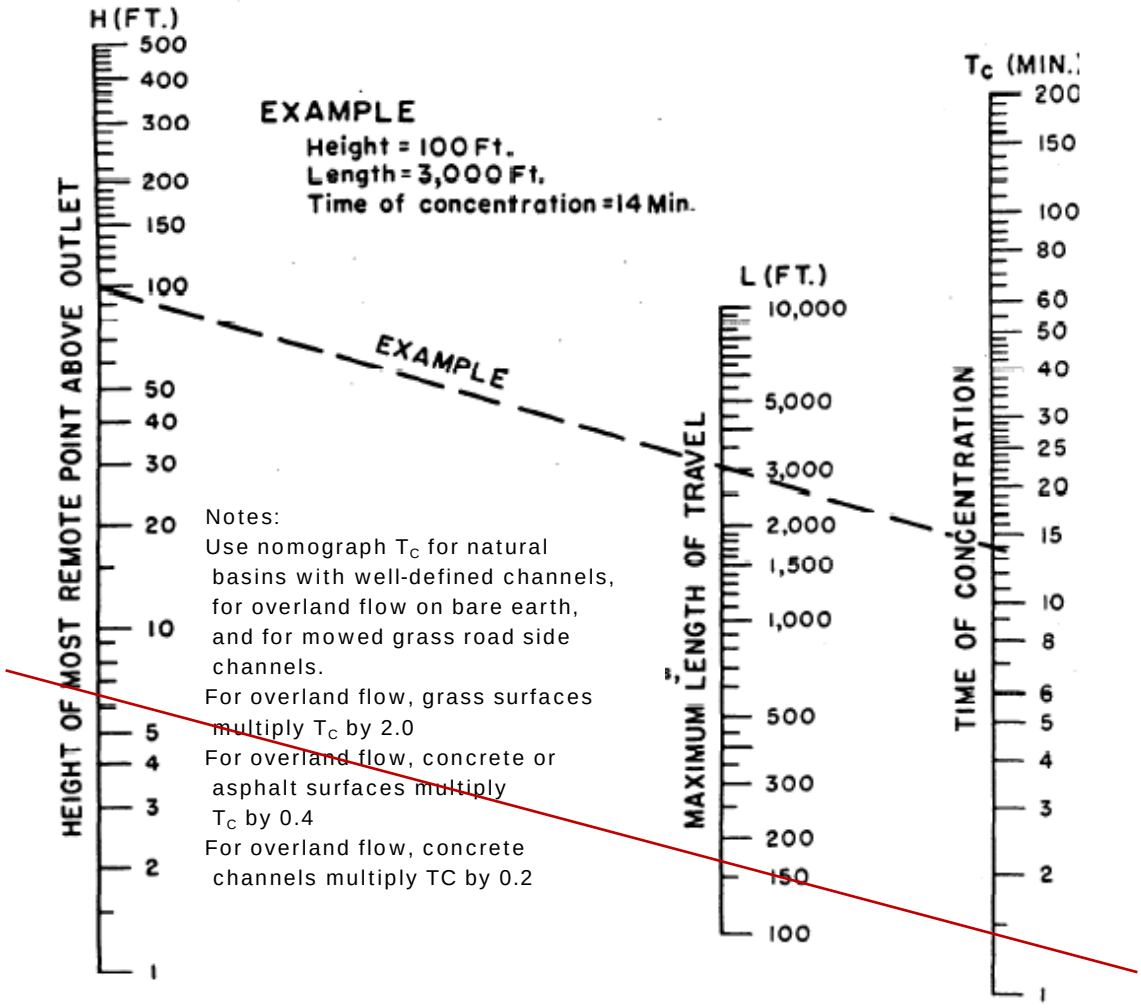
St. Charles, MO 63301
636 928-5552 FAX 636 928-1718

Project: Frontier Middle School Addition
Date: 12-4-19 Project No: 03-12495H
Designer: TMM Checked: TCF

TIME OF CONCENTRATION FOR SMALL DRAINAGE BASINS



OVERLAND FLOW

Δ Height = 6.5 ft

Length = 158 ft

$T_{Overland}$ = 1.45 min * 0.4 = 0.58

STORM SEWER TRAVEL TIME

T_{storm}=Pipe Length (L) * Assumed Velocity (V)

L = 1,288 ft

V = 7 ft/s

T_{storm} = 1,288 ft / 7 ft/s / 60 sec/min =3.07 min

Total Time of Concentration = $T_{Overland}$ + T_{storm} = 0.58 + 3.07 = 3.65 → USE 3 min.

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St. Charles, MO 63301
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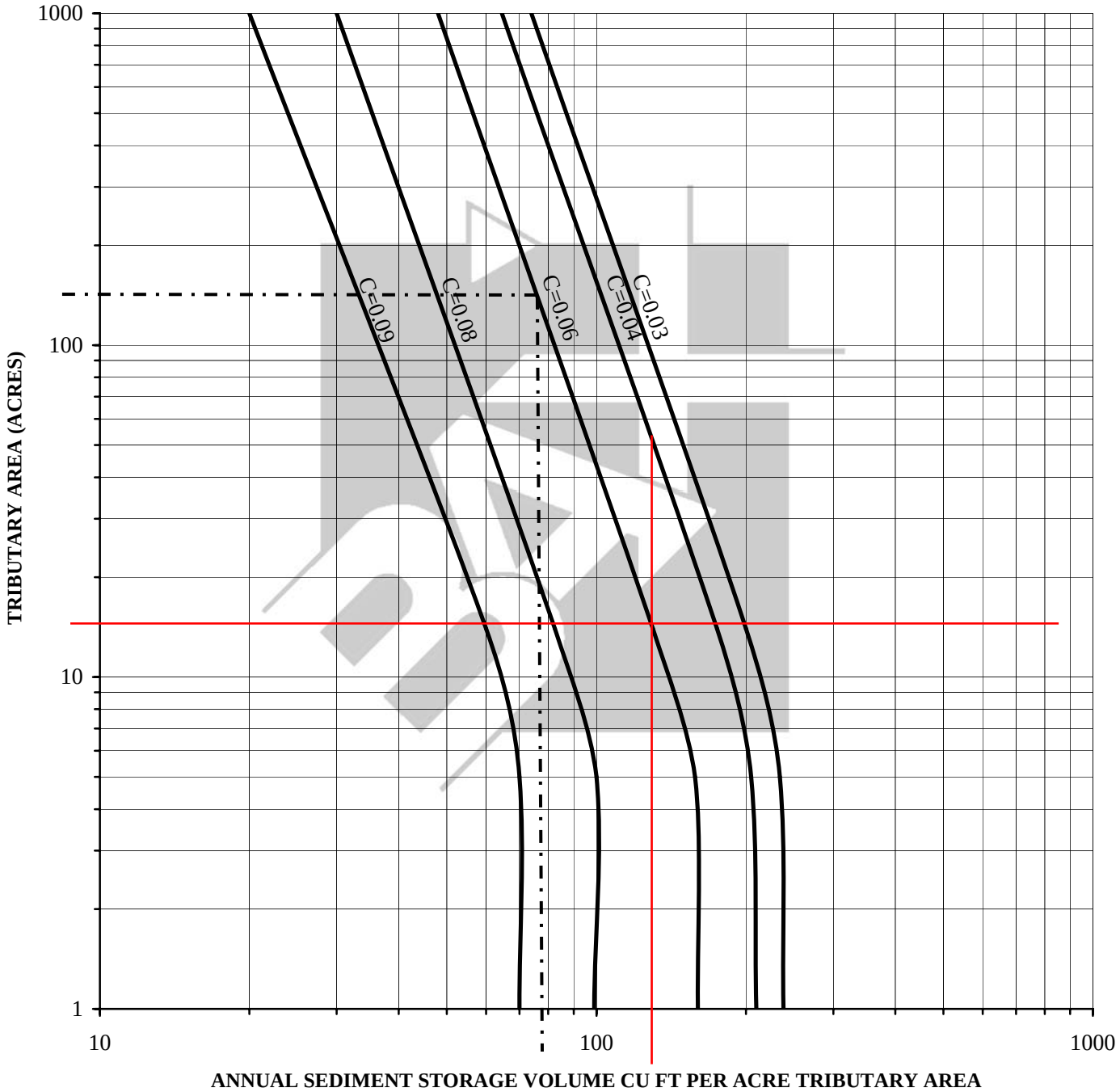
Project: Wyndgate Meadows
Date: 7/1/2019 Project: 17-17314
Designer: TMM Checked: TMM

ANNUAL SEDIMENT STORAGE



Storage Required = Years of Storage * Annual Sediment * Drainage Area

RUNOFF C VALUE = 0.06
DRAINAGE AREA = 15.44 acres
ANNUAL SEDIMENT = 130 CU FT per acre

YEARS OF STORAGE = 2 years
STORAGE REQUIRED = 2*130*15.44=4,015 CU FT

Appendix B

- Basin Routing

-Basin Inflow

-2 year Detention Routing

-15 year Detention Routing

-25 year Detention Routing

-100 year Detention Routing

-100 year LFB Routing

Table of Contents

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Site Runoff 1	2 Year 20 Min	0	39,956.000	3	33.33
Site Runoff 1	15 Year 20 Min	0	59,173.000	3	49.36
Site Runoff 1	25 Year 20 Min	0	69,542.000	3	58.01
Site Runoff 1	100 Year 20 Min	0	79,732.000	3	66.51
Site Runoff 1	100 Yr LFB	0	79,732.000	3	66.51

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Outflow 1	2 Year 20 Min	0	39,956.000	22	12.99
Outflow 1	15 Year 20 Min	0	59,173.000	22	19.23
Outflow 1	25 Year 20 Min	0	69,542.000	22	23.34
Outflow 1	100 Year 20 Min	0	79,732.000	22	25.72
Outflow 1	100 Yr LFB	0	79,732.000	20	65.52

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
Basin 1 (IN)	2 Year 20 Min	0	39,956.000	3	33.33	(N/A)	(N/A)
Basin 1 (OUT)	2 Year 20 Min	0	39,956.000	22	12.99	584.44	26,009.000
Basin 1 (IN)	15 Year 20 Min	0	59,173.000	3	49.36	(N/A)	(N/A)
Basin 1 (OUT)	15 Year 20 Min	0	59,173.000	22	19.23	585.57	42,212.000
Basin 1 (IN)	25 Year 20 Min	0	69,542.000	3	58.01	(N/A)	(N/A)
Basin 1 (OUT)	25 Year 20 Min	0	69,542.000	22	23.34	586.08	50,293.000
Basin 1 (IN)	100 Year 20 Min	0	79,732.000	3	66.51	(N/A)	(N/A)
Basin 1 (OUT)	100 Year 20 Min	0	79,732.000	22	25.72	586.55	58,350.000
Basin 1 (IN)	100 Yr LFB	0	79,732.000	3	66.51	(N/A)	(N/A)
Basin 1 (OUT)	100 Yr LFB	0	79,732.000	20	65.52	587.89	83,872.000

Peak Discharge	33.33 ft³/s
Time to Peak	13 min
Hydrograph Volume	39,956.004 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	11.00	22.00	33.33	33.33
5	33.33	33.33	33.33	33.33	33.33
10	33.33	33.33	33.33	33.33	33.33
15	33.33	33.33	33.33	33.33	33.33
20	33.33	22.00	11.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00
90	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Peak Discharge	49.36 ft³/s
Time to Peak	13 min
Hydrograph Volume	59,172.768 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	16.29	32.58	49.36	49.36
5	49.36	49.36	49.36	49.36	49.36
10	49.36	49.36	49.36	49.36	49.36
15	49.36	49.36	49.36	49.36	49.36
20	49.36	32.58	16.29	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00
90	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Peak Discharge	58.01 ft³/s
Time to Peak	13 min
Hydrograph Volume	69,542.388 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	19.14	38.29	58.01	58.01
5	58.01	58.01	58.01	58.01	58.01
10	58.01	58.01	58.01	58.01	58.01
15	58.01	58.01	58.01	58.01	58.01
20	58.01	38.29	19.14	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00
90	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Peak Discharge	66.51 ft³/s
Time to Peak	13 min
Hydrograph Volume	79,732.188 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	21.95	43.90	66.51	66.51
5	66.51	66.51	66.51	66.51	66.51
10	66.51	66.51	66.51	66.51	66.51
15	66.51	66.51	66.51	66.51	66.51
20	66.51	43.90	21.95	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00	0.00
75	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00
85	0.00	0.00	0.00	0.00	0.00
90	0.00	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Elevation-Area Volume Curve
Label: Basin 1

Return Event: 2 years
Storm Event:

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr(A1*A2) (ft²)	Volume (ft³)	Volume (Total) (ft³)
579.70	0.00	0.00	0.00	0.000	0.000
581.00	0.00	275.80	275.80	120.000	120.000
582.00	0.00	4,654.63	6,063.46	2,021.000	2,141.000
583.00	0.00	9,949.36	21,409.18	7,136.000	9,277.000
584.00	0.00	12,254.73	33,246.13	11,082.000	20,359.000
585.00	0.00	14,327.74	39,833.23	13,278.000	33,637.000
586.00	0.00	16,426.39	46,095.35	15,365.000	49,002.000
587.00	0.00	18,602.89	52,510.08	17,503.000	66,505.000
588.00	0.00	20,861.46	59,164.18	19,721.000	86,227.000

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Requested Pond Water Surface Elevations	
Minimum (Headwater)	580.19 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	589.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser - 1	Forward	Culvert - 1	586.78	588.00
Culvert-Circular	Culvert - 1	Forward	TW	576.85	588.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	30.0 in
Length	70.98 ft
Length (Computed Barrel)	71.04 ft
Slope (Computed)	0.043 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.009
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.074
T2 ratio (HW/D)	1.176
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	579.53 ft	T1 Flow	27.16 ft³/s
T2 Elevation	579.79 ft	T2 Flow	31.05 ft³/s

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	586.78 ft
Orifice Area	21.07 ft²
Orifice Coefficient	0.600
Weir Length	18.76 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Composite Rating Curve
Label: LFB 1

Return Event: 101 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
579.70	0.00	(N/A)	0.00
579.80	0.00	(N/A)	0.00
579.90	0.00	(N/A)	0.00
580.00	0.00	(N/A)	0.00
580.10	0.00	(N/A)	0.00
580.20	0.00	(N/A)	0.00
580.30	0.00	(N/A)	0.00
580.40	0.00	(N/A)	0.00
580.50	0.00	(N/A)	0.00
580.60	0.00	(N/A)	0.00
580.70	0.00	(N/A)	0.00
580.80	0.00	(N/A)	0.00
580.90	0.00	(N/A)	0.00
581.00	0.00	(N/A)	0.00
581.10	0.00	(N/A)	0.00
581.20	0.00	(N/A)	0.00
581.30	0.00	(N/A)	0.00
581.40	0.00	(N/A)	0.00
581.50	0.00	(N/A)	0.00
581.60	0.00	(N/A)	0.00
581.70	0.00	(N/A)	0.00
581.80	0.00	(N/A)	0.00
581.90	0.00	(N/A)	0.00
582.00	0.00	(N/A)	0.00
582.10	0.00	(N/A)	0.00
582.20	0.00	(N/A)	0.00
582.30	0.00	(N/A)	0.00
582.40	0.00	(N/A)	0.00
582.50	0.00	(N/A)	0.00
582.60	0.00	(N/A)	0.00
582.70	0.00	(N/A)	0.00
582.80	0.00	(N/A)	0.00
582.90	0.00	(N/A)	0.00
583.00	0.00	(N/A)	0.00
583.10	0.00	(N/A)	0.00
583.20	0.00	(N/A)	0.00
583.30	0.00	(N/A)	0.00
583.40	0.00	(N/A)	0.00
583.50	0.00	(N/A)	0.00
583.60	0.00	(N/A)	0.00
583.70	0.00	(N/A)	0.00
583.80	0.00	(N/A)	0.00
583.90	0.00	(N/A)	0.00
584.00	0.00	(N/A)	0.00

Subsection: Composite Rating Curve
Label: LFB 1

Return Event: 101 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
584.10	0.00	(N/A)	0.00
584.20	0.00	(N/A)	0.00
584.30	0.00	(N/A)	0.00
584.40	0.00	(N/A)	0.00
584.50	0.00	(N/A)	0.00
584.60	0.00	(N/A)	0.00
584.70	0.00	(N/A)	0.00
584.80	0.00	(N/A)	0.00
584.90	0.00	(N/A)	0.00
585.00	0.00	(N/A)	0.00
585.10	0.00	(N/A)	0.00
585.20	0.00	(N/A)	0.00
585.30	0.00	(N/A)	0.00
585.40	0.00	(N/A)	0.00
585.50	0.00	(N/A)	0.00
585.60	0.00	(N/A)	0.00
585.70	0.00	(N/A)	0.00
585.80	0.00	(N/A)	0.00
585.90	0.00	(N/A)	0.00
586.00	0.00	(N/A)	0.00
586.10	0.00	(N/A)	0.00
586.20	0.00	(N/A)	0.00
586.30	0.00	(N/A)	0.00
586.40	0.00	(N/A)	0.00
586.50	0.00	(N/A)	0.00
586.60	0.00	(N/A)	0.00
586.70	0.00	(N/A)	0.00
586.78	0.00	(N/A)	0.00
586.80	0.16	(N/A)	0.00
586.90	2.34	(N/A)	0.00
587.00	5.81	(N/A)	0.00
587.10	10.19	(N/A)	0.00
587.20	15.32	(N/A)	0.00
587.30	21.10	(N/A)	0.00
587.40	27.47	(N/A)	0.00
587.50	34.39	(N/A)	0.00
587.60	41.79	(N/A)	0.00
587.70	49.66	(N/A)	0.00
587.80	57.97	(N/A)	0.00
587.90	66.71	(N/A)	0.00
588.00	75.84	(N/A)	0.00

Contributing Structures

(no Q: Riser - 1,Culvert - 1)
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Composite Outflow Summary

Contributing Structures
(no Q: Riser - 1,Culvert - 1)
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Subsection: Composite Rating Curve
Label: LFB 1

Return Event: 101 years
Storm Event:

Composite Outflow Summary

Contributing Structures
(no Q: Riser - 1,Culvert - 1)
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Requested Pond Water Surface Elevations	
Minimum (Headwater)	579.70 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	588.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	Culvert - 1	579.70	581.53
Orifice-Area	Orifice - 2	Forward	Culvert - 1	585.75	588.00
Rectangular Weir	Weir - 2	Forward	Culvert - 1	584.50	585.75
Inlet Box	Riser - 1	Forward	Culvert - 1	586.78	588.00
Orifice-Area	Orifice - 1	Forward	Culvert - 1	581.53	588.00
Culvert-Circular	Culvert - 1	Forward	TW	576.85	588.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	579.70 ft
Weir Length	0.75 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Orifice - 1 Structure Type: Orifice-Area	
Number of Openings	1
Elevation	579.70 ft
Orifice Area	1.38 ft²
Top Elevation	581.53 ft
Datum Elevation	580.62 ft
Orifice Coefficient	0.600

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	30.0 in
Length	70.98 ft
Length (Computed Barrel)	71.04 ft
Slope (Computed)	0.043 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.009
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.074
T2 ratio (HW/D)	1.176
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	579.53 ft	T1 Flow	27.16 ft³/s
T2 Elevation	579.79 ft	T2 Flow	31.05 ft³/s

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	586.78 ft
Orifice Area	21.07 ft²
Orifice Coefficient	0.600
Weir Length	18.76 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Weir - 2 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	584.50 ft
Weir Length	1.33 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: Orifice - 2 Structure Type: Orifice-Area	
Number of Openings	1
Elevation	584.50 ft
Orifice Area	1.66 ft²
Top Elevation	585.75 ft
Datum Elevation	585.12 ft
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s

Convergence Tolerances	
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Composite Rating Curve
Label: OS 101

Return Event: 2 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
579.70	0.00	(N/A)	0.00
579.80	0.07	(N/A)	0.00
579.90	0.20	(N/A)	0.00
580.00	0.37	(N/A)	0.00
580.10	0.57	(N/A)	0.00
580.20	0.80	(N/A)	0.00
580.30	1.05	(N/A)	0.00
580.40	1.32	(N/A)	0.00
580.50	1.61	(N/A)	0.00
580.60	1.92	(N/A)	0.00
580.70	2.25	(N/A)	0.00
580.80	2.60	(N/A)	0.00
580.90	2.96	(N/A)	0.00
581.00	3.34	(N/A)	0.00
581.10	3.73	(N/A)	0.00
581.20	4.13	(N/A)	0.00
581.30	4.55	(N/A)	0.00
581.40	4.99	(N/A)	0.00
581.50	5.43	(N/A)	0.00
581.60	6.58	(N/A)	0.00
581.70	6.90	(N/A)	0.00
581.80	7.22	(N/A)	0.00
581.90	7.51	(N/A)	0.00
582.00	7.80	(N/A)	0.00
582.10	8.08	(N/A)	0.00
582.20	8.35	(N/A)	0.00
582.30	8.61	(N/A)	0.00
582.40	8.86	(N/A)	0.00
582.50	9.11	(N/A)	0.00
582.60	9.35	(N/A)	0.00
582.70	9.58	(N/A)	0.00
582.80	9.81	(N/A)	0.00
582.90	10.03	(N/A)	0.00
583.00	10.25	(N/A)	0.00
583.10	10.46	(N/A)	0.00
583.20	10.67	(N/A)	0.00
583.30	10.87	(N/A)	0.00
583.40	11.07	(N/A)	0.00
583.50	11.27	(N/A)	0.00
583.60	11.47	(N/A)	0.00
583.70	11.66	(N/A)	0.00
583.80	11.84	(N/A)	0.00
583.90	12.03	(N/A)	0.00
584.00	12.21	(N/A)	0.00

Subsection: Composite Rating Curve
Label: OS 101

Return Event: 2 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
584.10	12.39	(N/A)	0.00
584.20	12.57	(N/A)	0.00
584.30	12.74	(N/A)	0.00
584.40	12.91	(N/A)	0.00
584.50	13.08	(N/A)	0.00
584.60	13.38	(N/A)	0.00
584.70	13.77	(N/A)	0.00
584.80	14.24	(N/A)	0.00
584.90	14.75	(N/A)	0.00
585.00	15.30	(N/A)	0.00
585.10	15.91	(N/A)	0.00
585.20	16.56	(N/A)	0.00
585.30	17.21	(N/A)	0.00
585.40	17.92	(N/A)	0.00
585.50	18.66	(N/A)	0.00
585.60	19.42	(N/A)	0.00
585.70	20.21	(N/A)	0.00
585.80	21.70	(N/A)	0.00
585.90	22.33	(N/A)	0.00
586.00	22.90	(N/A)	0.00
586.10	23.46	(N/A)	0.00
586.20	23.98	(N/A)	0.00
586.30	24.51	(N/A)	0.00
586.40	25.02	(N/A)	0.00
586.50	25.50	(N/A)	0.00
586.60	25.95	(N/A)	0.00
586.70	26.42	(N/A)	0.00
586.78	26.77	(N/A)	0.00
586.80	27.03	(N/A)	0.00
586.90	29.65	(N/A)	0.00
587.00	33.55	(N/A)	0.00
587.10	38.34	(N/A)	0.00
587.20	43.37	(N/A)	0.00
587.30	48.66	(N/A)	0.00
587.40	54.35	(N/A)	0.00
587.50	60.30	(N/A)	0.00
587.60	66.38	(N/A)	0.00
587.70	72.07	(N/A)	0.00
587.80	76.40	(N/A)	0.00
587.90	80.38	(N/A)	0.00
588.00	83.60	(N/A)	0.00

Contributing Structures

(no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1,Orifice - 1,Culvert - 1)

Subsection: Composite Rating Curve
Label: OS 101

Return Event: 2 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Weir - 1,Culvert - 1 (no Q: Orifice - 2,Weir - 2,Riser - 1,Orifice - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)

Subsection: Composite Rating Curve
Label: OS 101

Return Event: 2 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)
Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Weir - 2,Riser - 1)

Composite Outflow Summary

Contributing Structures
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Weir - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Orifice - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2,Riser - 1)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)

Subsection: Composite Rating Curve
Label: OS 101

Return Event: 2 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)
Orifice - 2,Riser - 1,Orifice - 1,Culvert - 1 (no Q: Weir - 1,Weir - 2)

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
579.70	0.00	0.000	0.00	0.00	0.00	0.00
579.80	0.07	0.054	1.63	0.00	0.07	0.07
579.90	0.20	0.435	6.53	0.00	0.20	0.22
580.00	0.37	1.469	14.69	0.00	0.37	0.42
580.10	0.57	3.481	26.11	0.00	0.57	0.69
580.20	0.80	6.800	40.80	0.00	0.80	1.02
580.30	1.05	11.750	58.75	0.00	1.05	1.44
580.40	1.32	18.659	79.97	0.00	1.32	1.94
580.50	1.61	27.852	104.44	0.00	1.61	2.54
580.60	1.92	39.656	132.19	0.00	1.92	3.24
580.70	2.25	54.398	163.20	0.00	2.25	4.06
580.80	2.60	72.404	197.47	0.00	2.60	5.01
580.90	2.96	94.000	235.00	0.00	2.96	6.09
581.00	3.34	119.513	275.80	0.00	3.34	7.32
581.10	3.73	156.554	473.89	0.00	3.73	8.95
581.20	4.13	216.067	725.27	0.00	4.13	11.34
581.30	4.55	303.383	1,029.93	0.00	4.55	14.67
581.40	4.99	423.830	1,387.88	0.00	4.99	19.11
581.50	5.43	582.736	1,799.12	0.00	5.43	24.86
581.60	6.58	785.430	2,263.65	0.00	6.58	32.76
581.70	6.90	1,037.241	2,781.46	0.00	6.90	41.48
581.80	7.22	1,343.498	3,352.56	0.00	7.22	52.00
581.90	7.51	1,709.530	3,976.95	0.00	7.51	64.50
582.00	7.80	2,140.665	4,654.63	0.00	7.80	79.16
582.10	8.08	2,627.965	5,094.68	0.00	8.08	95.68
582.20	8.35	3,160.263	5,554.60	0.00	8.35	113.69
582.30	8.61	3,739.547	6,034.39	0.00	8.61	133.26
582.40	8.86	4,367.804	6,534.05	0.00	8.86	154.45
582.50	9.11	5,047.020	7,053.59	0.00	9.11	177.34
582.60	9.35	5,779.184	7,593.00	0.00	9.35	201.99
582.70	9.58	6,566.283	8,152.28	0.00	9.58	228.46

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 2 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
582.80	9.81	7,410.303	8,731.44	0.00	9.81	256.82
582.90	10.03	8,313.233	9,330.46	0.00	10.03	287.14
583.00	10.25	9,277.058	9,949.36	0.00	10.25	319.48
583.10	10.46	10,282.961	10,169.10	0.00	10.46	353.23
583.20	10.67	11,310.957	10,391.23	0.00	10.67	387.70
583.30	10.87	12,361.288	10,615.77	0.00	10.87	422.92
583.40	11.07	13,434.191	10,842.71	0.00	11.07	458.88
583.50	11.27	14,529.909	11,072.04	0.00	11.27	495.60
583.60	11.47	15,648.680	11,303.78	0.00	11.47	533.09
583.70	11.66	16,790.745	11,537.92	0.00	11.66	571.35
583.80	11.84	17,956.344	11,774.46	0.00	11.84	610.39
583.90	12.03	19,145.716	12,013.39	0.00	12.03	650.22
584.00	12.21	20,359.102	12,254.73	0.00	12.21	690.85
584.10	12.39	21,594.563	12,454.75	0.00	12.39	732.21
584.20	12.57	22,850.105	12,656.38	0.00	12.57	774.24
584.30	12.74	24,125.893	12,859.63	0.00	12.74	816.94
584.40	12.91	25,422.086	13,064.50	0.00	12.91	860.32
584.50	13.08	26,738.848	13,271.00	0.00	13.08	904.38
584.60	13.38	28,076.339	13,479.11	0.00	13.38	949.25
584.70	13.77	29,434.723	13,688.84	0.00	13.77	994.93
584.80	14.24	30,814.160	13,900.19	0.00	14.24	1,041.38
584.90	14.75	32,214.814	14,113.15	0.00	14.75	1,088.57
585.00	15.30	33,636.845	14,327.74	0.00	15.30	1,136.53
585.10	15.91	35,079.778	14,531.15	0.00	15.91	1,185.23
585.20	16.56	36,543.123	14,736.00	0.00	16.56	1,234.67
585.30	17.21	38,027.026	14,942.28	0.00	17.21	1,284.78
585.40	17.92	39,531.627	15,149.99	0.00	17.92	1,335.64
585.50	18.66	41,057.072	15,359.14	0.00	18.66	1,387.22
585.60	19.42	42,603.504	15,569.72	0.00	19.42	1,439.54
585.70	20.21	44,171.065	15,781.74	0.00	20.21	1,492.58
585.80	21.70	45,759.900	15,995.19	0.00	21.70	1,547.03
585.90	22.33	47,370.151	16,210.07	0.00	22.33	1,601.34
586.00	22.90	49,001.962	16,426.39	0.00	22.90	1,656.30
586.10	23.46	50,655.168	16,637.95	0.00	23.46	1,711.97
586.20	23.98	52,329.597	16,850.86	0.00	23.98	1,768.30
586.30	24.51	54,025.385	17,065.13	0.00	24.51	1,825.36
586.40	25.02	55,742.667	17,280.75	0.00	25.02	1,883.11
586.50	25.50	57,481.579	17,497.72	0.00	25.50	1,941.55
586.60	25.95	59,242.256	17,716.05	0.00	25.95	2,000.70
586.70	26.42	61,024.834	17,935.73	0.00	26.42	2,060.58
586.78	26.77	62,466.755	18,112.45	0.00	26.77	2,108.99
586.80	27.03	62,829.447	18,156.76	0.00	27.03	2,121.35
586.90	29.65	64,656.231	18,379.15	0.00	29.65	2,184.86
587.00	33.55	66,505.321	18,602.89	0.00	33.55	2,250.40
587.10	38.34	68,376.601	18,822.93	0.00	38.34	2,317.56

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 2 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
587.20	43.37	70,269.950	19,044.25	0.00	43.37	2,385.70
587.30	48.66	72,185.496	19,266.88	0.00	48.66	2,454.84
587.40	54.35	74,123.368	19,490.79	0.00	54.35	2,525.13
587.50	60.30	76,083.698	19,716.00	0.00	60.30	2,596.42
587.60	66.38	78,066.612	19,942.51	0.00	66.38	2,668.60
587.70	72.07	80,072.242	20,170.31	0.00	72.07	2,741.15
587.80	76.40	82,100.717	20,399.40	0.00	76.40	2,813.09
587.90	80.38	84,152.165	20,629.78	0.00	80.38	2,885.45
588.00	83.60	86,226.716	20,861.46	0.00	83.60	2,957.83

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
579.70	0.00	0.000	0.00	0.00	0.00	0.00
579.80	0.07	0.054	1.63	0.00	0.07	0.07
579.90	0.20	0.435	6.53	0.00	0.20	0.22
580.00	0.37	1.469	14.69	0.00	0.37	0.42
580.10	0.57	3.481	26.11	0.00	0.57	0.69
580.20	0.80	6.800	40.80	0.00	0.80	1.02
580.30	1.05	11.750	58.75	0.00	1.05	1.44
580.40	1.32	18.659	79.97	0.00	1.32	1.94
580.50	1.61	27.852	104.44	0.00	1.61	2.54
580.60	1.92	39.656	132.19	0.00	1.92	3.24
580.70	2.25	54.398	163.20	0.00	2.25	4.06
580.80	2.60	72.404	197.47	0.00	2.60	5.01
580.90	2.96	94.000	235.00	0.00	2.96	6.09
581.00	3.34	119.513	275.80	0.00	3.34	7.32
581.10	3.73	156.554	473.89	0.00	3.73	8.95
581.20	4.13	216.067	725.27	0.00	4.13	11.34
581.30	4.55	303.383	1,029.93	0.00	4.55	14.67
581.40	4.99	423.830	1,387.88	0.00	4.99	19.11
581.50	5.43	582.736	1,799.12	0.00	5.43	24.86
581.60	6.58	785.430	2,263.65	0.00	6.58	32.76
581.70	6.90	1,037.241	2,781.46	0.00	6.90	41.48
581.80	7.22	1,343.498	3,352.56	0.00	7.22	52.00
581.90	7.51	1,709.530	3,976.95	0.00	7.51	64.50
582.00	7.80	2,140.665	4,654.63	0.00	7.80	79.16
582.10	8.08	2,627.965	5,094.68	0.00	8.08	95.68
582.20	8.35	3,160.263	5,554.60	0.00	8.35	113.69
582.30	8.61	3,739.547	6,034.39	0.00	8.61	133.26
582.40	8.86	4,367.804	6,534.05	0.00	8.86	154.45
582.50	9.11	5,047.020	7,053.59	0.00	9.11	177.34
582.60	9.35	5,779.184	7,593.00	0.00	9.35	201.99
582.70	9.58	6,566.283	8,152.28	0.00	9.58	228.46

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 15 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
582.80	9.81	7,410.303	8,731.44	0.00	9.81	256.82
582.90	10.03	8,313.233	9,330.46	0.00	10.03	287.14
583.00	10.25	9,277.058	9,949.36	0.00	10.25	319.48
583.10	10.46	10,282.961	10,169.10	0.00	10.46	353.23
583.20	10.67	11,310.957	10,391.23	0.00	10.67	387.70
583.30	10.87	12,361.288	10,615.77	0.00	10.87	422.92
583.40	11.07	13,434.191	10,842.71	0.00	11.07	458.88
583.50	11.27	14,529.909	11,072.04	0.00	11.27	495.60
583.60	11.47	15,648.680	11,303.78	0.00	11.47	533.09
583.70	11.66	16,790.745	11,537.92	0.00	11.66	571.35
583.80	11.84	17,956.344	11,774.46	0.00	11.84	610.39
583.90	12.03	19,145.716	12,013.39	0.00	12.03	650.22
584.00	12.21	20,359.102	12,254.73	0.00	12.21	690.85
584.10	12.39	21,594.563	12,454.75	0.00	12.39	732.21
584.20	12.57	22,850.105	12,656.38	0.00	12.57	774.24
584.30	12.74	24,125.893	12,859.63	0.00	12.74	816.94
584.40	12.91	25,422.086	13,064.50	0.00	12.91	860.32
584.50	13.08	26,738.848	13,271.00	0.00	13.08	904.38
584.60	13.38	28,076.339	13,479.11	0.00	13.38	949.25
584.70	13.77	29,434.723	13,688.84	0.00	13.77	994.93
584.80	14.24	30,814.160	13,900.19	0.00	14.24	1,041.38
584.90	14.75	32,214.814	14,113.15	0.00	14.75	1,088.57
585.00	15.30	33,636.845	14,327.74	0.00	15.30	1,136.53
585.10	15.91	35,079.778	14,531.15	0.00	15.91	1,185.23
585.20	16.56	36,543.123	14,736.00	0.00	16.56	1,234.67
585.30	17.21	38,027.026	14,942.28	0.00	17.21	1,284.78
585.40	17.92	39,531.627	15,149.99	0.00	17.92	1,335.64
585.50	18.66	41,057.072	15,359.14	0.00	18.66	1,387.22
585.60	19.42	42,603.504	15,569.72	0.00	19.42	1,439.54
585.70	20.21	44,171.065	15,781.74	0.00	20.21	1,492.58
585.80	21.70	45,759.900	15,995.19	0.00	21.70	1,547.03
585.90	22.33	47,370.151	16,210.07	0.00	22.33	1,601.34
586.00	22.90	49,001.962	16,426.39	0.00	22.90	1,656.30
586.10	23.46	50,655.168	16,637.95	0.00	23.46	1,711.97
586.20	23.98	52,329.597	16,850.86	0.00	23.98	1,768.30
586.30	24.51	54,025.385	17,065.13	0.00	24.51	1,825.36
586.40	25.02	55,742.667	17,280.75	0.00	25.02	1,883.11
586.50	25.50	57,481.579	17,497.72	0.00	25.50	1,941.55
586.60	25.95	59,242.256	17,716.05	0.00	25.95	2,000.70
586.70	26.42	61,024.834	17,935.73	0.00	26.42	2,060.58
586.78	26.77	62,466.755	18,112.45	0.00	26.77	2,108.99
586.80	27.03	62,829.447	18,156.76	0.00	27.03	2,121.35
586.90	29.65	64,656.231	18,379.15	0.00	29.65	2,184.86
587.00	33.55	66,505.321	18,602.89	0.00	33.55	2,250.40
587.10	38.34	68,376.601	18,822.93	0.00	38.34	2,317.56

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 15 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
587.20	43.37	70,269.950	19,044.25	0.00	43.37	2,385.70
587.30	48.66	72,185.496	19,266.88	0.00	48.66	2,454.84
587.40	54.35	74,123.368	19,490.79	0.00	54.35	2,525.13
587.50	60.30	76,083.698	19,716.00	0.00	60.30	2,596.42
587.60	66.38	78,066.612	19,942.51	0.00	66.38	2,668.60
587.70	72.07	80,072.242	20,170.31	0.00	72.07	2,741.15
587.80	76.40	82,100.717	20,399.40	0.00	76.40	2,813.09
587.90	80.38	84,152.165	20,629.78	0.00	80.38	2,885.45
588.00	83.60	86,226.716	20,861.46	0.00	83.60	2,957.83

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
579.70	0.00	0.000	0.00	0.00	0.00	0.00
579.80	0.07	0.054	1.63	0.00	0.07	0.07
579.90	0.20	0.435	6.53	0.00	0.20	0.22
580.00	0.37	1.469	14.69	0.00	0.37	0.42
580.10	0.57	3.481	26.11	0.00	0.57	0.69
580.20	0.80	6.800	40.80	0.00	0.80	1.02
580.30	1.05	11.750	58.75	0.00	1.05	1.44
580.40	1.32	18.659	79.97	0.00	1.32	1.94
580.50	1.61	27.852	104.44	0.00	1.61	2.54
580.60	1.92	39.656	132.19	0.00	1.92	3.24
580.70	2.25	54.398	163.20	0.00	2.25	4.06
580.80	2.60	72.404	197.47	0.00	2.60	5.01
580.90	2.96	94.000	235.00	0.00	2.96	6.09
581.00	3.34	119.513	275.80	0.00	3.34	7.32
581.10	3.73	156.554	473.89	0.00	3.73	8.95
581.20	4.13	216.067	725.27	0.00	4.13	11.34
581.30	4.55	303.383	1,029.93	0.00	4.55	14.67
581.40	4.99	423.830	1,387.88	0.00	4.99	19.11
581.50	5.43	582.736	1,799.12	0.00	5.43	24.86
581.60	6.58	785.430	2,263.65	0.00	6.58	32.76
581.70	6.90	1,037.241	2,781.46	0.00	6.90	41.48
581.80	7.22	1,343.498	3,352.56	0.00	7.22	52.00
581.90	7.51	1,709.530	3,976.95	0.00	7.51	64.50
582.00	7.80	2,140.665	4,654.63	0.00	7.80	79.16
582.10	8.08	2,627.965	5,094.68	0.00	8.08	95.68
582.20	8.35	3,160.263	5,554.60	0.00	8.35	113.69
582.30	8.61	3,739.547	6,034.39	0.00	8.61	133.26
582.40	8.86	4,367.804	6,534.05	0.00	8.86	154.45
582.50	9.11	5,047.020	7,053.59	0.00	9.11	177.34
582.60	9.35	5,779.184	7,593.00	0.00	9.35	201.99
582.70	9.58	6,566.283	8,152.28	0.00	9.58	228.46

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 25 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
582.80	9.81	7,410.303	8,731.44	0.00	9.81	256.82
582.90	10.03	8,313.233	9,330.46	0.00	10.03	287.14
583.00	10.25	9,277.058	9,949.36	0.00	10.25	319.48
583.10	10.46	10,282.961	10,169.10	0.00	10.46	353.23
583.20	10.67	11,310.957	10,391.23	0.00	10.67	387.70
583.30	10.87	12,361.288	10,615.77	0.00	10.87	422.92
583.40	11.07	13,434.191	10,842.71	0.00	11.07	458.88
583.50	11.27	14,529.909	11,072.04	0.00	11.27	495.60
583.60	11.47	15,648.680	11,303.78	0.00	11.47	533.09
583.70	11.66	16,790.745	11,537.92	0.00	11.66	571.35
583.80	11.84	17,956.344	11,774.46	0.00	11.84	610.39
583.90	12.03	19,145.716	12,013.39	0.00	12.03	650.22
584.00	12.21	20,359.102	12,254.73	0.00	12.21	690.85
584.10	12.39	21,594.563	12,454.75	0.00	12.39	732.21
584.20	12.57	22,850.105	12,656.38	0.00	12.57	774.24
584.30	12.74	24,125.893	12,859.63	0.00	12.74	816.94
584.40	12.91	25,422.086	13,064.50	0.00	12.91	860.32
584.50	13.08	26,738.848	13,271.00	0.00	13.08	904.38
584.60	13.38	28,076.339	13,479.11	0.00	13.38	949.25
584.70	13.77	29,434.723	13,688.84	0.00	13.77	994.93
584.80	14.24	30,814.160	13,900.19	0.00	14.24	1,041.38
584.90	14.75	32,214.814	14,113.15	0.00	14.75	1,088.57
585.00	15.30	33,636.845	14,327.74	0.00	15.30	1,136.53
585.10	15.91	35,079.778	14,531.15	0.00	15.91	1,185.23
585.20	16.56	36,543.123	14,736.00	0.00	16.56	1,234.67
585.30	17.21	38,027.026	14,942.28	0.00	17.21	1,284.78
585.40	17.92	39,531.627	15,149.99	0.00	17.92	1,335.64
585.50	18.66	41,057.072	15,359.14	0.00	18.66	1,387.22
585.60	19.42	42,603.504	15,569.72	0.00	19.42	1,439.54
585.70	20.21	44,171.065	15,781.74	0.00	20.21	1,492.58
585.80	21.70	45,759.900	15,995.19	0.00	21.70	1,547.03
585.90	22.33	47,370.151	16,210.07	0.00	22.33	1,601.34
586.00	22.90	49,001.962	16,426.39	0.00	22.90	1,656.30
586.10	23.46	50,655.168	16,637.95	0.00	23.46	1,711.97
586.20	23.98	52,329.597	16,850.86	0.00	23.98	1,768.30
586.30	24.51	54,025.385	17,065.13	0.00	24.51	1,825.36
586.40	25.02	55,742.667	17,280.75	0.00	25.02	1,883.11
586.50	25.50	57,481.579	17,497.72	0.00	25.50	1,941.55
586.60	25.95	59,242.256	17,716.05	0.00	25.95	2,000.70
586.70	26.42	61,024.834	17,935.73	0.00	26.42	2,060.58
586.78	26.77	62,466.755	18,112.45	0.00	26.77	2,108.99
586.80	27.03	62,829.447	18,156.76	0.00	27.03	2,121.35
586.90	29.65	64,656.231	18,379.15	0.00	29.65	2,184.86
587.00	33.55	66,505.321	18,602.89	0.00	33.55	2,250.40
587.10	38.34	68,376.601	18,822.93	0.00	38.34	2,317.56

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 25 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
587.20	43.37	70,269.950	19,044.25	0.00	43.37	2,385.70
587.30	48.66	72,185.496	19,266.88	0.00	48.66	2,454.84
587.40	54.35	74,123.368	19,490.79	0.00	54.35	2,525.13
587.50	60.30	76,083.698	19,716.00	0.00	60.30	2,596.42
587.60	66.38	78,066.612	19,942.51	0.00	66.38	2,668.60
587.70	72.07	80,072.242	20,170.31	0.00	72.07	2,741.15
587.80	76.40	82,100.717	20,399.40	0.00	76.40	2,813.09
587.90	80.38	84,152.165	20,629.78	0.00	80.38	2,885.45
588.00	83.60	86,226.716	20,861.46	0.00	83.60	2,957.83

Subsection: Elevation-Volume-Flow Table (Pond)
Label: Basin 1

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
579.70	0.00	0.000	0.00	0.00	0.00	0.00
579.80	0.07	0.054	1.63	0.00	0.07	0.07
579.90	0.20	0.435	6.53	0.00	0.20	0.22
580.00	0.37	1.469	14.69	0.00	0.37	0.42
580.10	0.57	3.481	26.11	0.00	0.57	0.69
580.20	0.80	6.800	40.80	0.00	0.80	1.02
580.30	1.05	11.750	58.75	0.00	1.05	1.44
580.40	1.32	18.659	79.97	0.00	1.32	1.94
580.50	1.61	27.852	104.44	0.00	1.61	2.54
580.60	1.92	39.656	132.19	0.00	1.92	3.24
580.70	2.25	54.398	163.20	0.00	2.25	4.06
580.80	2.60	72.404	197.47	0.00	2.60	5.01
580.90	2.96	94.000	235.00	0.00	2.96	6.09
581.00	3.34	119.513	275.80	0.00	3.34	7.32
581.10	3.73	156.554	473.89	0.00	3.73	8.95
581.20	4.13	216.067	725.27	0.00	4.13	11.34
581.30	4.55	303.383	1,029.93	0.00	4.55	14.67
581.40	4.99	423.830	1,387.88	0.00	4.99	19.11
581.50	5.43	582.736	1,799.12	0.00	5.43	24.86
581.60	6.58	785.430	2,263.65	0.00	6.58	32.76
581.70	6.90	1,037.241	2,781.46	0.00	6.90	41.48
581.80	7.22	1,343.498	3,352.56	0.00	7.22	52.00
581.90	7.51	1,709.530	3,976.95	0.00	7.51	64.50
582.00	7.80	2,140.665	4,654.63	0.00	7.80	79.16
582.10	8.08	2,627.965	5,094.68	0.00	8.08	95.68
582.20	8.35	3,160.263	5,554.60	0.00	8.35	113.69
582.30	8.61	3,739.547	6,034.39	0.00	8.61	133.26
582.40	8.86	4,367.804	6,534.05	0.00	8.86	154.45
582.50	9.11	5,047.020	7,053.59	0.00	9.11	177.34
582.60	9.35	5,779.184	7,593.00	0.00	9.35	201.99
582.70	9.58	6,566.283	8,152.28	0.00	9.58	228.46

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
582.80	9.81	7,410.303	8,731.44	0.00	9.81	256.82
582.90	10.03	8,313.233	9,330.46	0.00	10.03	287.14
583.00	10.25	9,277.058	9,949.36	0.00	10.25	319.48
583.10	10.46	10,282.961	10,169.10	0.00	10.46	353.23
583.20	10.67	11,310.957	10,391.23	0.00	10.67	387.70
583.30	10.87	12,361.288	10,615.77	0.00	10.87	422.92
583.40	11.07	13,434.191	10,842.71	0.00	11.07	458.88
583.50	11.27	14,529.909	11,072.04	0.00	11.27	495.60
583.60	11.47	15,648.680	11,303.78	0.00	11.47	533.09
583.70	11.66	16,790.745	11,537.92	0.00	11.66	571.35
583.80	11.84	17,956.344	11,774.46	0.00	11.84	610.39
583.90	12.03	19,145.716	12,013.39	0.00	12.03	650.22
584.00	12.21	20,359.102	12,254.73	0.00	12.21	690.85
584.10	12.39	21,594.563	12,454.75	0.00	12.39	732.21
584.20	12.57	22,850.105	12,656.38	0.00	12.57	774.24
584.30	12.74	24,125.893	12,859.63	0.00	12.74	816.94
584.40	12.91	25,422.086	13,064.50	0.00	12.91	860.32
584.50	13.08	26,738.848	13,271.00	0.00	13.08	904.38
584.60	13.38	28,076.339	13,479.11	0.00	13.38	949.25
584.70	13.77	29,434.723	13,688.84	0.00	13.77	994.93
584.80	14.24	30,814.160	13,900.19	0.00	14.24	1,041.38
584.90	14.75	32,214.814	14,113.15	0.00	14.75	1,088.57
585.00	15.30	33,636.845	14,327.74	0.00	15.30	1,136.53
585.10	15.91	35,079.778	14,531.15	0.00	15.91	1,185.23
585.20	16.56	36,543.123	14,736.00	0.00	16.56	1,234.67
585.30	17.21	38,027.026	14,942.28	0.00	17.21	1,284.78
585.40	17.92	39,531.627	15,149.99	0.00	17.92	1,335.64
585.50	18.66	41,057.072	15,359.14	0.00	18.66	1,387.22
585.60	19.42	42,603.504	15,569.72	0.00	19.42	1,439.54
585.70	20.21	44,171.065	15,781.74	0.00	20.21	1,492.58
585.80	21.70	45,759.900	15,995.19	0.00	21.70	1,547.03
585.90	22.33	47,370.151	16,210.07	0.00	22.33	1,601.34
586.00	22.90	49,001.962	16,426.39	0.00	22.90	1,656.30
586.10	23.46	50,655.168	16,637.95	0.00	23.46	1,711.97
586.20	23.98	52,329.597	16,850.86	0.00	23.98	1,768.30
586.30	24.51	54,025.385	17,065.13	0.00	24.51	1,825.36
586.40	25.02	55,742.667	17,280.75	0.00	25.02	1,883.11
586.50	25.50	57,481.579	17,497.72	0.00	25.50	1,941.55
586.60	25.95	59,242.256	17,716.05	0.00	25.95	2,000.70
586.70	26.42	61,024.834	17,935.73	0.00	26.42	2,060.58
586.78	26.77	62,466.755	18,112.45	0.00	26.77	2,108.99
586.80	27.03	62,829.447	18,156.76	0.00	27.03	2,121.35
586.90	29.65	64,656.231	18,379.15	0.00	29.65	2,184.86
587.00	33.55	66,505.321	18,602.89	0.00	33.55	2,250.40
587.10	38.34	68,376.601	18,822.93	0.00	38.34	2,317.56

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
587.20	43.37	70,269.950	19,044.25	0.00	43.37	2,385.70
587.30	48.66	72,185.496	19,266.88	0.00	48.66	2,454.84
587.40	54.35	74,123.368	19,490.79	0.00	54.35	2,525.13
587.50	60.30	76,083.698	19,716.00	0.00	60.30	2,596.42
587.60	66.38	78,066.612	19,942.51	0.00	66.38	2,668.60
587.70	72.07	80,072.242	20,170.31	0.00	72.07	2,741.15
587.80	76.40	82,100.717	20,399.40	0.00	76.40	2,813.09
587.90	80.38	84,152.165	20,629.78	0.00	80.38	2,885.45
588.00	83.60	86,226.716	20,861.46	0.00	83.60	2,957.83

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	586.78 ft
Volume (Initial)	62,467.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
579.70	0.00	0.000	0.00	0.00	0.00	0.00
579.80	0.00	0.054	1.63	0.00	0.00	0.00
579.90	0.00	0.435	6.53	0.00	0.00	0.01
580.00	0.00	1.469	14.69	0.00	0.00	0.05
580.10	0.00	3.481	26.11	0.00	0.00	0.12
580.20	0.00	6.800	40.80	0.00	0.00	0.23
580.30	0.00	11.750	58.75	0.00	0.00	0.39
580.40	0.00	18.659	79.97	0.00	0.00	0.62
580.50	0.00	27.852	104.44	0.00	0.00	0.93
580.60	0.00	39.656	132.19	0.00	0.00	1.32
580.70	0.00	54.398	163.20	0.00	0.00	1.81
580.80	0.00	72.404	197.47	0.00	0.00	2.41
580.90	0.00	94.000	235.00	0.00	0.00	3.13
581.00	0.00	119.513	275.80	0.00	0.00	3.98
581.10	0.00	156.554	473.89	0.00	0.00	5.22
581.20	0.00	216.067	725.27	0.00	0.00	7.20
581.30	0.00	303.383	1,029.93	0.00	0.00	10.11
581.40	0.00	423.830	1,387.88	0.00	0.00	14.13
581.50	0.00	582.736	1,799.12	0.00	0.00	19.42
581.60	0.00	785.430	2,263.65	0.00	0.00	26.18
581.70	0.00	1,037.241	2,781.46	0.00	0.00	34.57
581.80	0.00	1,343.498	3,352.56	0.00	0.00	44.78
581.90	0.00	1,709.530	3,976.95	0.00	0.00	56.98
582.00	0.00	2,140.665	4,654.63	0.00	0.00	71.36
582.10	0.00	2,627.965	5,094.68	0.00	0.00	87.60
582.20	0.00	3,160.263	5,554.60	0.00	0.00	105.34
582.30	0.00	3,739.547	6,034.39	0.00	0.00	124.65
582.40	0.00	4,367.804	6,534.05	0.00	0.00	145.59
582.50	0.00	5,047.020	7,053.59	0.00	0.00	168.23
582.60	0.00	5,779.184	7,593.00	0.00	0.00	192.64
582.70	0.00	6,566.283	8,152.28	0.00	0.00	218.88

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 101 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
582.80	0.00	7,410.303	8,731.44	0.00	0.00	247.01
582.90	0.00	8,313.233	9,330.46	0.00	0.00	277.11
583.00	0.00	9,277.058	9,949.36	0.00	0.00	309.24
583.10	0.00	10,282.961	10,169.10	0.00	0.00	342.77
583.20	0.00	11,310.957	10,391.23	0.00	0.00	377.03
583.30	0.00	12,361.288	10,615.77	0.00	0.00	412.04
583.40	0.00	13,434.191	10,842.71	0.00	0.00	447.81
583.50	0.00	14,529.909	11,072.04	0.00	0.00	484.33
583.60	0.00	15,648.680	11,303.78	0.00	0.00	521.62
583.70	0.00	16,790.745	11,537.92	0.00	0.00	559.69
583.80	0.00	17,956.344	11,774.46	0.00	0.00	598.54
583.90	0.00	19,145.716	12,013.39	0.00	0.00	638.19
584.00	0.00	20,359.102	12,254.73	0.00	0.00	678.64
584.10	0.00	21,594.563	12,454.75	0.00	0.00	719.82
584.20	0.00	22,850.105	12,656.38	0.00	0.00	761.67
584.30	0.00	24,125.893	12,859.63	0.00	0.00	804.20
584.40	0.00	25,422.086	13,064.50	0.00	0.00	847.40
584.50	0.00	26,738.848	13,271.00	0.00	0.00	891.29
584.60	0.00	28,076.339	13,479.11	0.00	0.00	935.88
584.70	0.00	29,434.723	13,688.84	0.00	0.00	981.16
584.80	0.00	30,814.160	13,900.19	0.00	0.00	1,027.14
584.90	0.00	32,214.814	14,113.15	0.00	0.00	1,073.83
585.00	0.00	33,636.845	14,327.74	0.00	0.00	1,121.23
585.10	0.00	35,079.778	14,531.15	0.00	0.00	1,169.33
585.20	0.00	36,543.123	14,736.00	0.00	0.00	1,218.10
585.30	0.00	38,027.026	14,942.28	0.00	0.00	1,267.57
585.40	0.00	39,531.627	15,149.99	0.00	0.00	1,317.72
585.50	0.00	41,057.072	15,359.14	0.00	0.00	1,368.57
585.60	0.00	42,603.504	15,569.72	0.00	0.00	1,420.12
585.70	0.00	44,171.065	15,781.74	0.00	0.00	1,472.37
585.80	0.00	45,759.900	15,995.19	0.00	0.00	1,525.33
585.90	0.00	47,370.151	16,210.07	0.00	0.00	1,579.01
586.00	0.00	49,001.962	16,426.39	0.00	0.00	1,633.40
586.10	0.00	50,655.168	16,637.95	0.00	0.00	1,688.51
586.20	0.00	52,329.597	16,850.86	0.00	0.00	1,744.32
586.30	0.00	54,025.385	17,065.13	0.00	0.00	1,800.85
586.40	0.00	55,742.667	17,280.75	0.00	0.00	1,858.09
586.50	0.00	57,481.579	17,497.72	0.00	0.00	1,916.05
586.60	0.00	59,242.256	17,716.05	0.00	0.00	1,974.74
586.70	0.00	61,024.834	17,935.73	0.00	0.00	2,034.16
586.78	0.00	62,466.755	18,112.45	0.00	0.00	2,082.23
586.80	0.16	62,829.447	18,156.76	0.00	0.16	2,094.47
586.90	2.34	64,656.231	18,379.15	0.00	2.34	2,157.55
587.00	5.81	66,505.321	18,602.89	0.00	5.81	2,222.65
587.10	10.19	68,376.601	18,822.93	0.00	10.19	2,289.41

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 101 years
Label: Basin 1 Storm Event:

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
587.20	15.32	70,269.950	19,044.25	0.00	15.32	2,357.65
587.30	21.10	72,185.496	19,266.88	0.00	21.10	2,427.28
587.40	27.47	74,123.368	19,490.79	0.00	27.47	2,498.25
587.50	34.39	76,083.698	19,716.00	0.00	34.39	2,570.52
587.60	41.79	78,066.612	19,942.51	0.00	41.79	2,644.02
587.70	49.66	80,072.242	20,170.31	0.00	49.66	2,718.74
587.80	57.97	82,100.717	20,399.40	0.00	57.97	2,794.66
587.90	66.71	84,152.165	20,629.78	0.00	66.71	2,871.78
588.00	75.84	86,226.716	20,861.46	0.00	75.84	2,950.06

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	33.33 ft³/s	Time to Peak (Flow, In)	3 min
Flow (Peak Outlet)	12.99 ft³/s	Time to Peak (Flow, Outlet)	22 min

Elevation (Water Surface, Peak)	584.44 ft
Volume (Peak)	26,009.106 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	39,956.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	39,956.000 ft³
Volume (Retained)	0.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	49.36 ft³/s	Time to Peak (Flow, In)	3 min
Flow (Peak Outlet)	19.23 ft³/s	Time to Peak (Flow, Outlet)	22 min

Elevation (Water Surface, Peak)	585.57 ft
Volume (Peak)	42,211.897 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	59,173.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	59,173.000 ft³
Volume (Retained)	0.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	58.01 ft³/s	Time to Peak (Flow, In)	3 min
Flow (Peak Outlet)	23.34 ft³/s	Time to Peak (Flow, Outlet)	22 min

Elevation (Water Surface, Peak)	586.08 ft
Volume (Peak)	50,293.060 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	69,542.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	69,542.000 ft³
Volume (Retained)	0.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	579.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	66.51 ft³/s	Time to Peak (Flow, In)	3 min
Flow (Peak Outlet)	25.72 ft³/s	Time to Peak (Flow, Outlet)	22 min

Elevation (Water Surface, Peak)	586.55 ft
Volume (Peak)	58,350.195 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	79,732.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	79,732.000 ft³
Volume (Retained)	0.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	586.78 ft
Volume (Initial)	62,467.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	66.51 ft³/s	Time to Peak (Flow, In)	3 min
Flow (Peak Outlet)	65.52 ft³/s	Time to Peak (Flow, Outlet)	20 min

Elevation (Water Surface, Peak)	587.89 ft
Volume (Peak)	83,872.228 ft³

Mass Balance (ft³)	
Volume (Initial)	62,467.000 ft³
Volume (Total Inflow)	79,732.000 ft³
Volume (Total Infiltration)	0.000 ft³
Volume (Total Outlet Outflow)	79,732.000 ft³
Volume (Retained)	62,467.000 ft³
Volume (Unrouted)	0.000 ft³
Error (Mass Balance)	0.0 %

Summary for Hydrograph Addition at 'Basin 1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Site Runoff 1

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Site Runoff 1	39,956.004	3	33.33
Flow (In)	Basin 1	39,956.004	3	33.33

Summary for Hydrograph Addition at 'Basin 1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Site Runoff 1

Node Inflows

Inflow Type	Element	Volume (ft³)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	Site Runoff 1	59,172.768	3	49.36
Flow (In)	Basin 1	59,172.768	3	49.36

Summary for Hydrograph Addition at 'Basin 1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Site Runoff 1

Node Inflows

Inflow Type	Element	Volume (ft³)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	Site Runoff 1	69,542.388	3	58.01
Flow (In)	Basin 1	69,542.388	3	58.01

Summary for Hydrograph Addition at 'Basin 1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Site Runoff 1

Node Inflows

Inflow Type	Element	Volume (ft³)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	Site Runoff 1	79,732.188	3	66.51
Flow (In)	Basin 1	79,732.188	3	66.51

Summary for Hydrograph Addition at 'Basin 1'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Site Runoff 1

Node Inflows

Inflow Type	Element	Volume (ft³)	Time to Peak (min)	Flow (Peak) (ft³/s)
Flow (From)	Site Runoff 1	79,732.188	3	66.51
Flow (In)	Basin 1	79,732.188	3	66.51

Index

Appendix C

Drainage Area
Maps

Exhibit A
Predeveloped Drainage Map
Frontier Middle School Addition
03-12495H

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

ENGINEERING
PLANNING
SURVEYING

221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 928-1718

FOX WOOD ESTATES
PLAT THREE
P.B.21 PG.41

FOX WOOD ESTATES
PLAT TWO
P.B.19 PG.187

ZONED A
ST. CHARLES COUNTY

FOX WOOD DRIVE
50' W. PRIVATE

N89°52'51"E 645.34'

S00°07'09"E
625.25'

482.46'

N89°52'51"E 430.50'

S00°07'09"E 554.82'

N25°54'11"E 1444.16'

N89°14'12"W 1064.37'

S66°58'21"W 942.08'

S66°58'21"W 298.84'

MISSOURI STATE ROUTE DD

PREDEVELOPED WATERSHED A
LAND USE ACRE PI
ONSITE GREENSPACE 4.70 1.70

PREDEVELOPED WATERSHED B
LAND USE ACRE PI
ONSITE GREENSPACE 4.96 1.70

PREDEVELOPED WATERSHED C
LAND USE ACRE PI
ONSITE GREENSPACE 1.52 1.70

PREDEVELOPED WATERSHED D
LAND USE ACRE PI
ONSITE GREENSPACE 12.40 1.70

PREDEVELOPED WATERSHED E
LAND USE ACRE PI
ONSITE GREENSPACE 0.85 1.70

PREDEVELOPED WATERSHED F
LAND USE ACRE PI
ONSITE GREENSPACE 0.90 1.70

END PIPE
21"CMP
FL = 578.51

END PIPE
21"CMP
FL = 579.34

END PIPE
18"RCP
FL = 586.64

FIRE HYDRANT

ASPHALT PAVEMENT

GARDEN AREA

1 STORY BRICK AND FRAME

2 STORY FRAME HOUSE

BARN

FRAME BLDG.

GARAGE

48" WIRE FENCE

GRAVEL

TREELINE

FLOWLINE

R30.50'

ST.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

Todd C. Flauaus
Engineer
Engineers License #2005000982

Engineering Authority No. 000655
Surveying Authority No. 000144

Exhibit B
Postdeveloped Drainage Map
Frontier Middle School Addition
03-12495H

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

ENGINEERING
PLANNING
SURVEYING

221 Point West Blvd.
St. Charles, MO 63301
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FAX 928-1718

N89°52'51"E 316.98'

N89°52'51"E 645.34'

N89°52'51"E

N25°54'11"E 1444.19'

N89°14'12"W 1064.37'

S66°58'21"W 942.08'

S66°58'21"W 296.84'

FOX WOOD ESTATES
PLAT THREE
P.B.21 PG.41

LOT 17

ZONED A
ST. CHARLES COUNTY

LOT 10

PROPERTY N/F
MICHAEL J &
CYNTHIA L SPECIALE
6997/1193

FOX WOOD ESTATES
PLAT TWO
P.B.19 PG.187

ZONED A
ST. CHARLES COUNTY

LOT 11
FOX WOOD ESTATES
PLAT TWO
P.B.19 PG.187

PROPERTY N/F
JOSEPH S &
VICKEY D SILKEY
6906/0046

ZONED A
ST. CHARLES COUNTY

LOT 12

PROPERTY N/F
KAISER PHILIP EDWARD
REVOC
LIV TRUST DTD7-17-07*
KAISER JOAN BETH REVOC
LIV TRUST DTD7-17-07
6330/1047

PROPERTY N/F
NATHANIEL DE LUCA
5588/9004

LOT 13

ZONED A
ST. CHARLES COUNTY

PROPERTY N/F
WENTZVILLE R-IV
SCHOOL DISTRICT
6700/1303

PROPERTY N/F
GEORGE W. THOMPSON AND
AUDREY M. THOMPSON
1196/2775
UNZONED O'FALLON

PROPERTY N/F
TERRY A SMITH
1440/740

2 YEAR 20 MIN HW=585.04
10 YEAR 20 MIN HW=586.52
25 YEAR 20 MIN HW=587.28
100 YEAR 20 MIN HW=588.08
TOP OF BERM ELEV=589.50

100 YEAR 20 MIN HW=588.08

POSTDEVELOPED WATERSHED A
LAND USE ACRE FI
ONSITE GREENSPACE 4.04 TYP.
ONSITE PAVING/ROOF

POSTDEVELOPED WATERSHED B
LAND USE ACRE FI
ONSITE GREENSPACE 1.07 1.70

POSTDEVELOPED WATERSHED C
LAND USE ACRE FI
ONSITE GREENSPACE 1.22 1.70

POSTDEVELOPED WATERSHED D
LAND USE ACRE FI
ONSITE GREENSPACE 12.45 1.54
ONSITE PAVING/ROOF 6.48 3.54
OFFSITE BASIN

POSTDEVELOPED WATERSHED E
LAND USE ACRE FI
ONSITE GREENSPACE 0.67 1.70

POSTDEVELOPED WATERSHED F
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED G
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED H
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED I
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED J
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED K
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED L
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED M
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED N
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED O
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED P
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED Q
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED R
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED S
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED T
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED U
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED V
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED W
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED X
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED Y
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED Z
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AD
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AE
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AF
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AH
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AI
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED AZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BD
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BE
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BF
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BH
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BI
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED BZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CD
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CE
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CF
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CH
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CI
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CM
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CN
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POSTDEVELOPED WATERSHED CO
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CP
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CQ
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POSTDEVELOPED WATERSHED CR
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POSTDEVELOPED WATERSHED CS
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED CT
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POSTDEVELOPED WATERSHED CU
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POSTDEVELOPED WATERSHED CV
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POSTDEVELOPED WATERSHED CW
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POSTDEVELOPED WATERSHED CZ
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POSTDEVELOPED WATERSHED DA
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POSTDEVELOPED WATERSHED DB
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POSTDEVELOPED WATERSHED DD
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POSTDEVELOPED WATERSHED DI
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POSTDEVELOPED WATERSHED DK
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POSTDEVELOPED WATERSHED DO
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POSTDEVELOPED WATERSHED DP
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POSTDEVELOPED WATERSHED DQ
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POSTDEVELOPED WATERSHED DR
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POSTDEVELOPED WATERSHED DS
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POSTDEVELOPED WATERSHED DT
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POSTDEVELOPED WATERSHED DU
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POSTDEVELOPED WATERSHED DV
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POSTDEVELOPED WATERSHED DW
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POSTDEVELOPED WATERSHED DX
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POSTDEVELOPED WATERSHED DY
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POSTDEVELOPED WATERSHED DZ
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POSTDEVELOPED WATERSHED EA
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POSTDEVELOPED WATERSHED EB
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POSTDEVELOPED WATERSHED EC
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POSTDEVELOPED WATERSHED ED
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POSTDEVELOPED WATERSHED EE
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POSTDEVELOPED WATERSHED EG
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POSTDEVELOPED WATERSHED EH
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EI
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EJ
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POSTDEVELOPED WATERSHED EK
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POSTDEVELOPED WATERSHED EL
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EM
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EN
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED ER
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED ES
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED ET
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EU
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED EZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FC
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FD
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FE
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FF
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FH
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ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FI
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED FZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GD
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GE
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GF
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GH
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GI
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED GZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HD
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HE
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HF
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HH
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HI
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED HZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED ID
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IE
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IF
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IH
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED II
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED IZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JD
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JE
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JF
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JG
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JH
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JI
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JJ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JK
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JL
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JM
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JN
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JO
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JP
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JQ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JR
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JS
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JT
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JU
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JV
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JW
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JX
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JY
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED JZ
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED KA
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED KB
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATERSHED KC
LAND USE ACRE FI
ONSITE GREENSPACE 0.30 1.70

POSTDEVELOPED WATER

Exhibit C
Basin Inflow Drainage Map
Frontier Middle School Addition
03-12495H

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

ENGINEERING
PLANNING
SURVEYING

221 Point West Blvd.
St. Charles, MO 63301
636-928-5552
FAX 928-1718

N89°52'51"E 316.98'

N89°52'51"E 645.34'

N89°52'51"E

N25°54'11"E 1444.16'

N89°14'12"W 1064.37'

S66°58'21"W 942.08'

S66°58'21"W 296.84'

FOX WOOD ESTATES
PLAT THREE
P.B.21 PG.41

LOT 17

ZONED A
ST. CHARLES COUNTY

LOT 10

PROPERTY N/F
MICHAEL J. &
CYNTHIA L SPECIALE
6997/1193

FOX WOOD ESTATES
PLAT TWO
P.B.19 PG.187

ZONED A
ST. CHARLES COUNTY

LOT 11
FOX WOOD ESTATES
PLAT TWO
P.B.19 PG.187

PROPERTY N/F
JOSEPH S. &
VICKEY D SILKEY
6908/0046

ZONED A
ST. CHARLES COUNTY

LOT 12

PROPERTY N/F
KAISER PHILIP EDWARD
REVOC
LIV TRUST DTD7-17-07
KAISER JOAN BETH REVOC
LIV TRUST DTD7-17-07
5330/1047

PROPERTY N/F
NATHANIEL DE LUCA
5588/0004

LOT 13

ZONED A
ST. CHARLES COUNTY

PROPERTY N/F
WENTZVILLE R-IV
SCHOOL DISTRICT
2700/1333

PROPERTY N/F
GEORGE W THOMPSON AND
AUDREY M THOMPSON
1196/277
UNZONED O'FALLON

ZONE
ST. CHARLES

PROPERTY N/F
TERRY A SMITH
1440/740

2 YEAR 20 MIN HW=585.04
10 YEAR 20 MIN HW=586.52
25 YEAR 20 MIN HW=587.28
100 YEAR 20 MIN HW=588.08
TOP OF BERM ELEV=589.50

100 YEAR 20 MIN HW=588.08

BASIN INFLOW WATERSHED

	AREA
ONSITE DETENTION	2.82
ONSITE PAVE/BUILDING	12.10
ONSITE BASIN	0.46
	1.70
	3.54
	3.54

2 STORY ADDITION
FOR CLASSROOMS
SEPARATE BID PACKAGE

FUTURE ADDITION

1 STORY BRICK AND FRAME

BARN

FRAME BLDG

1 STORY FRAME

GARAGE

5' CONCRETE SIDEWALK

EXISTING TREELINE

GRAVEL

END PIPE
RCP
FL = 593.87

END PIPE
RCP
FL = 593.55

END PIPE
RCP
FL = 586.44

END PIPE
RCP
FL = 585.58

20 NEW TREES SHOWN TO REPLACE THE TREES TO BE REMOVED DURING CONSTRUCTION.

MISSOURI STATE ROUTE 60

R=5769.65'

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

Todd C. Flauaus
Engineer
Engineers License #2005000982
2020

Exhibit C
Basin Inflow Drainage Map
Frontier Middle School Addition
03-12495H

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 inch = 30 ft.

ENGINEERING
PLANNING
SURVEYING

221 Point West Blvd.
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636-928-5552
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PROPERTY N/F
JOSEPH S &
VICKEY D SILKEY
6906/0046

PROPERTY N/F
WENTZVILLE R-IV
SCHOOL DISTRICT
3700/1333

LOT 13

WATER QUALITY - GI 6
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.46 3.54

WATER QUALITY - YD 9
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.07 3.54

WATER QUALITY - YD 10 SNOUT
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.34 3.54

WATER QUALITY - YD 10
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.08 3.54

WATER QUALITY - YD 11 SNOUT
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.18 3.54

WATER QUALITY - GI 4
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.73 3.54

WATER QUALITY - YD 8
LAND USE ACRE PI
ONSITE PAV/BUILDING 0.63 3.54

WATER QUALITY - GI 3
LAND USE ACRE PI
ONSITE GREENSPACE 0.23 1.70
ONSITE PAV/BUILDING 0.85 3.54

2 STORY ADDITION
TO BE BUILT UNDER
SEPARATE BID PACKAGE

FUTURE ADDITION

20 NEW TREES SHOWN TO REPLACE
THE TREES TO BE REMOVED DURING CONSTRUCTION.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THEREFORE THEIR LOCATIONS SHALL BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF THE LOCATION OF ALL UNDERGROUND UTILITIES, EITHER SHOWN OR NOT SHOWN ON THESE PLANS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE LOCATED PRIOR TO ANY GRADING OR CONSTRUCTION OF THE IMPROVEMENTS.

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Engineer
Engineers License #2005000982
2020