



BARGHAUSEN

PRELIMINARY DRAINAGE REPORT AMENDMENT

Chick-fil-A
8811 35th Avenue N.E.
Marysville, Washington

Prepared for:
Chick-fil-A, Inc.
15635 Alton Parkway, Suite 350
Irvine, CA 92618

December 13, 2022
Our Job No. 17520

PRELIMINARY DRAINAGE REPORT AMENDMENT

Barghausen Consulting Engineers, Inc.

Chick-fil-A

Marysville, Washington

Our Job No. 17520

TABLE OF CONTENTS

- 1.0 INTRODUCTION
- 2.0 DEVELOPED SITE CONDITIONS
- 3.0 CONCLUSION

LIST OF EXHIBITS

- EXHIBIT A EXISTING CONDITION
- EXHIBIT B DEVELOPED CONDITION
- EXHIBIT C WATER QUALITY BASIN MAP

1.0 INTRODUCTION

This amendment has been prepared as a supplementary document to demonstrate compliance with the stormwater site plan and amendment that was prepared under permit PA 16-015. The lot where the proposed Chick-fil-A is to be constructed is 0.84 acres in size and currently is partially developed with parking and drive surfaces. The intent with the redevelopment of the Chick-fil-A is to increase efficiency and through-put at the existing site while utilizing the existing stormwater facilities for full infiltration and water quality.

2.0 DEVELOPED SITE CONDITIONS

2.1 Flow Control

The proposed Chick-fil-A improvements will include expanding the drive-thru to accommodate a second lane and longer queue. The redevelopment will bring the total lot area to the quantities in Table 1 below. The original infiltration gallery was constructed at 9,437 CF of volume provided, while only 9,104 CF of volume was required for 100% infiltration of the original improvements. To maintain full infiltration of the site runoff for the proposed improvements of this project, 9,235 CF of volume is required. The increased impervious surface does not exceed the capacity of the existing stormwater facilities previously constructed on site, and therefore no additional flow control is required. Please see Exhibit A for the original WWHM calculations and Drainage Map and Exhibit B for the proposed WWHM calculations and Drainage Map.

Table 1

	Total Lot Area	Bypass Area	Impervious	Pervious
Existing	2.38	0.09	1.72	0.57
Proposed	2.38	0.09	1.89	0.40

2.2 Water Quality

In the original development, the pollution generating runoff was treated by four on-site Filterra units. In the proposed condition, the project will impact Filterra Basins Nos. 3 and 4. We are reducing the tributary area to Filterra No. 3, as some of it will redrain towards Filterra No. 4, and some will be replaced with non-pollution generating roof that will drain directly into the infiltration gallery.

All of the existing filterra units on site were originally sized to handle the improvements from this project. Filterra Unit No. 4, was originally sized to handle 95.72% of surface runoff, while only 91% was required per PA 16-015. With the additional pollution generating service the unit now can now service 93.24%, exceeding the requirement of 91%. Though adequately sized, Filterra Unit No. 4 cannot remain in place as it is currently located where a proposed parking stall is. Because of this, Filterra Unit F No. 4 from PA 16-015 will be replaced with a new Filterra Unit (named F No. 4 on the proposed plans) that is sized to match the existing Filterra Unit capacity. Please see Exhibit C for the Filterra Unit WWHM calculations and the Water Quality Basin Map.

Table 2

Contributing Area (Acres)				
	Filtterra #1	Filtterra #2	Filtterra #3	Filtterra #4
Existing	0.33	0.43	0.44	0.27
Proposed	0.33	0.43	0.42	0.33

3.0 CONCLUSION

In conclusion, with the impervious surface quantities of the proposed Chick-fil-A not exceeding the capacity of the existing stormwater system design for flow control or water quality, there will be no need for additional flow control or water quality facilities included in this design package. The only modifications to the design are replacing the Filtterra Unit F No. 4 from AP 16-015 with a new one sized to match the existing capacity.

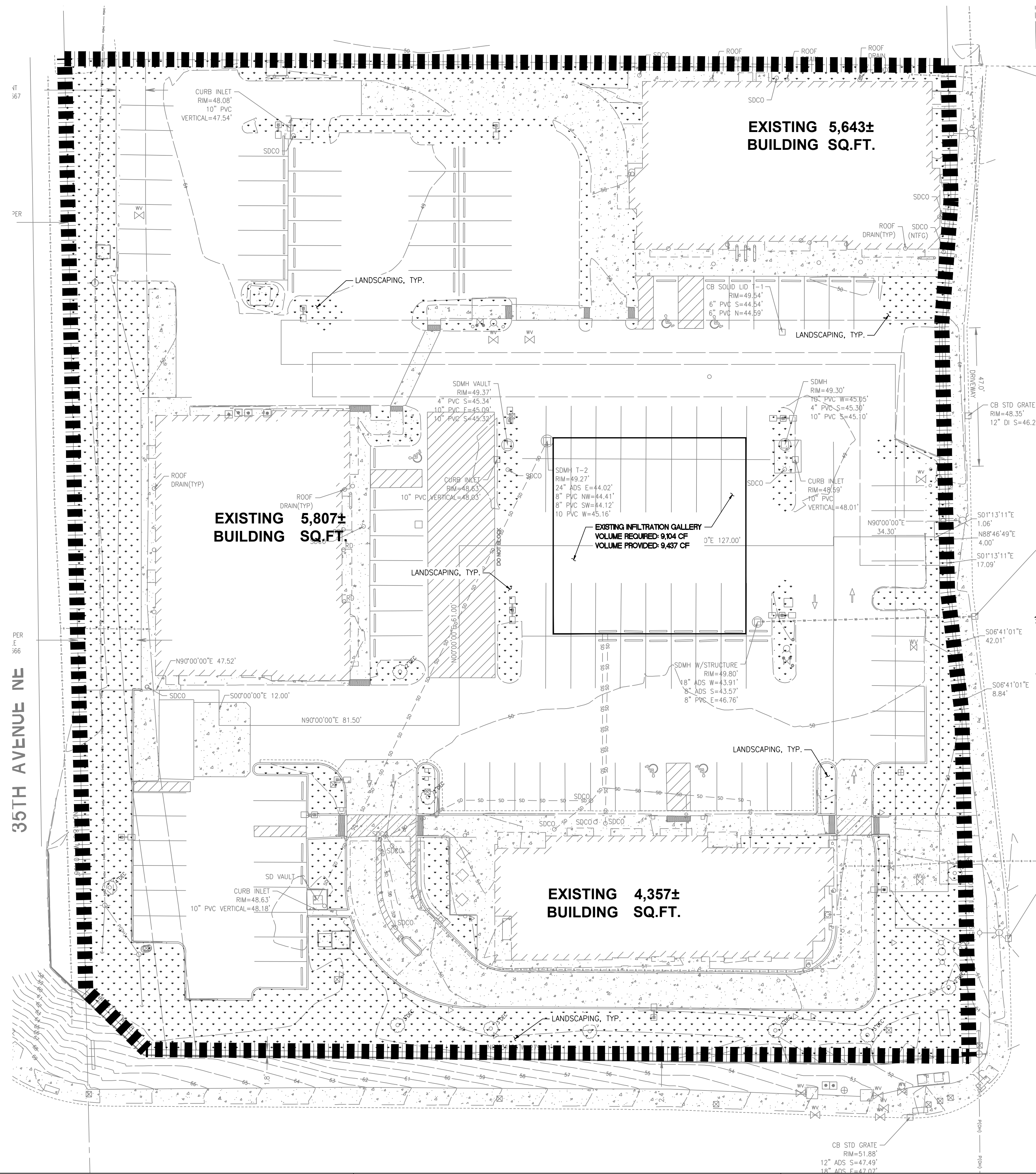
Exhibit A

Existing Condition



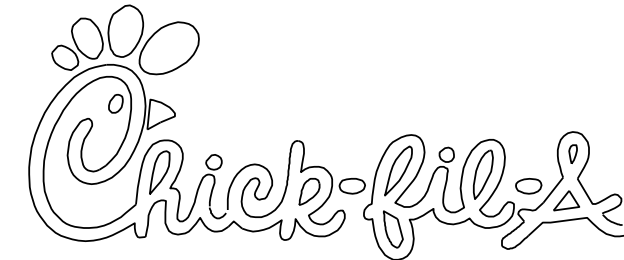
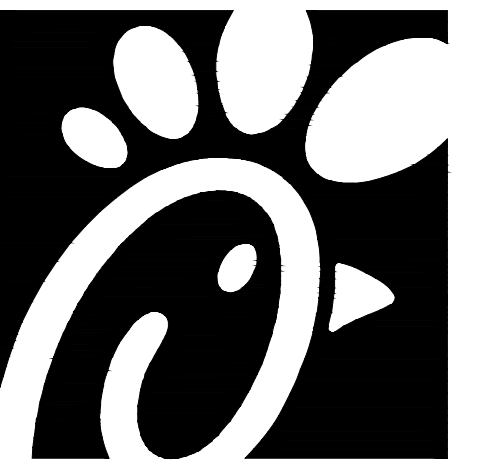
EXISTING DRAINAGE EXHIBIT FOR CHICK-FIL-A MARYSVILLE

SECTION 21, TWP. 30 N., RGE 5 EAST, W. M.
CITY OF MARYSVILLE, SNOHOMISH COUNTY, STATE OF WASHINGTON

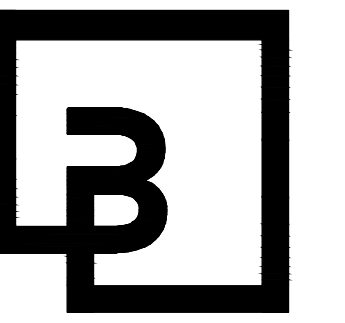


LAND COVER:

TOTAL AREA: 99,923 SF = 2.29 AC
- IMPERVIOUS AREA: 1.72 AC
- PERVIOUS AREA: 0.57 AC



Chick-fil-A
5200 Buffington Road
Atlanta, Georgia 30349-2998



Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com



CHICK-FIL-A
MARYSVILLE, WA

8810 36TH AVE NE
MARYSVILLE, WA 98270

FSR#03988

BUILDING TYPE / SIZE:
RELEASE:

REVISION SCHEDULE		
NO.	DATE	DESCRIPTION

CONSULTANT PROJECT #	17520
PRINTED FOR	ENTITLEMENT
DATE	11/18/2022
DRAWN BY	CJC

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EXISTING DRAINAGE
EXHIBIT

SHEET NUMBER

1

FOR CLIENT REVIEW



Know what's below.
Call before you dig.
Dial 811

WWHM2012 17879 - Infiltration

File Edit View Help Summary Report

Trench Help

Schematic

SCENARIOS

Predeveloped

Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 40 Y 60

Gravel Trench Bed 1 Mitigated

Facility Name: Gravel Trench Bed 1

Downstream Connection: Outlet 1: 0, Outlet 2: 0, Outlet 3: 0

Facility Type: Gravel Trench/Bed

Precipitation Applied to Facility

Evaporation Applied to Facility

Facility Dimensions

Trench Length (ft): 74

Trench Bottom Width (ft): 74

Effective Total Depth (ft): 4

Top and bottom slope (H/V): 0

Left Side Slope (H/V): 0

Right Side Slope (H/V): 0

Material Layers for Trench/Bed

Layer 1 Thickness (ft): 3.5

Layer 1 porosity (0-1): 0.55

Layer 2 Thickness (ft): 0

Layer 2 porosity (0-1): 0

Layer 3 Thickness (ft): 0

Layer 3 porosity (0-1): 0

Infiltration: Yes

Measured Infiltration Rate (in/hr): 2

Reduction Factor (infiltr*factor): 1

Use Wetted Surface Area (sidewalls): NO

Total Volume Infiltrated (ac-ft): 310.942

Total Volume Through Riser (ac-ft): 0

Size Infiltration Trench

Target %: 100

Outlet Structure Data

Riser Height (ft): 3

Riser Diameter (in): 12

Riser Type: Flat

Notch Type:

Orifice Number, Diameter (in), Height (ft)

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Trench Volume at Riser Head (ac-ft): .209

Show Trench: Open Table

Initial Stage (ft): 0

Total Volume Through Facility (ac-ft): 310.942

Percent Infiltrated: 100

$0.209 * 43560 = 9,104 \text{ cu-ft}$

100% Runoff is infiltrated onsite

WWHM2012 17879 - Infiltration

File Edit View Help Summary Report

Basin Help

Schematic

SCENARIOS

Predeveloped

Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 0 Y 30

Basin 1 Mitigated

Subbasin Name: Basin 1 Designate as Bypass for POC:

Flows To : **Surface** Gravel Trench Bed 1 **Interflow** Gravel Trench Bed 1 **Groundwater**

Area in Basin Show Only Selected

Available Pervious	Acres	Available Impervious	Acres
<input checked="" type="checkbox"/> A/B, Forest, Flat	0	<input checked="" type="checkbox"/> ROADS/FLAT	0
<input type="checkbox"/> A/B, Forest, Mod	0	<input type="checkbox"/> ROADS/MOD	0
<input type="checkbox"/> A/B, Forest, Steep	0	<input type="checkbox"/> ROADS/STEEP	0
<input type="checkbox"/> A/B, Pasture, Flat	0	<input type="checkbox"/> ROOF TOPS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Mod	0	<input type="checkbox"/> DRIVEWAYS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Steep	0	<input type="checkbox"/> DRIVEWAYS/MOD	0
<input type="checkbox"/> A/B, Lawn, Flat	0	<input type="checkbox"/> DRIVEWAYS/STEEP	0
<input type="checkbox"/> A/B, Lawn, Mod	0	<input checked="" type="checkbox"/> SIDEWALKS/FLAT	0
<input type="checkbox"/> A/B, Lawn, Steep	0	<input type="checkbox"/> SIDEWALKS/MOD	0
<input type="checkbox"/> C, Forest, Flat	0	<input type="checkbox"/> SIDEWALKS/STEEP	0
<input type="checkbox"/> C, Forest, Mod	0	<input checked="" type="checkbox"/> PARKING/FLAT	1.72
<input type="checkbox"/> C, Forest, Steep	0	<input type="checkbox"/> PARKING/MOD	0
<input type="checkbox"/> C, Pasture, Flat	0	<input type="checkbox"/> PARKING/STEEP	0
<input type="checkbox"/> C, Pasture, Mod	0	<input type="checkbox"/> POND	0
<input type="checkbox"/> C, Pasture, Steep	0	<input type="checkbox"/> Porous Pavement	0
<input checked="" type="checkbox"/> C, Lawn, Flat	0.57		
<input type="checkbox"/> C, Lawn, Mod	0		
<input type="checkbox"/> C, Lawn, Steep	0		
<input type="checkbox"/> SAT, Forest, Flat	0		
<input type="checkbox"/> SAT, Forest, Mod	0		
<input type="checkbox"/> SAT, Forest, Steep	0		

Pervious Total 0.57 Acres

Impervious Total 1.72 Acres

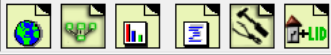
Basin Total 2.29 Acres

Deselect Zero Select By: GO

Onsite Developed
Conditions
(75% Impervious)

Exhibit B
Developed
Condition





Schematic Help

Schematic

SCENARIOS

Predeveloped

Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 50 Y 60

Wed 3:01p - 17520 - Infiltration - Finish Mitigated

Gravel Trench Bed 1 Mitigated

Facility Name Gravel Trench Bed 1

Outlet 1 0 **Outlet 2** 0 **Outlet 3** 0

Downstream Connection

Facility Type Gravel Trench/Bed

Precipitation Applied to Facility

Evaporation Applied to Facility

Facility Dimensions

Trench Length (ft) 75

Trench Bottom Width (ft) 74

Effective Total Depth (ft) 4

Top and bottom slope (H/V) 0

Left Side Slope (H/V) 0

Right Side Slope (H/V) 0

Material Layers for Trench/Bed

Layer 1 Thickness (ft) 3.5

Layer 1 porosity (0-1) 0.55

Layer 2 Thickness (ft) 0

Layer 2 porosity (0-1) 0

Layer 3 Thickness (ft) 0

Layer 3 porosity (0-1) 0

Infiltration Yes

Measured Infiltration Rate (in/hr) 2

Reduction Factor (infil*factor) 1

Use Wetted Surface Area (sidewalls) NO

Total Volume Infiltrated (ac-ft) 324.527

Total Volume Through Riser (ac-ft) 0.011

Orifice Structure Data

Orifice Number	Diameter (in)	Height (ft)
1	0	0
2	0	0
3	0	0

Trench Volume at Riser Head (ac-ft) .212

Show Trench Open Table

Initial Stage (ft) 0

Total Volume Through Facility (ac-ft) 324.538

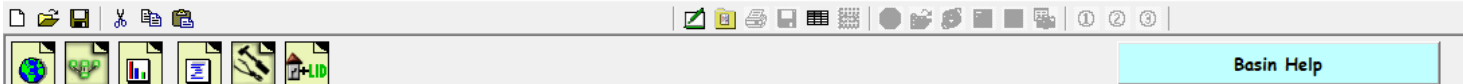
Percent Infiltrated 100

Size Infiltration Trench

Target %: 100

0.212*43560 ft/ac = 9,235 cu ft

100% Runoff is infiltrated onsite



Schematic

SCENARIOS

Predeveloped
 Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 50
 Y 24

Wed 3:01p - 17520 - Infiltration - Finish Mitigated

Basin 1 Mitigated

Subbasin Name: Basin 1 Designate as Bypass for POC

Flows To : Surface: Gravel Trench Bed 1 Interflow: Gravel Trench Bed 1 Groundwater:

Area in Basin Show Only Selected

Available Pervious		Available Impervious	
	Acres		Acres
<input checked="" type="checkbox"/> A/B, Forest, Flat	0	<input checked="" type="checkbox"/> ROADS/FLAT	0
<input type="checkbox"/> A/B, Forest, Mod	0	<input type="checkbox"/> ROADS/MOD	0
<input type="checkbox"/> A/B, Forest, Steep	0	<input type="checkbox"/> ROADS/STEEP	0
<input type="checkbox"/> A/B, Pasture, Flat	0	<input type="checkbox"/> ROOF TOPS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Mod	0	<input type="checkbox"/> DRIVEWAYS/FLAT	0
<input type="checkbox"/> A/B, Pasture, Steep	0	<input type="checkbox"/> DRIVEWAYS/MOD	0
<input type="checkbox"/> A/B, Lawn, Flat	0	<input type="checkbox"/> DRIVEWAYS/STEEP	0
<input type="checkbox"/> A/B, Lawn, Mod	0	<input checked="" type="checkbox"/> SIDEWALKS/FLAT	0
<input type="checkbox"/> A/B, Lawn, Steep	0	<input type="checkbox"/> SIDEWALKS/MOD	0
<input type="checkbox"/> C, Forest, Flat	0	<input type="checkbox"/> SIDEWALKS/STEEP	0
<input type="checkbox"/> C, Forest, Mod	0	<input checked="" type="checkbox"/> PARKING/FLAT	1.89
<input type="checkbox"/> C, Forest, Steep	0	<input type="checkbox"/> PARKING/MOD	0
<input type="checkbox"/> C, Pasture, Flat	0	<input type="checkbox"/> PARKING/STEEP	0
<input type="checkbox"/> C, Pasture, Mod	0	<input type="checkbox"/> POND	0
<input type="checkbox"/> C, Pasture, Steep	0	<input type="checkbox"/> Porous Pavement	0
<input checked="" type="checkbox"/> C, Lawn, Flat	0.4		
<input type="checkbox"/> C, Lawn, Mod	0		
<input type="checkbox"/> C, Lawn, Steep	0		
<input type="checkbox"/> SAT, Forest, Flat	0		
<input type="checkbox"/> SAT, Forest, Mod	0		
<input type="checkbox"/> SAT, Forest, Steep	0		

Pervious Total: 0.4 Acres
 Impervious Total: 1.89 Acres
 Basin Total: 2.29 Acres

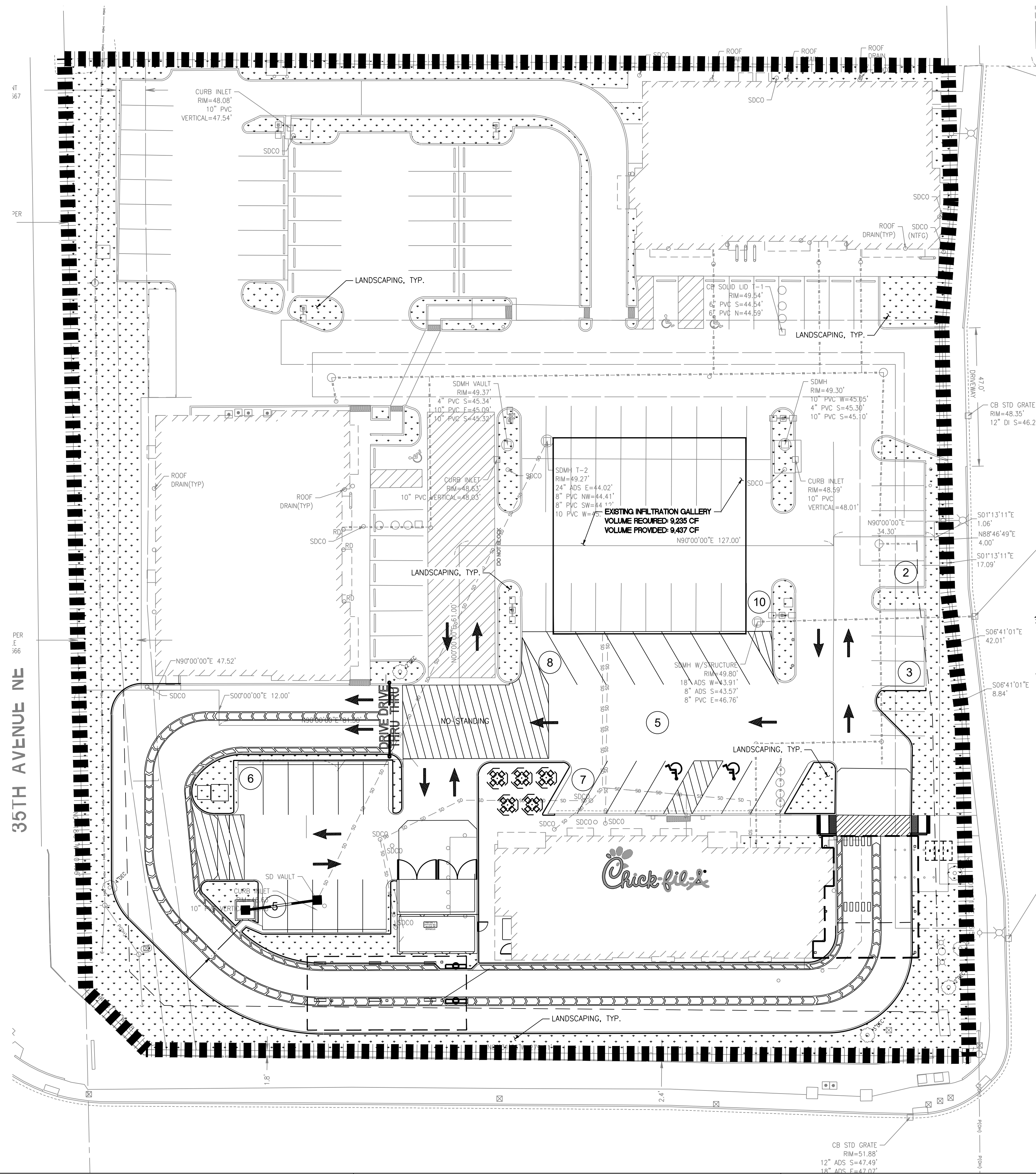
Precipitation Gage: 2 - SILVER L | Everett Auto Assign Gages

Deselect Zero Select By: GO

Onsite Developed
 Conditions

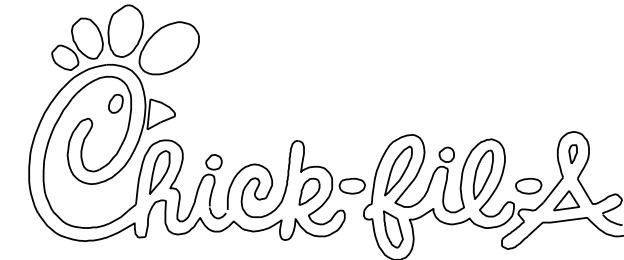
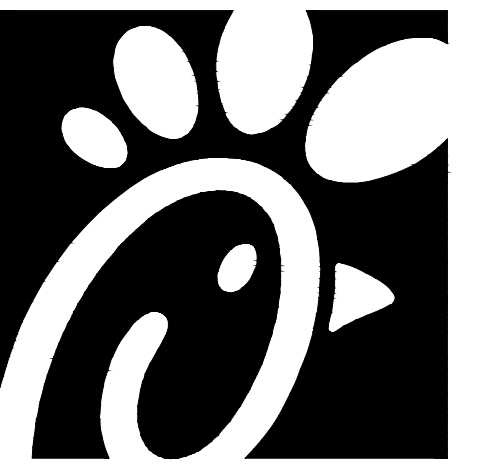
PROPOSED DRAINAGE EXHIBIT FOR CHICK-FIL-A MARYSVILLE

SECTION 21, TWP. 30 N., RGE 5 EAST, W. M.
CITY OF MARYSVILLE, SNOHOMISH COUNTY, STATE OF WASHINGTON

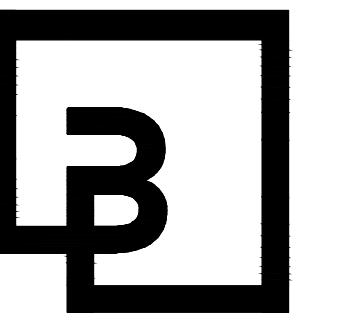


LAND COVER:

TOTAL AREA: 99,923 SF = 2.29 AC
 - IMPERVIOUS AREA: 82,544 SF = 1.89 AC
 - PERVIOUS AREA: 17,379 SF = 0.40 AC

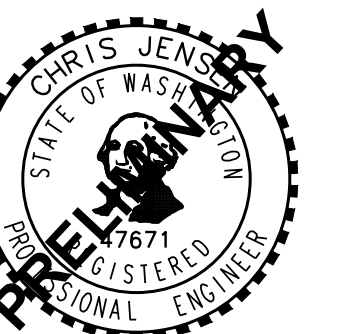


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 barghausen.com



CHICK-FIL-A
MARYSVILLE, WA

8810 36TH AVE NE
 MARYSVILLE, WA 98270

FSR#03988

BUILDING TYPE / SIZE:
 RELEASE:

REVISION SCHEDULE		
NO.	DATE	DESCRIPTION

CONSULTANT PROJECT #	17520
PRINTED FOR	ENTITLEMENT
DATE	11/18/2022
DRAWN BY	CJC

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SHEET
PROPOSED DRAINAGE EXHIBIT

SHEET NUMBER

1

FOR CLIENT REVIEW



Know what's below.
 Call before you dig.
 Dial 811

Exhibit C

Water Quality

WWHM2012
PROJECT REPORT

General Model Information

Project Name: 17520 - Filterra
Site Name: 17879 TDC Retail
Site Address: 8833 36th Ave NE
City: Marysville
Report Date: 12/2/2022
Gage: Everett
Data Start: 1948/10/01
Data End: 2009/09/30
Timestep: 15 Minute
Precip Scale: 1.000
Version Date: 2019/09/13
Version: 4.2.17

POC Thresholds

Low Flow Threshold for POC1: 50 Percent of the 2 Year
High Flow Threshold for POC1: 50 Year

Low Flow Threshold for POC2: 50 Percent of the 2 Year
High Flow Threshold for POC2: 50 Year

Low Flow Threshold for POC3: 50 Percent of the 2 Year
High Flow Threshold for POC3: 50 Year

Low Flow Threshold for POC4: 50 Percent of the 2 Year
High Flow Threshold for POC4: 50 Year

Landuse Basin Data
Predeveloped Land Use

Mitigated Land Use

Filtterra Basin 1
Existing to remain, no additional
contributing area with redevelopment

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	0.33
Impervious Total	0.33
Basin Total	0.33

Element Flows To:		
Surface	Interflow	Groundwater
Sand Filter 1	Sand Filter 1	

Basin 2

Bypass: No
GroundWater: No
Pervious Land Use acre
Pervious Total 0
Impervious Land Use acre
PARKING FLAT 0.43
Impervious Total 0.43
Basin Total 0.43

Filterra Basin 2
Existing to remain, no additional
contributing area with redevelopment

Element Flows To:
Surface Interflow Groundwater
Sand Filter 2 Sand Filter 2

Basin 3

Bypass: No
GroundWater: No
Pervious Land Use acre
Pervious Total 0
Impervious Land Use acre
PARKING FLAT 0.42
Impervious Total 0.42
Basin Total 0.42

Filterra Basin 3
Existing to remain, contributing area
reduced due to site changes.

Element Flows To:
Surface Interflow Groundwater
Sand Filter 3 Sand Filter 3

Basin 4

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	0.33
Impervious Total	0.33
Basin Total	0.33

Filterra Basin 4

Proposed Filterra Basin will be adequately sized to match the capacity of the existing Filterra unit on site.

Element Flows To:		
Surface	Interflow	Groundwater
Sand Filter 4	Sand Filter 4	

Routing Elements
Predeveloped Routing

Mitigated Routing

Filterra Basin 1

Sand Filter 1

Bottom Length: 6.00 ft.
 Bottom Width: 6.00 ft.
 Depth: 0.75 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1
 Filtration On
 Hydraulic conductivity: 24.82
 Depth of filter medium: 1.8
 Total Volume Infiltrated (ac-ft.): 45.802
 Total Volume Through Riser (ac-ft.): 4.381
 Total Volume Through Facility (ac-ft.): 50.183
 Percent Infiltrated: 91.27
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Discharge Structure
 Riser Height: 0.7 ft.
 Riser Diameter: 100 in.
 Element Flows To:
 Outlet 1 Outlet 2

Sand Filter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000826	0.000000	0.000	0.000
0.0083	0.000826	0.000007	0.000	0.020
0.0167	0.000826	0.000014	0.000	0.020
0.0250	0.000826	0.000021	0.000	0.021
0.0333	0.000826	0.000028	0.000	0.021
0.0417	0.000826	0.000034	0.000	0.021
0.0500	0.000826	0.000041	0.000	0.021
0.0583	0.000826	0.000048	0.000	0.021
0.0667	0.000826	0.000055	0.000	0.021
0.0750	0.000826	0.000062	0.000	0.021
0.0833	0.000826	0.000069	0.000	0.021
0.0917	0.000826	0.000076	0.000	0.021
0.1000	0.000826	0.000083	0.000	0.021
0.1083	0.000826	0.000090	0.000	0.021
0.1167	0.000826	0.000096	0.000	0.022
0.1250	0.000826	0.000103	0.000	0.022
0.1333	0.000826	0.000110	0.000	0.022
0.1417	0.000826	0.000117	0.000	0.022
0.1500	0.000826	0.000124	0.000	0.022
0.1583	0.000826	0.000131	0.000	0.022
0.1667	0.000826	0.000138	0.000	0.022
0.1750	0.000826	0.000145	0.000	0.022
0.1833	0.000826	0.000152	0.000	0.022
0.1917	0.000826	0.000158	0.000	0.022
0.2000	0.000826	0.000165	0.000	0.023
0.2083	0.000826	0.000172	0.000	0.023
0.2167	0.000826	0.000179	0.000	0.023
0.2250	0.000826	0.000186	0.000	0.023

0.2333	0.000826	0.000193	0.000	0.023
0.2417	0.000826	0.000200	0.000	0.023
0.2500	0.000826	0.000207	0.000	0.023
0.2583	0.000826	0.000213	0.000	0.023
0.2667	0.000826	0.000220	0.000	0.023
0.2750	0.000826	0.000227	0.000	0.023
0.2833	0.000826	0.000234	0.000	0.023
0.2917	0.000826	0.000241	0.000	0.024
0.3000	0.000826	0.000248	0.000	0.024
0.3083	0.000826	0.000255	0.000	0.024
0.3167	0.000826	0.000262	0.000	0.024
0.3250	0.000826	0.000269	0.000	0.024
0.3333	0.000826	0.000275	0.000	0.024
0.3417	0.000826	0.000282	0.000	0.024
0.3500	0.000826	0.000289	0.000	0.024
0.3583	0.000826	0.000296	0.000	0.024
0.3667	0.000826	0.000303	0.000	0.024
0.3750	0.000826	0.000310	0.000	0.025
0.3833	0.000826	0.000317	0.000	0.025
0.3917	0.000826	0.000324	0.000	0.025
0.4000	0.000826	0.000331	0.000	0.025
0.4083	0.000826	0.000337	0.000	0.025
0.4167	0.000826	0.000344	0.000	0.025
0.4250	0.000826	0.000351	0.000	0.025
0.4333	0.000826	0.000358	0.000	0.025
0.4417	0.000826	0.000365	0.000	0.025
0.4500	0.000826	0.000372	0.000	0.025
0.4583	0.000826	0.000379	0.000	0.025
0.4667	0.000826	0.000386	0.000	0.026
0.4750	0.000826	0.000393	0.000	0.026
0.4833	0.000826	0.000399	0.000	0.026
0.4917	0.000826	0.000406	0.000	0.026
0.5000	0.000826	0.000413	0.000	0.026
0.5083	0.000826	0.000420	0.000	0.026
0.5167	0.000826	0.000427	0.000	0.026
0.5250	0.000826	0.000434	0.000	0.026
0.5333	0.000826	0.000441	0.000	0.026
0.5417	0.000826	0.000448	0.000	0.026
0.5500	0.000826	0.000455	0.000	0.027
0.5583	0.000826	0.000461	0.000	0.027
0.5667	0.000826	0.000468	0.000	0.027
0.5750	0.000826	0.000475	0.000	0.027
0.5833	0.000826	0.000482	0.000	0.027
0.5917	0.000826	0.000489	0.000	0.027
0.6000	0.000826	0.000496	0.000	0.027
0.6083	0.000826	0.000503	0.000	0.027
0.6167	0.000826	0.000510	0.000	0.027
0.6250	0.000826	0.000517	0.000	0.027
0.6333	0.000826	0.000523	0.000	0.028
0.6417	0.000826	0.000530	0.000	0.028
0.6500	0.000826	0.000537	0.000	0.028
0.6583	0.000826	0.000544	0.000	0.028
0.6667	0.000826	0.000551	0.000	0.028
0.6750	0.000826	0.000558	0.000	0.028
0.6833	0.000826	0.000565	0.000	0.028
0.6917	0.000826	0.000572	0.000	0.028
0.7000	0.000826	0.000579	0.000	0.028
0.7083	0.000826	0.000585	0.067	0.028

0.7167	0.000826	0.000592	0.190	0.028
0.7250	0.000826	0.000599	0.349	0.029
0.7333	0.000826	0.000606	0.538	0.029
0.7417	0.000826	0.000613	0.752	0.029
0.7500	0.000826	0.000620	0.989	0.029
0.7583	0.000826	0.000627	1.246	0.029

Sand Filter 2

Bottom Length:	6.00 ft.	
Bottom Width:	8.00 ft.	
Depth:	0.75 ft.	
Side slope 1:	0 To 1	
Side slope 2:	0 To 1	
Side slope 3:	0 To 1	
Side slope 4:	0 To 1	
Filtration On		
Hydraulic conductivity:	24.82	
Depth of filter medium:	1.8	
Total Volume Infiltrated (ac-ft.):		60.237
Total Volume Through Riser (ac-ft.):		5.465
Total Volume Through Facility (ac-ft.):		65.702
Percent Infiltrated:		91.68
Total Precip Applied to Facility:		0
Total Evap From Facility:		0
Discharge Structure		
Riser Height:	0.7 ft.	
Riser Diameter:	100 in.	
Element Flows To:		
Outlet 1	Outlet 2	

Sand Filter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.001102	0.000000	0.000	0.000
0.0083	0.001102	0.000009	0.000	0.027
0.0167	0.001102	0.000018	0.000	0.027
0.0250	0.001102	0.000028	0.000	0.028
0.0333	0.001102	0.000037	0.000	0.028
0.0417	0.001102	0.000046	0.000	0.028
0.0500	0.001102	0.000055	0.000	0.028
0.0583	0.001102	0.000064	0.000	0.028
0.0667	0.001102	0.000073	0.000	0.028
0.0750	0.001102	0.000083	0.000	0.028
0.0833	0.001102	0.000092	0.000	0.028
0.0917	0.001102	0.000101	0.000	0.029
0.1000	0.001102	0.000110	0.000	0.029
0.1083	0.001102	0.000119	0.000	0.029
0.1167	0.001102	0.000129	0.000	0.029
0.1250	0.001102	0.000138	0.000	0.029
0.1333	0.001102	0.000147	0.000	0.029
0.1417	0.001102	0.000156	0.000	0.029
0.1500	0.001102	0.000165	0.000	0.029
0.1583	0.001102	0.000174	0.000	0.030
0.1667	0.001102	0.000184	0.000	0.030
0.1750	0.001102	0.000193	0.000	0.030
0.1833	0.001102	0.000202	0.000	0.030
0.1917	0.001102	0.000211	0.000	0.030
0.2000	0.001102	0.000220	0.000	0.030
0.2083	0.001102	0.000230	0.000	0.030
0.2167	0.001102	0.000239	0.000	0.030
0.2250	0.001102	0.000248	0.000	0.031
0.2333	0.001102	0.000257	0.000	0.031
0.2417	0.001102	0.000266	0.000	0.031

0.2500	0.001102	0.000275	0.000	0.031
0.2583	0.001102	0.000285	0.000	0.031
0.2667	0.001102	0.000294	0.000	0.031
0.2750	0.001102	0.000303	0.000	0.031
0.2833	0.001102	0.000312	0.000	0.031
0.2917	0.001102	0.000321	0.000	0.032
0.3000	0.001102	0.000331	0.000	0.032
0.3083	0.001102	0.000340	0.000	0.032
0.3167	0.001102	0.000349	0.000	0.032
0.3250	0.001102	0.000358	0.000	0.032
0.3333	0.001102	0.000367	0.000	0.032
0.3417	0.001102	0.000376	0.000	0.032
0.3500	0.001102	0.000386	0.000	0.032
0.3583	0.001102	0.000395	0.000	0.033
0.3667	0.001102	0.000404	0.000	0.033
0.3750	0.001102	0.000413	0.000	0.033
0.3833	0.001102	0.000422	0.000	0.033
0.3917	0.001102	0.000432	0.000	0.033
0.4000	0.001102	0.000441	0.000	0.033
0.4083	0.001102	0.000450	0.000	0.033
0.4167	0.001102	0.000459	0.000	0.034
0.4250	0.001102	0.000468	0.000	0.034
0.4333	0.001102	0.000478	0.000	0.034
0.4417	0.001102	0.000487	0.000	0.034
0.4500	0.001102	0.000496	0.000	0.034
0.4583	0.001102	0.000505	0.000	0.034
0.4667	0.001102	0.000514	0.000	0.034
0.4750	0.001102	0.000523	0.000	0.034
0.4833	0.001102	0.000533	0.000	0.035
0.4917	0.001102	0.000542	0.000	0.035
0.5000	0.001102	0.000551	0.000	0.035
0.5083	0.001102	0.000560	0.000	0.035
0.5167	0.001102	0.000569	0.000	0.035
0.5250	0.001102	0.000579	0.000	0.035
0.5333	0.001102	0.000588	0.000	0.035
0.5417	0.001102	0.000597	0.000	0.035
0.5500	0.001102	0.000606	0.000	0.036
0.5583	0.001102	0.000615	0.000	0.036
0.5667	0.001102	0.000624	0.000	0.036
0.5750	0.001102	0.000634	0.000	0.036
0.5833	0.001102	0.000643	0.000	0.036
0.5917	0.001102	0.000652	0.000	0.036
0.6000	0.001102	0.000661	0.000	0.036
0.6083	0.001102	0.000670	0.000	0.036
0.6167	0.001102	0.000680	0.000	0.037
0.6250	0.001102	0.000689	0.000	0.037
0.6333	0.001102	0.000698	0.000	0.037
0.6417	0.001102	0.000707	0.000	0.037
0.6500	0.001102	0.000716	0.000	0.037
0.6583	0.001102	0.000725	0.000	0.037
0.6667	0.001102	0.000735	0.000	0.037
0.6750	0.001102	0.000744	0.000	0.037
0.6833	0.001102	0.000753	0.000	0.038
0.6917	0.001102	0.000762	0.000	0.038
0.7000	0.001102	0.000771	0.000	0.038
0.7083	0.001102	0.000781	0.067	0.038
0.7167	0.001102	0.000790	0.190	0.038
0.7250	0.001102	0.000799	0.349	0.038

0.7333	0.001102	0.000808	0.538	0.038
0.7417	0.001102	0.000817	0.752	0.038
0.7500	0.001102	0.000826	0.989	0.039
0.7583	0.001102	0.000836	1.246	0.039

Sand Filter 3

Bottom Length:	6.00 ft.	
Bottom Width:	8.00 ft.	
Depth:	0.75 ft.	
Side slope 1:	0 To 1	
Side slope 2:	0 To 1	
Side slope 3:	0 To 1	
Side slope 4:	0 To 1	
Filtration On		
Hydraulic conductivity:	24.82	
Depth of filter medium:	1.8	
Total Volume Infiltrated (ac-ft.):		59.072
Total Volume Through Riser (ac-ft.):		5.082
Total Volume Through Facility (ac-ft.):		64.154
Percent Infiltrated:		92.08
Total Precip Applied to Facility:		0
Total Evap From Facility:		0
Discharge Structure		
Riser Height:	0.7 ft.	
Riser Diameter:	100 in.	
Element Flows To:		
Outlet 1	Outlet 2	

Sand Filter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.001102	0.000000	0.000	0.000
0.0083	0.001102	0.000009	0.000	0.027
0.0167	0.001102	0.000018	0.000	0.027
0.0250	0.001102	0.000028	0.000	0.028
0.0333	0.001102	0.000037	0.000	0.028
0.0417	0.001102	0.000046	0.000	0.028
0.0500	0.001102	0.000055	0.000	0.028
0.0583	0.001102	0.000064	0.000	0.028
0.0667	0.001102	0.000073	0.000	0.028
0.0750	0.001102	0.000083	0.000	0.028
0.0833	0.001102	0.000092	0.000	0.028
0.0917	0.001102	0.000101	0.000	0.029
0.1000	0.001102	0.000110	0.000	0.029
0.1083	0.001102	0.000119	0.000	0.029
0.1167	0.001102	0.000129	0.000	0.029
0.1250	0.001102	0.000138	0.000	0.029
0.1333	0.001102	0.000147	0.000	0.029
0.1417	0.001102	0.000156	0.000	0.029
0.1500	0.001102	0.000165	0.000	0.029
0.1583	0.001102	0.000174	0.000	0.030
0.1667	0.001102	0.000184	0.000	0.030
0.1750	0.001102	0.000193	0.000	0.030
0.1833	0.001102	0.000202	0.000	0.030
0.1917	0.001102	0.000211	0.000	0.030
0.2000	0.001102	0.000220	0.000	0.030
0.2083	0.001102	0.000230	0.000	0.030
0.2167	0.001102	0.000239	0.000	0.030
0.2250	0.001102	0.000248	0.000	0.031
0.2333	0.001102	0.000257	0.000	0.031
0.2417	0.001102	0.000266	0.000	0.031

0.2500	0.001102	0.000275	0.000	0.031
0.2583	0.001102	0.000285	0.000	0.031
0.2667	0.001102	0.000294	0.000	0.031
0.2750	0.001102	0.000303	0.000	0.031
0.2833	0.001102	0.000312	0.000	0.031
0.2917	0.001102	0.000321	0.000	0.032
0.3000	0.001102	0.000331	0.000	0.032
0.3083	0.001102	0.000340	0.000	0.032
0.3167	0.001102	0.000349	0.000	0.032
0.3250	0.001102	0.000358	0.000	0.032
0.3333	0.001102	0.000367	0.000	0.032
0.3417	0.001102	0.000376	0.000	0.032
0.3500	0.001102	0.000386	0.000	0.032
0.3583	0.001102	0.000395	0.000	0.033
0.3667	0.001102	0.000404	0.000	0.033
0.3750	0.001102	0.000413	0.000	0.033
0.3833	0.001102	0.000422	0.000	0.033
0.3917	0.001102	0.000432	0.000	0.033
0.4000	0.001102	0.000441	0.000	0.033
0.4083	0.001102	0.000450	0.000	0.033
0.4167	0.001102	0.000459	0.000	0.034
0.4250	0.001102	0.000468	0.000	0.034
0.4333	0.001102	0.000478	0.000	0.034
0.4417	0.001102	0.000487	0.000	0.034
0.4500	0.001102	0.000496	0.000	0.034
0.4583	0.001102	0.000505	0.000	0.034
0.4667	0.001102	0.000514	0.000	0.034
0.4750	0.001102	0.000523	0.000	0.034
0.4833	0.001102	0.000533	0.000	0.035
0.4917	0.001102	0.000542	0.000	0.035
0.5000	0.001102	0.000551	0.000	0.035
0.5083	0.001102	0.000560	0.000	0.035
0.5167	0.001102	0.000569	0.000	0.035
0.5250	0.001102	0.000579	0.000	0.035
0.5333	0.001102	0.000588	0.000	0.035
0.5417	0.001102	0.000597	0.000	0.035
0.5500	0.001102	0.000606	0.000	0.036
0.5583	0.001102	0.000615	0.000	0.036
0.5667	0.001102	0.000624	0.000	0.036
0.5750	0.001102	0.000634	0.000	0.036
0.5833	0.001102	0.000643	0.000	0.036
0.5917	0.001102	0.000652	0.000	0.036
0.6000	0.001102	0.000661	0.000	0.036
0.6083	0.001102	0.000670	0.000	0.036
0.6167	0.001102	0.000680	0.000	0.037
0.6250	0.001102	0.000689	0.000	0.037
0.6333	0.001102	0.000698	0.000	0.037
0.6417	0.001102	0.000707	0.000	0.037
0.6500	0.001102	0.000716	0.000	0.037
0.6583	0.001102	0.000725	0.000	0.037
0.6667	0.001102	0.000735	0.000	0.037
0.6750	0.001102	0.000744	0.000	0.037
0.6833	0.001102	0.000753	0.000	0.038
0.6917	0.001102	0.000762	0.000	0.038
0.7000	0.001102	0.000771	0.000	0.038
0.7083	0.001102	0.000781	0.067	0.038
0.7167	0.001102	0.000790	0.190	0.038
0.7250	0.001102	0.000799	0.349	0.038

0.7333	0.001102	0.000808	0.538	0.038
0.7417	0.001102	0.000817	0.752	0.038
0.7500	0.001102	0.000826	0.989	0.039
0.7583	0.001102	0.000836	1.246	0.039

Sand Filter 4

Filterra Basin 4

Bottom Length:	6.00 ft.	
Bottom Width:	6.00 ft.	
Depth:	0.75 ft.	
Side slope 1:	0 To 1	
Side slope 2:	0 To 1	
Side slope 3:	0 To 1	
Side slope 4:	0 To 1	
Filtration On		
Hydraulic conductivity:	28.42	
Depth of filter medium:	1.8	
Total Volume Infiltrated (ac-ft.):		46.698
Total Volume Through Riser (ac-ft.):		3.383
Total Volume Through Facility (ac-ft.):		50.081
Percent Infiltrated:		93.24
Total Precip Applied to Facility:		0
Total Evap From Facility:		0
Discharge Structure		
Riser Height:	0.7 ft.	
Riser Diameter:	100 in.	
Element Flows To:		
Outlet 1	Outlet 2	

Sand Filter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.000826	0.000000	0.000	0.000
0.0083	0.000826	0.000007	0.000	0.023
0.0167	0.000826	0.000014	0.000	0.023
0.0250	0.000826	0.000021	0.000	0.024
0.0333	0.000826	0.000028	0.000	0.024
0.0417	0.000826	0.000034	0.000	0.024
0.0500	0.000826	0.000041	0.000	0.024
0.0583	0.000826	0.000048	0.000	0.024
0.0667	0.000826	0.000055	0.000	0.024
0.0750	0.000826	0.000062	0.000	0.024
0.0833	0.000826	0.000069	0.000	0.024
0.0917	0.000826	0.000076	0.000	0.024
0.1000	0.000826	0.000083	0.000	0.025
0.1083	0.000826	0.000090	0.000	0.025
0.1167	0.000826	0.000096	0.000	0.025
0.1250	0.000826	0.000103	0.000	0.025
0.1333	0.000826	0.000110	0.000	0.025
0.1417	0.000826	0.000117	0.000	0.025
0.1500	0.000826	0.000124	0.000	0.025
0.1583	0.000826	0.000131	0.000	0.025
0.1667	0.000826	0.000138	0.000	0.025
0.1750	0.000826	0.000145	0.000	0.026
0.1833	0.000826	0.000152	0.000	0.026
0.1917	0.000826	0.000158	0.000	0.026
0.2000	0.000826	0.000165	0.000	0.026
0.2083	0.000826	0.000172	0.000	0.026
0.2167	0.000826	0.000179	0.000	0.026
0.2250	0.000826	0.000186	0.000	0.026
0.2333	0.000826	0.000193	0.000	0.026
0.2417	0.000826	0.000200	0.000	0.026

0.2500	0.000826	0.000207	0.000	0.027
0.2583	0.000826	0.000213	0.000	0.027
0.2667	0.000826	0.000220	0.000	0.027
0.2750	0.000826	0.000227	0.000	0.027
0.2833	0.000826	0.000234	0.000	0.027
0.2917	0.000826	0.000241	0.000	0.027
0.3000	0.000826	0.000248	0.000	0.027
0.3083	0.000826	0.000255	0.000	0.027
0.3167	0.000826	0.000262	0.000	0.027
0.3250	0.000826	0.000269	0.000	0.028
0.3333	0.000826	0.000275	0.000	0.028
0.3417	0.000826	0.000282	0.000	0.028
0.3500	0.000826	0.000289	0.000	0.028
0.3583	0.000826	0.000296	0.000	0.028
0.3667	0.000826	0.000303	0.000	0.028
0.3750	0.000826	0.000310	0.000	0.028
0.3833	0.000826	0.000317	0.000	0.028
0.3917	0.000826	0.000324	0.000	0.028
0.4000	0.000826	0.000331	0.000	0.028
0.4083	0.000826	0.000337	0.000	0.029
0.4167	0.000826	0.000344	0.000	0.029
0.4250	0.000826	0.000351	0.000	0.029
0.4333	0.000826	0.000358	0.000	0.029
0.4417	0.000826	0.000365	0.000	0.029
0.4500	0.000826	0.000372	0.000	0.029
0.4583	0.000826	0.000379	0.000	0.029
0.4667	0.000826	0.000386	0.000	0.029
0.4750	0.000826	0.000393	0.000	0.029
0.4833	0.000826	0.000399	0.000	0.030
0.4917	0.000826	0.000406	0.000	0.030
0.5000	0.000826	0.000413	0.000	0.030
0.5083	0.000826	0.000420	0.000	0.030
0.5167	0.000826	0.000427	0.000	0.030
0.5250	0.000826	0.000434	0.000	0.030
0.5333	0.000826	0.000441	0.000	0.030
0.5417	0.000826	0.000448	0.000	0.030
0.5500	0.000826	0.000455	0.000	0.030
0.5583	0.000826	0.000461	0.000	0.031
0.5667	0.000826	0.000468	0.000	0.031
0.5750	0.000826	0.000475	0.000	0.031
0.5833	0.000826	0.000482	0.000	0.031
0.5917	0.000826	0.000489	0.000	0.031
0.6000	0.000826	0.000496	0.000	0.031
0.6083	0.000826	0.000503	0.000	0.031
0.6167	0.000826	0.000510	0.000	0.031
0.6250	0.000826	0.000517	0.000	0.031
0.6333	0.000826	0.000523	0.000	0.032
0.6417	0.000826	0.000530	0.000	0.032
0.6500	0.000826	0.000537	0.000	0.032
0.6583	0.000826	0.000544	0.000	0.032
0.6667	0.000826	0.000551	0.000	0.032
0.6750	0.000826	0.000558	0.000	0.032
0.6833	0.000826	0.000565	0.000	0.032
0.6917	0.000826	0.000572	0.000	0.032
0.7000	0.000826	0.000579	0.000	0.032
0.7083	0.000826	0.000585	0.067	0.033
0.7167	0.000826	0.000592	0.190	0.033
0.7250	0.000826	0.000599	0.349	0.033

0.7333	0.000826	0.000606	0.538	0.033
0.7417	0.000826	0.000613	0.752	0.033
0.7500	0.000826	0.000620	0.989	0.033
0.7583	0.000826	0.000627	1.246	0.033

Analysis Results

POC 1

POC #1 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 2

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 3

POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 4

POC #4 was not reported because POC must exist in both scenarios and both scenarios must have been run.

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

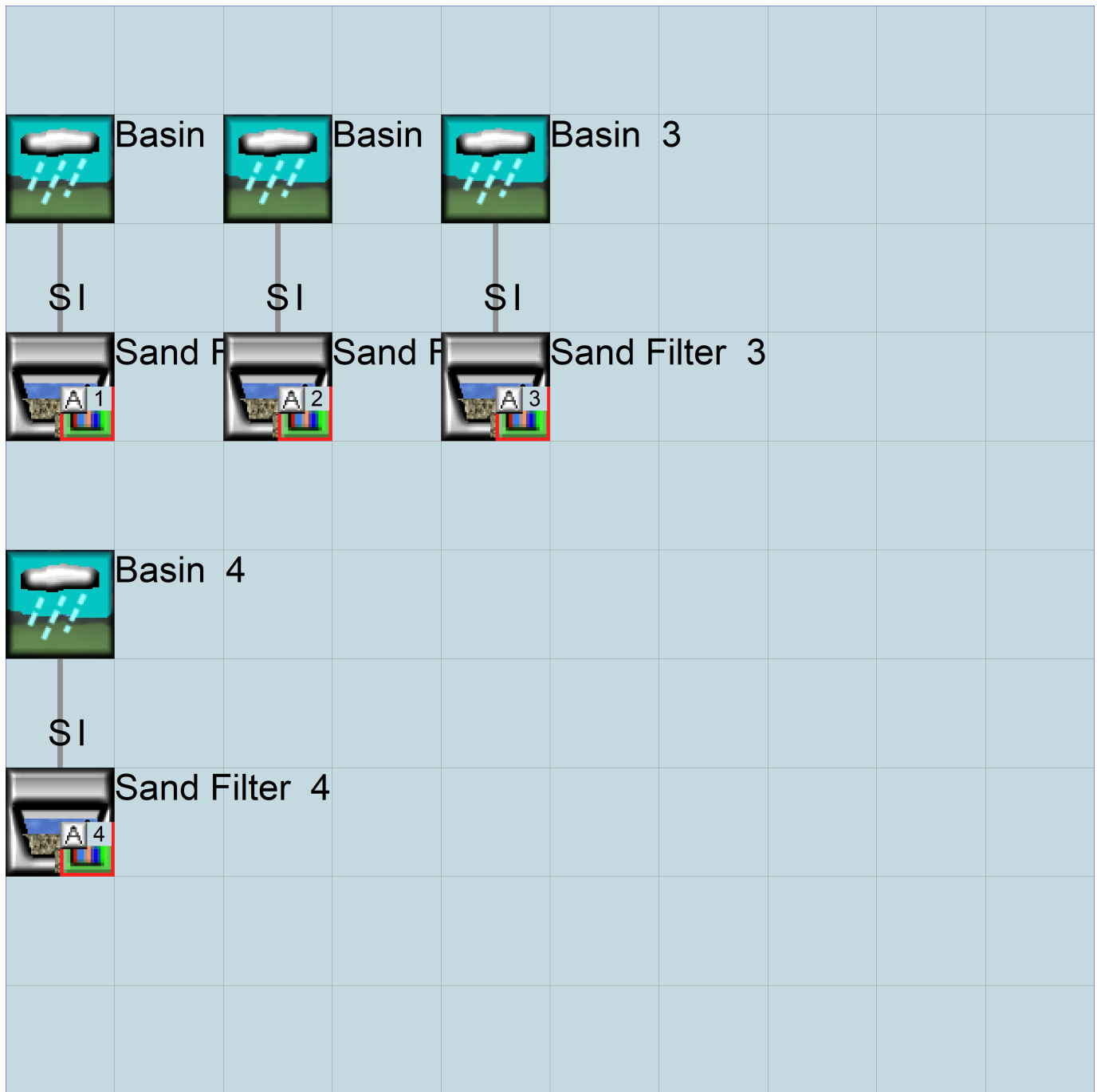
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic

EXISTING CONDITIONS NOT MODELED.
CALCULATIONS FOR WATER QUALITY ONLY

Mitigated Schematic



Predeveloped UCI File

Mitigated UCI File

RUN

GLOBAL

WVHM4 model simulation
START 1948 10 01 END 2009 09 30
RUN INTERP OUTPUT LEVEL 3 0
RESUME 0 RUN 1 UNIT SYSTEM 1
END GLOBAL

FILES

<File>	<Un#>	<-----File Name----->	***
<-ID->			***
WDM	26	17520 - Filterra.wdm	
MESSU	25	Mit17520 - Filterra.MES	
	27	Mit17520 - Filterra.L61	
	28	Mit17520 - Filterra.L62	
	30	POC17520 - Filterra1.dat	
	31	POC17520 - Filterra2.dat	
	32	POC17520 - Filterra3.dat	
	33	POC17520 - Filterra4.dat	

END FILES

OPN SEQUENCE

INGRP INDELT 00:15

IMPLND	11
RCHRES	1
RCHRES	2
RCHRES	3
RCHRES	4
COPY	1
COPY	501
COPY	2
COPY	502
COPY	3
COPY	503
COPY	4
COPY	504
DISPLY	1
DISPLY	2
DISPLY	3
DISPLY	4

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INF01

#	-	#	<-----Title----->	***	TRAN	PIVL	DIG1	FIL1	PYR	DIG2	FIL2	YRND
1			Sand Filter	1	MAX				1	2	30	9
2			Sand Filter	2	MAX				1	2	31	9
3			Sand Filter	3	MAX				1	2	32	9
4			Sand Filter	4	MAX				1	2	33	9

END DISPLY-INF01

END DISPLY

COPY

TIMESERIES

#	-	#	NPT	NMN	***
1			1	1	
501			1	1	
2			1	1	
502			1	1	
3			1	1	
503			1	1	
4			1	1	
504			1	1	

END TIMESERIES

END COPY

GENER

OPCODE

#	#	OPCD	***
---	---	------	-----

```

END OPCODE
PARM
# # K ***
END PARM
END GENER
PERLND
GEN-INFO
<PLS ><-----Name----->NBLKS Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***
END GEN-INFO
*** Section PWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC ***
END ACTIVITY

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
END PRINT-INFO

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
END PWAT-PARM1

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
END PWAT-PARM3

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
END PWAT-PARM4

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***
11 PARKING/FLAT 1 1 1 27 0
END GEN-INFO
*** Section IWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
11 0 0 1 0 0 0
END ACTIVITY

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
11 0 0 4 0 0 0 1 9
END PRINT-INFO

```

```

IWAT-PARM1
  <PLS > IWATER variable monthly parameter value flags ***
  # - # CSNO RTOP VRS VNN RTLI ***
  11 0 0 0 0 0
END IWAT-PARM1

```

```

IWAT-PARM2
  <PLS > IWATER input info: Part 2 ***
  # - # *** LSUR SLSUR NSUR RETSC
  11 400 0.01 0.1 0.1
END IWAT-PARM2

```

```

IWAT-PARM3
  <PLS > IWATER input info: Part 3 ***
  # - # ***PETMAX PETMIN
  11 0 0
END IWAT-PARM3

```

```

IWAT-STATE1
  <PLS > *** Initial conditions at start of simulation
  # - # *** RETS SURS
  11 0 0
END IWAT-STATE1

```

END IMPLND

```

SCHEMATIC
<-Source->          <--Area-->          <-Target->  MBLK  ***
<Name> #          <-factor-->          <Name> #  Tbl#  ***
Basin 1***
IMPLND 11          0.33          RCHRES 1    5
Basin 2***
IMPLND 11          0.43          RCHRES 2    5
Basin 3***
IMPLND 11          0.42          RCHRES 3    5
Basin 4***
IMPLND 11          0.33          RCHRES 4    5

```

```

*****Routing*****
IMPLND 11          0.33          COPY 1    15
IMPLND 11          0.43          COPY 2    15
IMPLND 11          0.42          COPY 3    15
IMPLND 11          0.33          COPY 4    15
RCHRES 1           1           COPY 501  17
RCHRES 2           1           COPY 502  17
RCHRES 3           1           COPY 503  17
RCHRES 4           1           COPY 504  17
END SCHEMATIC

```

```

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor-->strg <Name> # # <Name> # # ***
COPY 501 OUTPUT MEAN 1 1 48.4 DISPLY 1 INPUT TIMSER 1
COPY 502 OUTPUT MEAN 1 1 48.4 DISPLY 2 INPUT TIMSER 1
COPY 503 OUTPUT MEAN 1 1 48.4 DISPLY 3 INPUT TIMSER 1
COPY 504 OUTPUT MEAN 1 1 48.4 DISPLY 4 INPUT TIMSER 1

```

```

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor-->strg <Name> # # <Name> # # ***
END NETWORK

```

```

RCHRES
GEN-INFO
RCHRES          Name          Nexits  Unit Systems  Printer          ***
# - #<-----><-----> User T-series  Engl Metr LKFG          ***
          1  Sand Filter  1          2  1  1  1  28  0  1          ***

```

```

2      Sand Filter  2          2      1      1      1      28      0      1
3      Sand Filter  3          2      1      1      1      28      0      1
4      Sand Filter  4          2      1      1      1      28      0      1
END GEN-INFO
*** Section RCHRES***

```

```

ACTIVITY
<PLS > ***** Active Sections *****
# - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFQ PKFG PHFG ***
1      1      0      0      0      0      0      0      0      0      0
2      1      0      0      0      0      0      0      0      0      0
3      1      0      0      0      0      0      0      0      0      0
4      1      0      0      0      0      0      0      0      0      0

```

END ACTIVITY

```

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL  PYR
# - # HYDR ADCA CONS HEAT SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *****
1      4      0      0      0      0      0      0      0      0      0      1      9
2      4      0      0      0      0      0      0      0      0      0      1      9
3      4      0      0      0      0      0      0      0      0      0      1      9
4      4      0      0      0      0      0      0      0      0      0      1      9

```

END PRINT-INFO

```

HYDR-PARM1
RCHRES  Flags for each HYDR Section
# - # VC A1 A2 A3  ODFVFG for each *** ODGTFG for each  FUNCT for each
      FG FG FG FG  possible exit *** possible exit  possible exit
      * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
1      0  1  0  0      4  5  0  0  0      0  0  0  0  0      2  2  2  2  2
2      0  1  0  0      4  5  0  0  0      0  0  0  0  0      2  2  2  2  2
3      0  1  0  0      4  5  0  0  0      0  0  0  0  0      2  2  2  2  2
4      0  1  0  0      4  5  0  0  0      0  0  0  0  0      2  2  2  2  2

```

END HYDR-PARM1

```

HYDR-PARM2
# - # FTABNO      LEN      DELTH      STCOR      KS      DB50      ***
<-----><-----><-----><-----><-----><-----><----->
1      1      0.01      0.0      0.0      0.5      0.0
2      2      0.01      0.0      0.0      0.5      0.0
3      3      0.01      0.0      0.0      0.5      0.0
4      4      0.01      0.0      0.0      0.5      0.0

```

END HYDR-PARM2

```

HYDR-INIT
RCHRES  Initial conditions for each HYDR section
# - # *** VOL      Initial value of COLIND      Initial value of OUTDGT
      *** ac-ft      for each possible exit      for each possible exit
<-----><-----><-----><-----><-----><-----><-----><-----><-----><----->
1      0      4.0  5.0  0.0  0.0  0.0      0.0  0.0  0.0  0.0  0.0
2      0      4.0  5.0  0.0  0.0  0.0      0.0  0.0  0.0  0.0  0.0
3      0      4.0  5.0  0.0  0.0  0.0      0.0  0.0  0.0  0.0  0.0
4      0      4.0  5.0  0.0  0.0  0.0      0.0  0.0  0.0  0.0  0.0

```

END HYDR-INIT

END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS

FTABLES

```

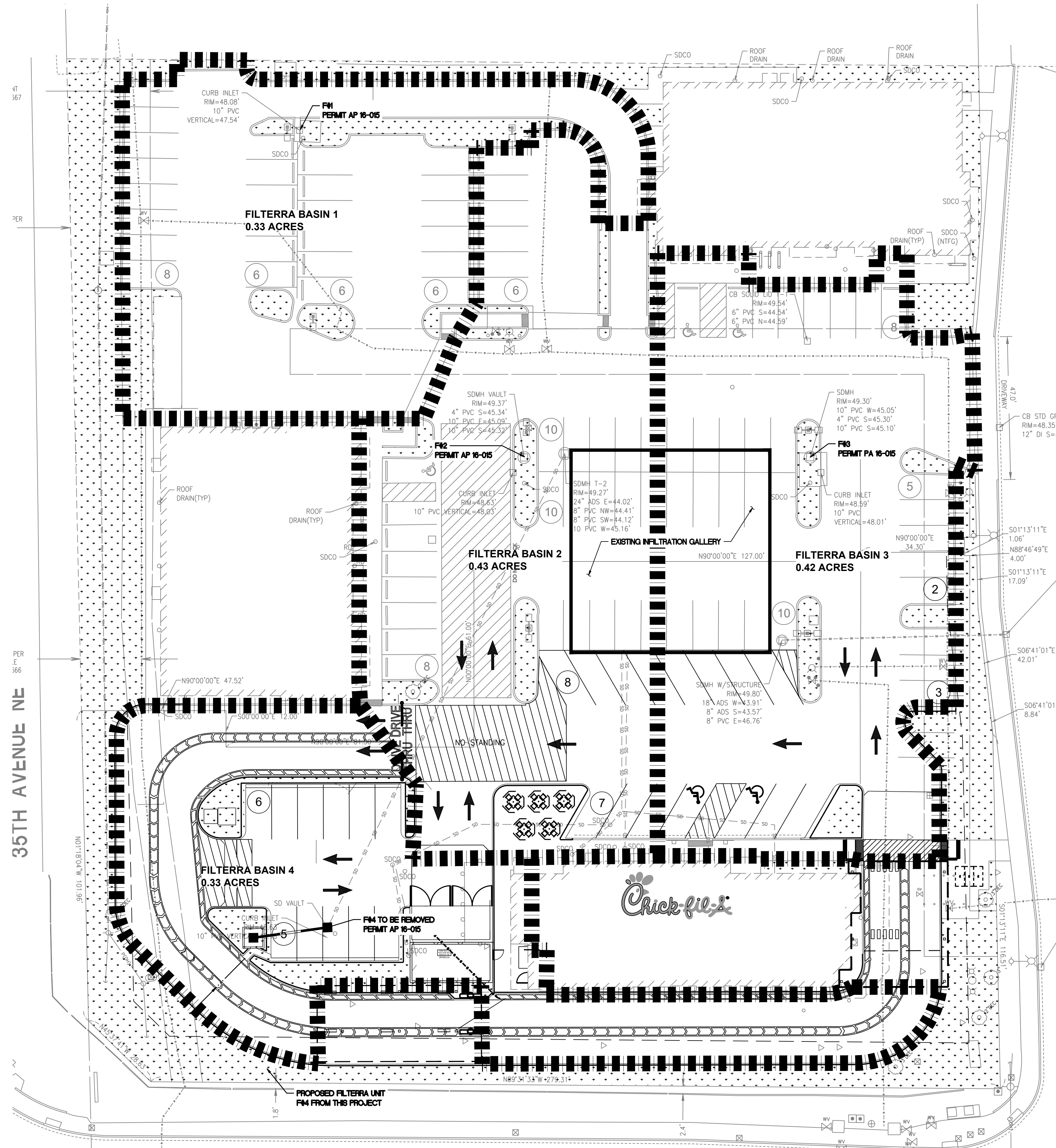
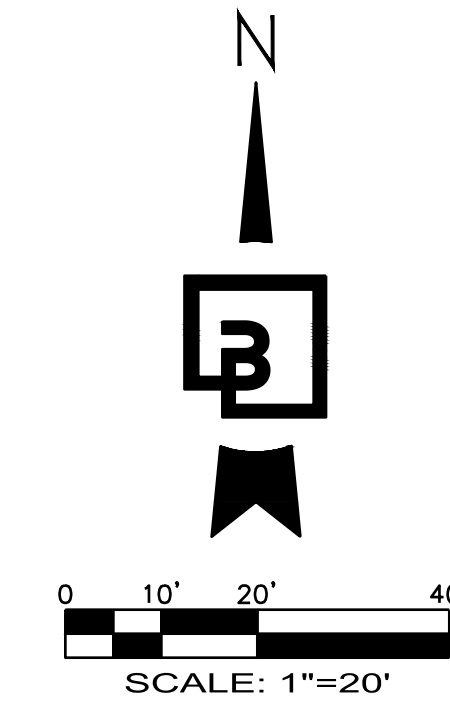
FTABLE      1
91      5
      Depth      Area      Volume      Outflow1      Outflow2      Velocity      Travel Time***
      (ft)      (acres)      (acre-ft)      (cfs)      (cfs)      (ft/sec)      (Minutes)***
0.000000  0.000826  0.000000  0.000000  0.000000
0.008333  0.000826  0.000007  0.000000  0.020779
0.016667  0.000826  0.000014  0.000000  0.020875
0.025000  0.000826  0.000021  0.000000  0.020971
0.033333  0.000826  0.000028  0.000000  0.021066
0.041667  0.000826  0.000034  0.000000  0.021162
0.050000  0.000826  0.000041  0.000000  0.021258
0.058333  0.000826  0.000048  0.000000  0.021354

```

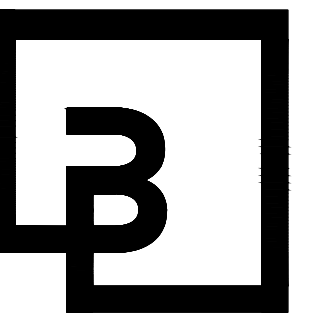
WATER QUALITY BASIN MAP

FOR CHICK-FIL-A MARYSVILLE

SECTION 21, TWP. 30 N., RGE 5 EAST, W. M.
CITY OF MARYSVILLE, SNOHOMISH COUNTY, STATE OF WASHINGTON



Chick-fil-A
5200 Buffington Road
Atlanta, Georgia 30349-2998



Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com



CHICK-FIL-A
MARYSVILLE, WA

8810 36TH AVE NE
MARYSVILLE, WA 98270

FSR#03988

BUILDING TYPE / SIZE:
RELEASE:

REVISION SCHEDULE		
NO.	DATE	DESCRIPTION

CONSULTANT PROJECT #	17520
PRINTED FOR	ENTITLEMENT
DATE	11/18/2022
DRAWN BY	CJC

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SHEET
WATER QUALITY BASIN MAP
SHEET NUMBER

1



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