Stormwater Management Report

for

Stonefield Court Subdivision

Site Address:

Rhododendron Drive TL 18-12-04-44-03800

Florence, Oregon 97439

Prepared For:

Stonefield Investments, LLC

1539 9th Street

Florence, Oregon 97439

Prepared By:

Robert Johnson, PE

Johnson Broderick Engineering

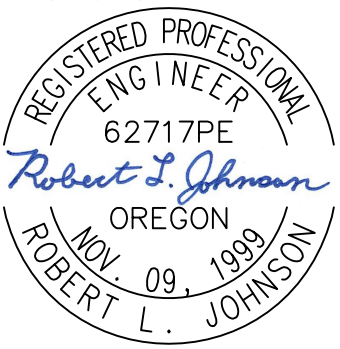
325 West 13th Avenue

Eugene, OR 97401

541-338-9488

Robert@JBE.us.com

Digitally Signed: 2022.08.09



Expires: 2023.06.30

Robert L. Johnson P.E.

JBE, Eugene

Documents@JBE.us.com

2022.08.09 12:39:47-07'00'

Submitted:

July 28, 2022

TABLE OF CONTENTS

ENGINEER'S CERTIFICATION

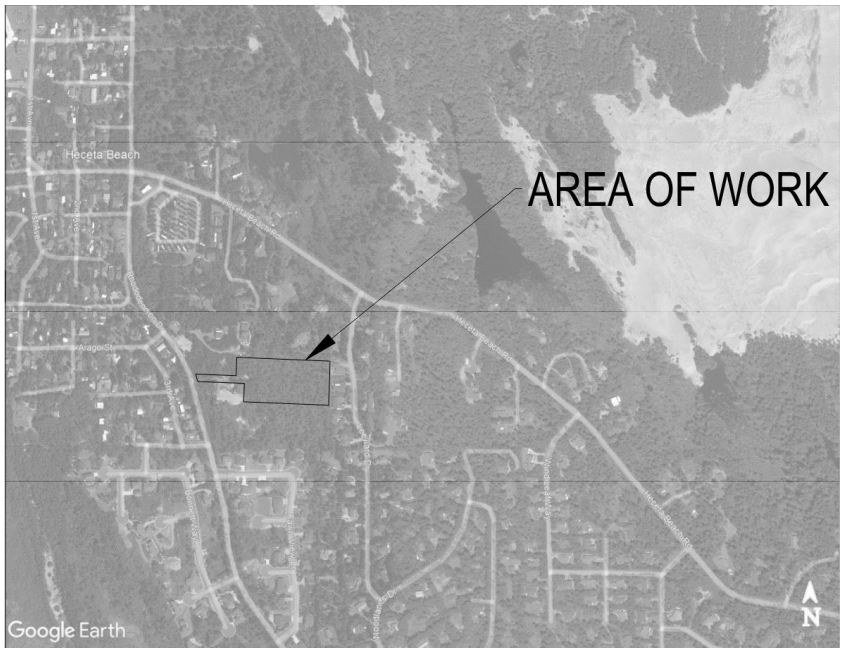
I hereby certify that this Stormwater Management Report for Stonefield Court Subdivision has been prepared by me or under my supervision and meets minimum standards of the City of Florence and normal standards of engineering practice. I hereby acknowledge and agree that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities designed by me.

PROJECT OVERVIEW & DESCRIPTION

The following narrative describes the methodology, analysis, and results of the stormwater management design for the Stonefield Court Subdivision.

The subject site consists of 4.52 acres of vacant, undeveloped land zoned single family residential, located in Florence, Oregon, east of Rhododendron Drive on Taxlot 18-12-04-44-03800. The property is bordered to north, east, and south by unannexed, developed, single family residential property. The property is bordered to the west by Rhododendron Drive. The site consists of dense native vegetation with slopes ranging from 10 to 25 degrees. Stormwater currently infiltrates into the ground with no discernable channelized runoff patterns and no nearby receiving water bodies. There are no developed stormwater destinations designated for collection of runoff from the property. The property has recently annexed to the City of Florence.

The proposed project is a 14-lot residential subdivision with average lot sizes of 0.24 Acres. The developer plans to fully develop the individual lots into single family residential homes that average 2560 square feet in size. The development will include a public roadway that connects to Rhododendron Drive and terminates in a cul-de-sac at the east end of the property and includes a street stub to the vacant property to the south for future street connectivity. Public utilities including, underground power, water, telecommunications, wastewater, and stormwater will be located within the roadway right-of-way, or the adjacent Public Utility Easement. All stormwater from impervious surfaces, public roadway, driveways, house rooftops, will be collected in vegetated swales and soakage trenches for treatment and infiltration on site.



METHODOLOGY

DESIGN PARAMETERS

The stormwater management system has been designed in accordance with the *City of Florence Stormwater Design Manual (SDM) dated November 2010 and Revised September 2011.* A combination of the Presumptive Approach and the Performance Approach, as outlined in Sections 4.2.2 and 4.2.3 respectively of the SDM, were used for design of the stormwater management system. Hydrology calculations were completed using the NRCS method with design rainfall storms as provided in Table 4.1 of the SDM. Infiltration tests were performed and determined a site infiltration rate of 65 in/hr. A design infiltration rate of 4 in/hr was used in all areas that were not pre-treated for pollution, and 10 in/hr for the swale that treats the water with a double chambered catch basin.

Hydrology and runoff/infiltration calculations were performed by Autodesk Storm Sanitary Analysis (SSA) software in combination with Excel spreadsheets. Output reports from SSA and Excel spreadsheet calculations are attached in the calculations section.

STORMWATER MANAGEMENT TECHNIQUES

Vegetated swales as outlined in Section 5.3 of the SDM are proposed to manage stormwater runoff from the paved roadway, driveway areas and many of the house rooftop areas. Soakage Trenches as outlined in Section 5.7 of the SDM are utilized for collection and infiltration of the remaining house rooftop areas. The Soakage Trenches will receive runoff only from single family residential rooftops and are therefore exempt from DEQ rules for Underground Injection Control (UIC) requirements. Therefore, a groundwater investigation was not required by the stormwater management manual because there are no UIC's on the project

ANALYSIS

APPROACH

The site is divided into 52 separate catchments with runoff conveyed via sheet flow, and pipes where required, to individual vegetated swales, most of which are located within the public road right-of-way. The Presumptive Approach was used to design all of the east and south Swales as well as Swale W1. The Performance Approach was used to design Swales W2 through W36. The Performance Approach was used because the proposed swales were not capable of infiltrating the entire design storm events when using the Presumptive Approach.

VEGETATED SWALES

Vegetated Swales are designed to treat and infiltrate runoff in accordance with Section 5.3 and Detail SW-300-302 of the SDM. Subsurface dewatering systems are not included in the design as high groundwater levels are not indicated on the site. The vegetated swales include check dams, as required to store and infiltrate the 25-year design storm. The size and location of the swales were limited due to site slopes, required roadway widths, and utilities. The west swales are limited in size due to the proximity to the adjacent property. The chain of swales on the west side failed to infiltrate the entire design storm with both presumptive and performance approaches and therefore have an overflow into the existing storm drainage facility on Rhododendron. However, with the site tested infiltration rate of 65 in/hr the actual overflow runoff is predicted to minimal or none.

SOAKAGE TRENCHES

Soakage Trenches are utilized to infiltrate runoff from rooftop areas only from houses on Lots 1,2,7-12 and 14. Soakage Trenches are designed in accordance with Section 5.7 and Detail SW-180 of the SDM. All Soakage Trenches are located on private property and sized to treat 3600 SF of impervious area. They are designed to be eight-foot-wide by twenty-feet-long and two-foot-deep and filled with clean sand. The trenches will be buried under a 6-inch-thick portion of soil to allow for planting.

ENGINEERING CONCLUSIONS

Supporting calculations confirm that the inflow hydrograph of the 25-year, 24-hour storm event can be stored and infiltrated in the vegetated swales to east and south ends of the project. The west end of the project will treat the maximum amount and overflow the rest into the existing storm water ditch along Rhododendron. There is a portion of the west street that cannot be collected or treated in any manner, during any storm due to the steep slopes of the project site and the potential future developments in the Rhododendron ROW. All runoff from the site during the Water Quality Design Storm event is retained and infiltrated on site.

APPENDIX

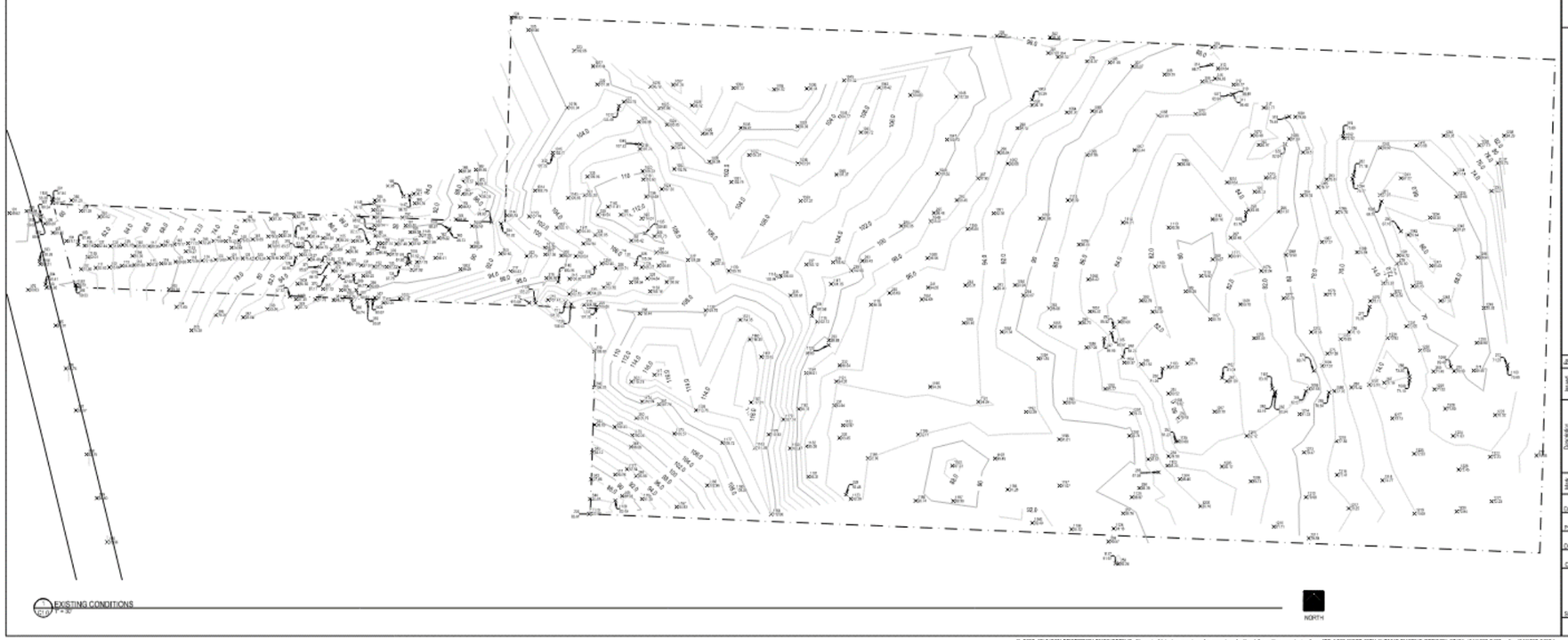
APPENDIX A: SITE MAPS

GENERAL NOTES THIS SHEET:

1. SEE C0.0 FOR GENERAL NOTES
2. SEE 1200C PERMIT DATED 2022.03.17 FOR EROSION CONTROL REQUIREMENTS

KEYED NOTES THIS SHEET:

(1) NONE



1 EXISTING CONDITIONS
C1.0 1" = 30'

NORTH

JBE JOHNSON BRODERICK ENGINEERING
Civil and Structural Engineers
325 W. 13th Ave
Eugene, Or 97401-3402
Tel (541) 338-9488
Fax (541) 338-9463
www.JBE.US.com

NOT FOR CONSTRUCTION
2022.09.04

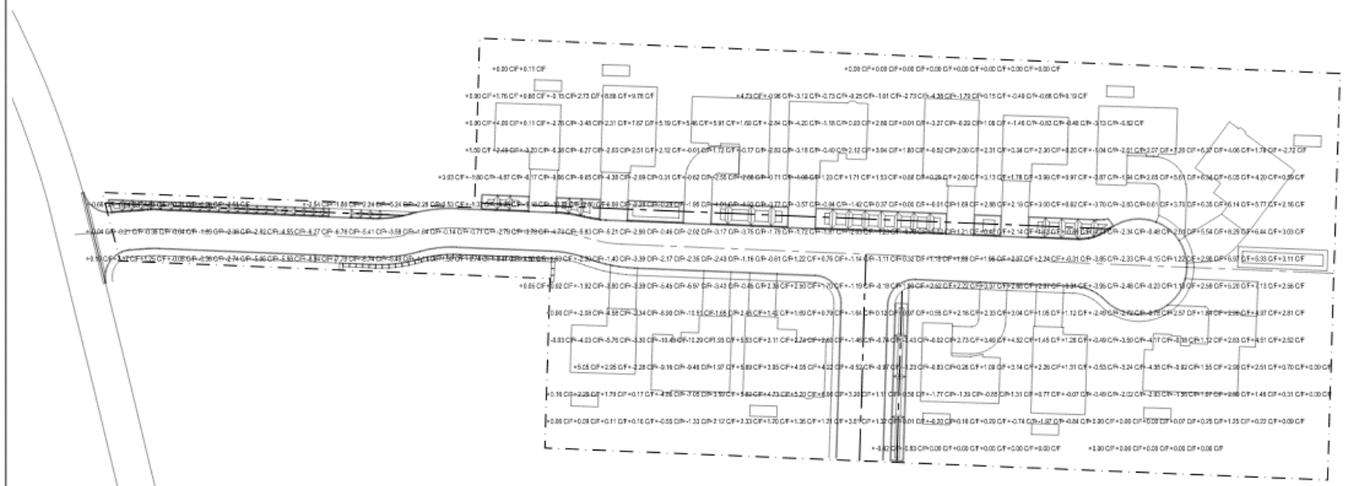
STONEFIELD INVESTMENTS
MAP LOT 1812044403800
FLORENCE, OR 97439

By	BD
Issued	2022.08.04
Description	STONEFIELD PRELIMINARY PLAT SUBMITTAL
Mark	
Date	2022.08.04
Project No.	21038.01
Drawn By	BMD
Checked By	RLJ

EXISTING CONDITIONS

Sheet title:

C1.0



PROPOSED CUT FILL ELEVATIONS

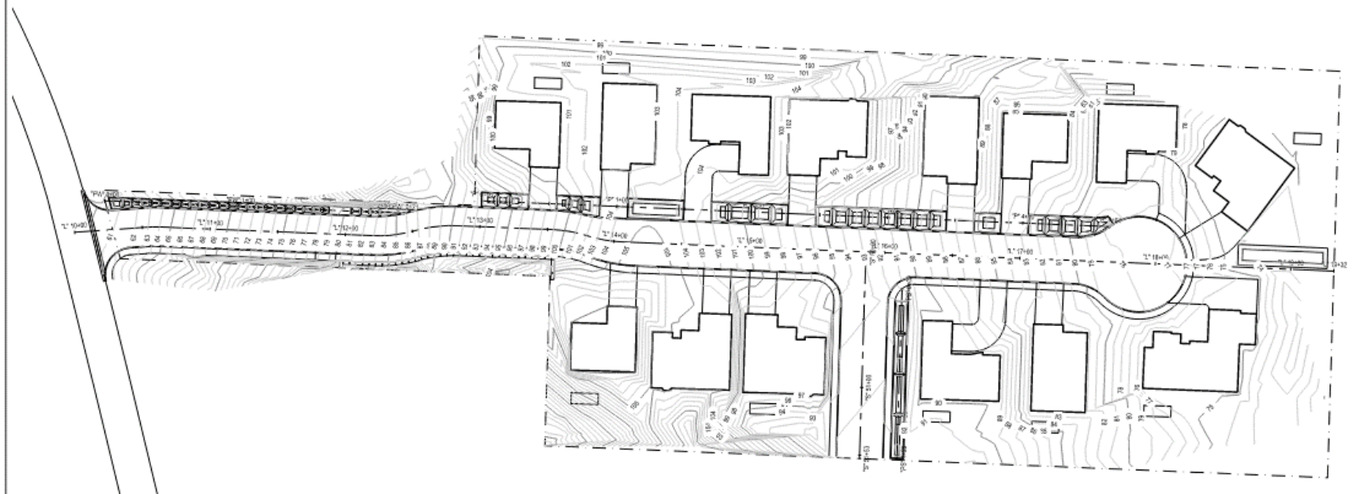
NORTH

GENERAL NOTES THIS SHEET:

1. SEE C0.0 FOR GENERAL NOTES

KEYED NOTES THIS SHEET:

(01) NOT USED



PROPOSED GRADING SURFACE

NORTH

JBE | JOHNSON BRODERICK ENGINEERING
Civil and Structural Engineers
375 W. 10th Ave.
Eugene, OR 97401-3402
Tel (541) 338-9480
Fax (541) 338-9483
www.JBE-US.com

NOT FOR CONSTRUCTION
2022.08.04

STONEFIELD INVESTMENTS
MAP LOT 18120444003800
FflorENCE, OR 97439

Project

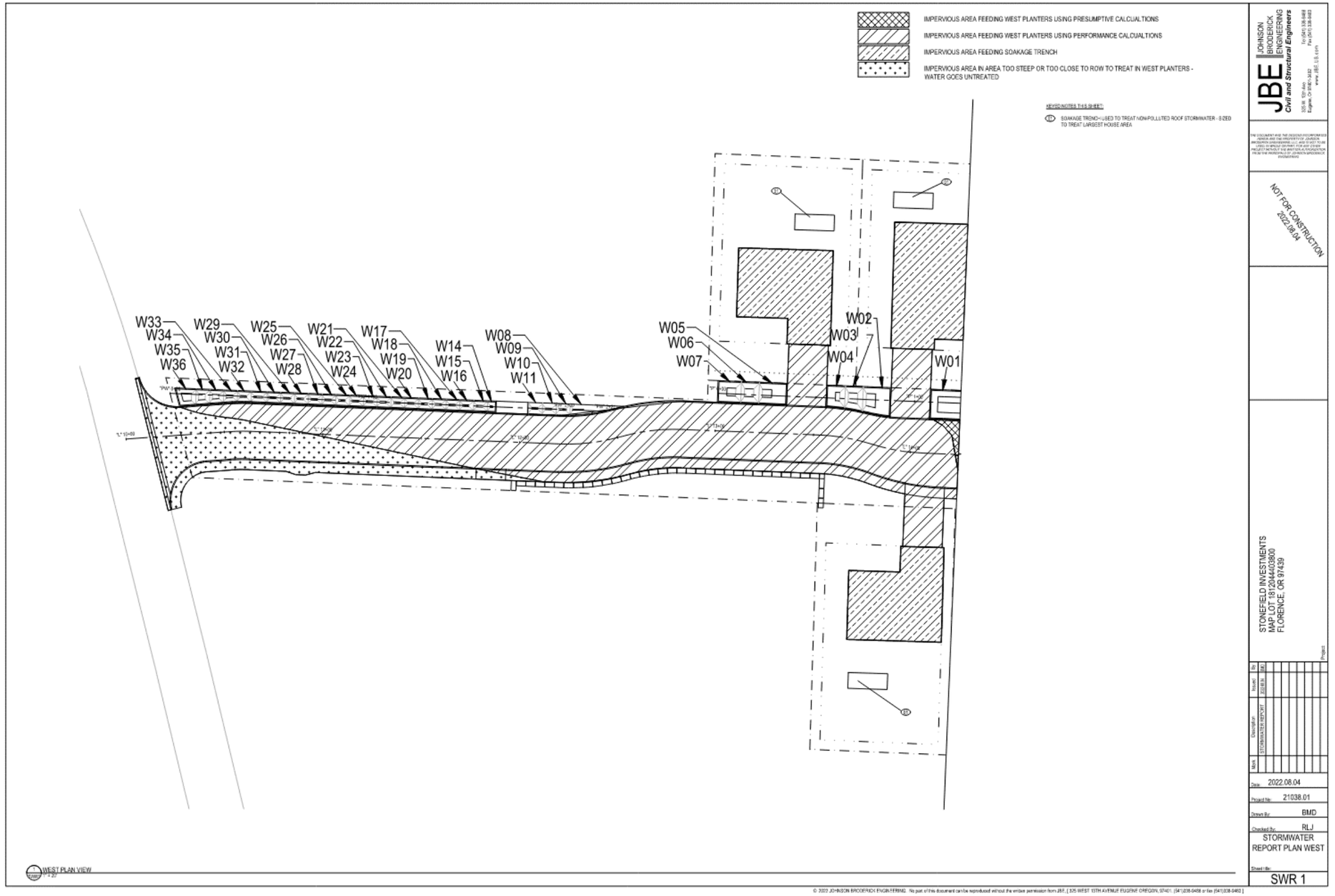
Issue	Description	Date	By
	STORMWATER ASSESSMENT	2022.08.04	BJS

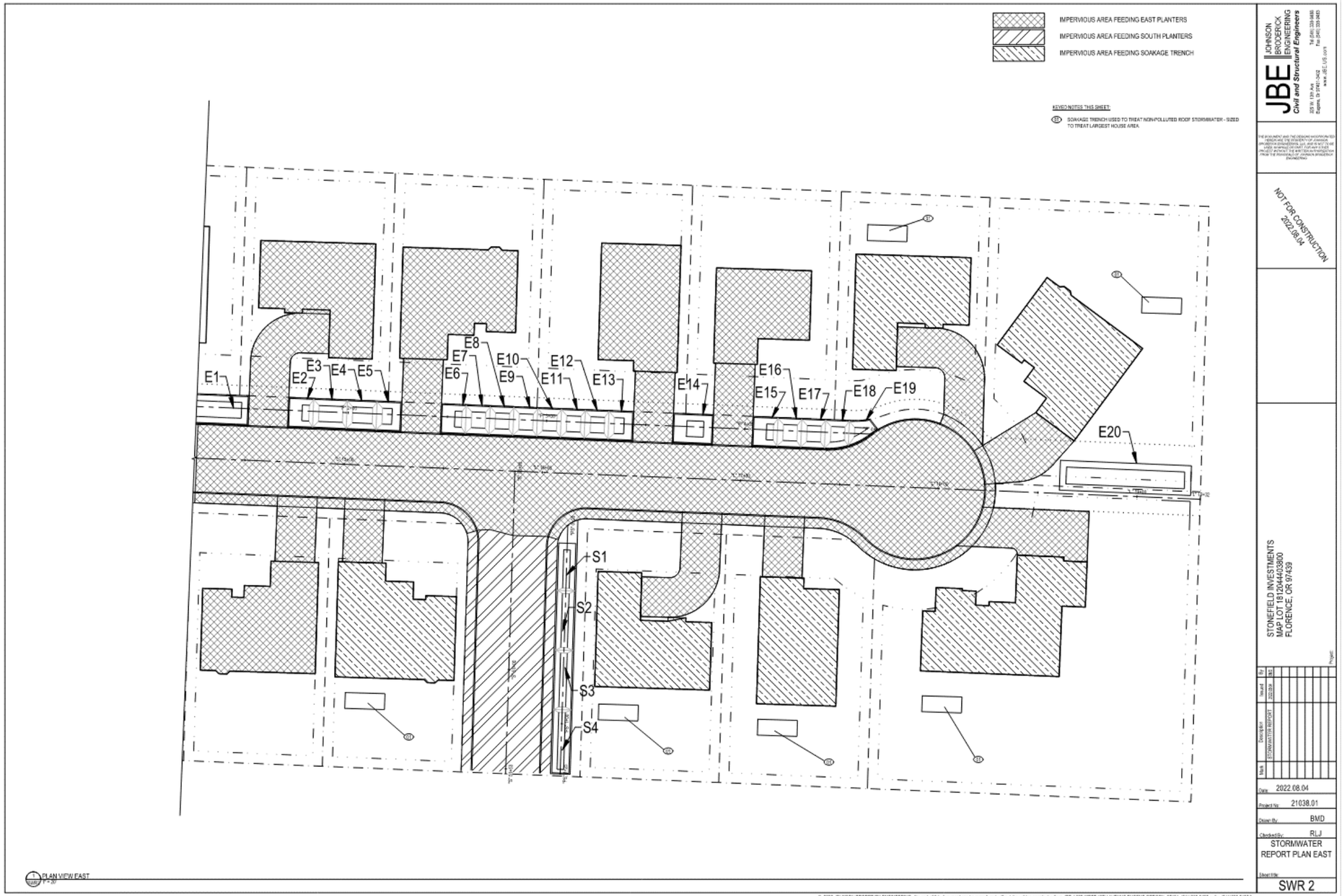
Date: 2022.08.04
Project No: 21038.01
Drawn By: BMD
Checked By: RLJ

PROPOSED GRADING & CUT FILL PLANS

Sheet title

C3.0




IMPERVIOUS AREA FEEDING EAST PLANTERS
IMPERVIOUS AREA FEEDING SOUTH PLANTERS
IMPERVIOUS AREA FEEDING SOAKAGE TRENCH
KEYED NOTES THIS SHEET:
(S1) SOAKAGE TRENCH USED TO TREAT NON-POLLUTED ROOF STORMWATER - SIZED TO TREAT LARGEST HOUSE AREA
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
E12
E13
E14
E15
E16
E17
E18
E19
E20
S1
S2
S3
S4
PLAN VIEW EAST
1/8" = 1'-0"
JBE JOHNSON BRODERICK ENGINEERING
Civil and Structural Engineers
325 W. 13th Ave
Eugene, OR 97402
Tel (541) 338-9488
Fax (541) 338-9483
www.JBE-LLC.com
NOT FOR CONSTRUCTION
2022.08.04
STONEFIELD INVESTMENTS
MAP LOT 18120444039800
FLORENCE, OR 97439
Issued
Description
STORMWATER REPORT
Date 2022.08.04
Project No 21038.01
Drawn By BMD
Checked By RLJ
STORMWATER REPORT PLAN EAST
Sheet No
SWR 2
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APPENDIX B: CALCULATIONS

EAST PLANTER PRESUMPTIVE APPROACH

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	5/12/2022
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E1
Designer:	Brodie Davis	**Input Planter ID 1:**	None
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	None

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*if no selected facility must either have apre pollution treatment or water is not from a contaminated source
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	25	ft	0	ft
Approximate Catchment Slope=	2%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	50%		50%	
Flow Velocity Pre Development=	14.0	ft/s	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	110.8	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	111	sft	Time of Concentration Post Development=	0.4	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	11.9	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	375 sqft
Surface Width =	15 ft			**Facility Slope=**	8.33%
Surface Length =	25 ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	8 ft	**Free Board: End =**	2.00 in	**Facility Start (Uphill) Slope=**	4 to 1
Bottom Length =	13.33 ft			**Facility End Slope=**	4 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	66.0 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	3.384

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.001	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	6	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.0	in	Overflow to Planter:	None	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.004	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	45	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	2.2	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	None	

Pre-Development Runoff Data

Peak Flow Rate =	0.002	cfs
Total Runoff Volume =	32	cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.004	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	45	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	2.2	in	Overflow to Planter:	None	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	5/12/2022
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E2
Designer:	Brodie Davis	**Input Planter ID 1:**	E1
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E3

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*if no selected facility must either have apre pollution treatment or water is not from a contaminated source
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	70	ft	0	ft
Approximate Catchment Slope=	15%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	25	ft	0	ft
Approximate Catchment Slope=	8%		50%	
Flow Velocity Pre Development=	0.7	ft/s	14.0	ft/s
Flow Velocity Post Development=	5.6	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	1679.5	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	1680	sft	Time of Concentration Post Development=	0.5	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	12.7	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	187.5	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12.5	ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	4	to 1
Bottom Length =	3.50	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	31.8	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.112	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.009 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	88 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	4.0 in	Overflow to Planter:	E3
Drawdown Time=	0.2 hours		

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.063 cfs	Peak Facility Overflow Rate=	0.053 cfs
Total Runoff Volume to Stormwater Facility =	675 cf	Total Overflow Volume=	106 cf
Max. Depth of Stormwater in Facility=	12.0 in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A cfs
Drawdown Time=	0.7 hours	Overflow to Planter:	E3

Pre-Development Runoff Data

Peak Flow Rate =	0.032 cfs
Total Runoff Volume =	479 cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.063 cfs	Peak Facility Overflow Rate=	0.053 cfs
Total Runoff Volume to Stormwater Facility =	675 cf	Total Overflow Volume=	106 cf
Max. Depth of Stormwater in Facility=	12.0 in	Overflow to Planter:	E3
Drawdown Time=	0.7 hours		

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E3
Designer:	Brodie Davis	**Input Planter ID 1:**	E2
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E4

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

Segment 1			**Segment 2**		
Length of Catchment Sheet Flow=	29.5	ft	**Length of Catchment Sheet Flow=**	0	ft
Approximate Catchment Slope=	9%		**Approximate Catchment Slope=**	8%	
Segment 3			**Segment 4**		
Length of Catchment Shallow Flow=	0	ft	**Length of Catchment Shallow Flow=**	0	ft
Approximate Catchment Slope=	50%		**Approximate Catchment Slope=**	50%	
Flow Velocity Pre Development=	14.0	ft/s	**Flow Velocity Pre Development=**	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s	**Flow Velocity Post Development=**	14.0	ft/s
Segment 5			**Segment 6**		
Length of Open Channel Flow=	0	ft	**Length of Open Channel Flow=**	0	ft
Approximate Catchment Slope=	5%		**Approximate Catchment Slope=**	12%	
Cross sectional Area of Flow	0.043	sf	**Cross sectional Area of Flow**	0.045	sf
Wetted Perimeter	1.000	ft	**Wetted Perimeter**	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	**Flow Velocity Pre Development=**	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	**Flow Velocity Post Development=**	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	**Mannings Rough. Coeff. Pre Dev. Open Flow=**	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	**Mannings Rough. Coeff. Post Dev. Open Flow=**	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	4317	sqft	**Total Square Footage Pervious Area=**	0	sqft
Impervious Area CN=	98		**Pervious Area CN=**	85	
Total Square Footage of Drainage Area=	4317	sft	**Time of Concentration Post Development=**	0.2	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		**Time of Concentration Pre-Development=**	7.6	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	**Destination Design=**	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	**Soil Infiltration Rate**		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	371.49 sqft
Surface Width =	21 ft			**Facility Slope=**	8.33%
Surface Length =	17.69 ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	14 ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	3 to 1
Bottom Length =	12.02 ft			**Facility End Slope=**	1 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	102.0 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	0.086

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.022	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	226	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	5.5	in	Overflow to Planter:	E4	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.215	cfs	Peak Facility Overflow Rate=	0.194	cfs
Total Runoff Volume to Stormwater Facility =	1841	cf	Total Overflow Volume=	471	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	1.2	hours	Overflow to Planter:	E4	

Pre-Development Runoff Data

Peak Flow Rate =	0.090	cfs
Total Runoff Volume =	1232	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.162	cfs	Peak Facility Overflow Rate=	0.194	cfs
Total Runoff Volume to Stormwater Facility =	1735	cf	Total Overflow Volume=	471	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E4	
Drawdown Time=	1.2	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E4
Designer:	Brodie Davis	**Input Planter ID 1:**	E3
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E5

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	84	ft	0	ft
Approximate Catchment Slope=	9%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	50%		50%	
Flow Velocity Pre Development=	14.0	ft/s	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	387 sqft	Total Square Footage Pervious Area=	0 sqft
Impervious Area CN=	98	Pervious Area CN=	85
Total Square Footage of Drainage Area=	387 sft	Time of Concentration Post Development=	0.6 min
Weighted Average CN=	98		

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85	Time of Concentration Pre-Development=	17.5 min

Soil Data

Tested Soil Infiltration Rate=	64 in/hr (See Note 4)	Destination Design=	4 in/hr
Design Soil Infiltration Rate=	4 in/hr	Soil Infiltration Rate	

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	255 sqft
Surface Width =	15 ft			**Facility Slope=**	8.33%
Surface Length =	17 ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	8 ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2 to 1
Bottom Length =	12.60 ft			**Facility End Slope=**	2 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	66.0 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	0.659

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.002	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	20	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	1.1	in	Overflow to Planter:	E5	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.209	cfs	Peak Facility Overflow Rate=	0.195	cfs
Total Runoff Volume to Stormwater Facility =	626	cf	Total Overflow Volume=	299	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	E5	

Pre-Development Runoff Data

Peak Flow Rate =	0.007	cfs
Total Runoff Volume =	110	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.014	cfs	Peak Facility Overflow Rate=	0.195	cfs
Total Runoff Volume to Stormwater Facility =	156	cf	Total Overflow Volume=	299	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E5	
Drawdown Time=	0.2	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	5/12/2022
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E5
Designer:	Brodie Davis	**Input Planter ID 1:**	E4
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	None

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*if no selected facility must either have apre pollution treatment or water is not from a contaminated source
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

Segment 1			Segment 2		
Length of Catchment Sheet Flow=	84	ft	Length of Catchment Sheet Flow=	0	ft
Approximate Catchment Slope=	9%		Approximate Catchment Slope=	8%	
Segment 3			**Segment 4**		
Length of Catchment Shallow Flow=	0	ft	Length of Catchment Shallow Flow=	0	ft
Approximate Catchment Slope=	2%		Approximate Catchment Slope=	50%	
Flow Velocity Pre Development=	1.0	ft/s	Flow Velocity Pre Development=	14.0	ft/s
Flow Velocity Post Development=	5.6	ft/s	Flow Velocity Post Development=	14.0	ft/s
Segment 5			**Segment 6**		
Length of Open Channel Flow=	0	ft	Length of Open Channel Flow=	0	ft
Approximate Catchment Slope=	5%		Approximate Catchment Slope=	12%	
Cross sectional Area of Flow	0.043	sf	Cross sectional Area of Flow	0.045	sf
Wetted Perimeter	1.000	ft	Wetted Perimeter	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	Flow Velocity Pre Development=	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	Flow Velocity Post Development=	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	485.5	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	486	sft	Time of Concentration Post Development=	0.6	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	17.1	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	Infiltration Swale			**Facility Surface Area=**	187.5 sqft
Surface Width =	15 ft			**Facility Slope=**	8.33%
Surface Length =	12.5 ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	8 ft	**Free Board: End =**	2.00 in	**Facility Start (Uphill) Slope=**	2 to 1
Bottom Length =	5.43 ft			**Facility End Slope=**	4 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	44.2 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	0.386

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.002 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	25 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	1.2 in	Overflow to Planter:	None
Drawdown Time=	0.2 hours		

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.213 cfs	Peak Facility Overflow Rate=	0.202 cfs
Total Runoff Volume to Stormwater Facility =	493 cf	Total Overflow Volume=	251 cf
Max. Depth of Stormwater in Facility=	12.0 in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A cfs
Drawdown Time=	0.2 hours	Overflow to Planter:	None

Pre-Development Runoff Data

Peak Flow Rate =	0.009 cfs
Total Runoff Volume =	139 cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.018 cfs	Peak Facility Overflow Rate=	0.202 cfs
Total Runoff Volume to Stormwater Facility =	195 cf	Total Overflow Volume=	251 cf
Max. Depth of Stormwater in Facility=	12.0 in	Overflow to Planter:	None
Drawdown Time=	0.2 hours		

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E6
Designer:	Brodie Davis	**Input Planter ID 1:**	E5
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E7

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	84	ft	0	ft
Approximate Catchment Slope=	9%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	50%		50%	
Flow Velocity Pre Development=	14.0	ft/s	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	4307.2 sqft	Total Square Footage Pervious Area=	0 sqft
Impervious Area CN=	98	Pervious Area CN=	85
Total Square Footage of Drainage Area=	4307 sft	Time of Concentration Post Development=	0.6 min
Weighted Average CN=	98		

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85	Time of Concentration Pre-Development=	17.5 min

Soil Data

Tested Soil Infiltration Rate=	64 in/hr (See Note 4)	Destination Design=	4 in/hr
Design Soil Infiltration Rate=	4 in/hr	Soil Infiltration Rate	

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	187.5	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12.5	ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	4	to 1
Bottom Length =	3.50	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	31.8	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.044	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.022 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	225 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	9.7 in	Overflow to Planter:	E7
Drawdown Time=	0.2 hours		

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.362 cfs	Peak Facility Overflow Rate=	0.352 cfs
Total Runoff Volume to Stormwater Facility =	1980 cf	Total Overflow Volume=	1161 cf
Max. Depth of Stormwater in Facility=	12.0 in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A cfs
Drawdown Time=	1.5 hours	Overflow to Planter:	E7

Pre-Development Runoff Data

Peak Flow Rate =	0.076 cfs
Total Runoff Volume =	1229 cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.160 cfs	Peak Facility Overflow Rate=	0.352 cfs
Total Runoff Volume to Stormwater Facility =	1731 cf	Total Overflow Volume=	1161 cf
Max. Depth of Stormwater in Facility=	12.0 in	Overflow to Planter:	E7
Drawdown Time=	1.5 hours		

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E7
Designer:	Brodie Davis	**Input Planter ID 1:**	E6
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E8

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	0	ft	0	ft
Approximate Catchment Slope=	9%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	50%		50%	
Flow Velocity Pre Development=	14.0	ft/s	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	0.1	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	0	sft	Time of Concentration Post Development=	0.0	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	0.0	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	1800.000	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.1	in	Overflow to Planter:	E8	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.352	cfs	Peak Facility Overflow Rate=	0.341	cfs
Total Runoff Volume to Stormwater Facility =	1161	cf	Total Overflow Volume=	607	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	E8	

Pre-Development Runoff Data

Peak Flow Rate =	0.000	cfs
Total Runoff Volume =	0	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.341	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	607	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E8	
Drawdown Time=	0.2	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E8
Designer:	Brodie Davis	**Input Planter ID 1:**	E7
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E9

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes
Flow Control (FC)	Yes
Destination (DT)	Yes

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	0	ft	0	ft
Approximate Catchment Slope=	9%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	50%		50%	
Flow Velocity Pre Development=	14.0	ft/s	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	0.1	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	0	sft	Time of Concentration Post Development=	0.0	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	0.0	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	1800.000	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.1	in	Overflow to Planter:	E9	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.341	cfs	Peak Facility Overflow Rate=	0.330	cfs
Total Runoff Volume to Stormwater Facility =	607	cf	Total Overflow Volume=	432	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	E9	

Pre-Development Runoff Data

Peak Flow Rate =	0.000	cfs
Total Runoff Volume =	0	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.330	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	432	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E9	
Drawdown Time=	0.2	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E9
Designer:	Brodie Davis	**Input Planter ID 1:**	E8
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E10

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	100	ft	0	ft
Approximate Catchment Slope=	9%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	63	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	1288	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	1288	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	21.6	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.140	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.006	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	67	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	3.1	in	Overflow to Planter:	E10	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.377	cfs	Peak Facility Overflow Rate=	0.366	cfs
Total Runoff Volume to Stormwater Facility =	947	cf	Total Overflow Volume=	458	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.3	hours	Overflow to Planter:	E10	

Pre-Development Runoff Data

Peak Flow Rate =	0.021	cfs
Total Runoff Volume =	367	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.047	cfs	Peak Facility Overflow Rate=	0.366	cfs
Total Runoff Volume to Stormwater Facility =	517	cf	Total Overflow Volume=	458	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E10	
Drawdown Time=	0.3	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E10
Designer:	Brodie Davis	**Input Planter ID 1:**	E9
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E11

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

Segment 1

Length of Catchment Sheet Flow=	100	ft
Approximate Catchment Slope=	9%	

Segment 2

Length of Catchment Sheet Flow=	0	ft
Approximate Catchment Slope=	8%	

Segment 3

Length of Catchment Shallow Flow=	64	ft
Approximate Catchment Slope=	9%	
Flow Velocity Pre Development=	0.8	ft/s
Flow Velocity Post Development=	6.0	ft/s

Segment 4

Length of Catchment Shallow Flow=	0	ft
Approximate Catchment Slope=	50%	
Flow Velocity Pre Development=	14.0	ft/s
Flow Velocity Post Development=	14.0	ft/s

Segment 5

Length of Open Channel Flow=	0	ft
Approximate Catchment Slope=	5%	
Cross sectional Area of Flow	0.043	sf
Wetted Perimeter	1.000	ft
Flow Velocity Pre Development=	0.41	ft/s
Flow Velocity Post Development=	3.72	ft/s

Segment 6

Length of Open Channel Flow=	0	ft
Approximate Catchment Slope=	12%	
Cross sectional Area of Flow	0.045	sf
Wetted Perimeter	1.560	ft
Flow Velocity Pre Development=	0.49	ft/s
Flow Velocity Post Development=	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	**Mannings Rough. Coeff. Pre Dev. Open Flow=**	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	**Mannings Rough. Coeff. Post Dev. Open Flow=**	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	3275.5	sqft	**Total Square Footage Pervious Area=**	0	sqft
Impervious Area CN=	98		**Pervious Area CN=**	85	
Total Square Footage of Drainage Area=	3276	sft	**Time of Concentration Post Development=**	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		**Time of Concentration Pre-Development=**	21.6	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	**Destination Design=**	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	**Soil Infiltration Rate**		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.055	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.016 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	171 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	6.2 in	Overflow to Planter:	E11
Drawdown Time=	0.2 hours		

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.487 cfs	Peak Facility Overflow Rate=	0.476 cfs
Total Runoff Volume to Stormwater Facility =	1774 cf	Total Overflow Volume=	892 cf
Max. Depth of Stormwater in Facility=	12.0 in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A cfs
Drawdown Time=	1.3 hours	Overflow to Planter:	E11

Pre-Development Runoff Data

Peak Flow Rate =	0.054 cfs
Total Runoff Volume =	934 cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.121 cfs	Peak Facility Overflow Rate=	0.476 cfs
Total Runoff Volume to Stormwater Facility =	1316 cf	Total Overflow Volume=	892 cf
Max. Depth of Stormwater in Facility=	12.0 in	Overflow to Planter:	E11
Drawdown Time=	1.3 hours		

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E11
Designer:	Brodie Davis	**Input Planter ID 1:**	E10
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E12

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	0	ft	0	ft
Approximate Catchment Slope=	9%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	0.1 sqft	Total Square Footage Pervious Area=	0 sqft
Impervious Area CN=	98	Pervious Area CN=	85
Total Square Footage of Drainage Area=	0 sft	Time of Concentration Post Development=	0.0 min
Weighted Average CN=	98		

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85	Time of Concentration Pre-Development=	0.0 min

Soil Data

Tested Soil Infiltration Rate=	64 in/hr (See Note 4)	Destination Design=	4 in/hr
Design Soil Infiltration Rate=	4 in/hr	Soil Infiltration Rate	

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	1800.000	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.1	in	Overflow to Planter:	E12	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.476	cfs	Peak Facility Overflow Rate=	0.464	cfs
Total Runoff Volume to Stormwater Facility =	892	cf	Total Overflow Volume=	609	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	E12	

Pre-Development Runoff Data

Peak Flow Rate =	0.000	cfs
Total Runoff Volume =	0	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.464	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	609	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E12	
Drawdown Time=	0.2	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E12
Designer:	Brodie Davis	**Input Planter ID 1:**	E11
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E13

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	100	ft	0	ft
Approximate Catchment Slope=	12%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	80	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	1558	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	1558	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	19.3	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.116	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.008	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	81	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	3.6	in	Overflow to Planter:	E13	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.522	cfs	Peak Facility Overflow Rate=	0.511	cfs
Total Runoff Volume to Stormwater Facility =	1232	cf	Total Overflow Volume=	667	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.5	hours	Overflow to Planter:	E13	

Pre-Development Runoff Data

Peak Flow Rate =	0.027	cfs
Total Runoff Volume =	444	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.058	cfs	Peak Facility Overflow Rate=	0.511	cfs
Total Runoff Volume to Stormwater Facility =	626	cf	Total Overflow Volume=	667	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E13	
Drawdown Time=	0.5	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E13
Designer:	Brodie Davis	**Input Planter ID 1:**	E12
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E14

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

Segment 1			**Segment 2**		
Length of Catchment Sheet Flow=	100	ft	**Length of Catchment Sheet Flow=**	0	ft
Approximate Catchment Slope=	9%		**Approximate Catchment Slope=**	8%	
Segment 3			**Segment 4**		
Length of Catchment Shallow Flow=	64	ft	**Length of Catchment Shallow Flow=**	0	ft
Approximate Catchment Slope=	9%		**Approximate Catchment Slope=**	50%	
Flow Velocity Pre Development=	0.8	ft/s	**Flow Velocity Pre Development=**	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	**Flow Velocity Post Development=**	14.0	ft/s
Segment 5			**Segment 6**		
Length of Open Channel Flow=	30	ft	**Length of Open Channel Flow=**	0	ft
Approximate Catchment Slope=	3%		**Approximate Catchment Slope=**	12%	
Cross sectional Area of Flow	0.025	sf	**Cross sectional Area of Flow**	0.045	sf
Wetted Perimeter	0.390	ft	**Wetted Perimeter**	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	**Flow Velocity Pre Development=**	0.49	ft/s
Flow Velocity Post Development=	3.76	ft/s	**Flow Velocity Post Development=**	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	**Mannings Rough. Coeff. Pre Dev. Open Flow=**	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	**Mannings Rough. Coeff. Post Dev. Open Flow=**	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	2500	sqft	**Total Square Footage Pervious Area=**	0	sqft
Impervious Area CN=	98		**Pervious Area CN=**	85	
Total Square Footage of Drainage Area=	2500	sft	**Time of Concentration Post Development=**	1.0	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		**Time of Concentration Pre-Development=**	22.8	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	**Destination Design=**	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	**Soil Infiltration Rate**		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	187.5	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12.5	ft	**Free Board: Start =**	0.00	in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	2.00	in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	5.43	ft				**Facility End Slope=**	4	to 1
Max. Ponding Depth =	12	in				**Basin Volume=**	44.2	cf
Depth of (Soil) =	24	in				**Ratio of Facility Area to Impervious Area=**	0.075	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.012	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	131	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	5.0	in	Overflow to Planter:	E14	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.602	cfs	Peak Facility Overflow Rate=	0.591	cfs
Total Runoff Volume to Stormwater Facility =	1671	cf	Total Overflow Volume=	905	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.8	hours	Overflow to Planter:	E14	

Pre-Development Runoff Data

Peak Flow Rate =	0.041	cfs
Total Runoff Volume =	713	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.092	cfs	Peak Facility Overflow Rate=	0.591	cfs
Total Runoff Volume to Stormwater Facility =	1004	cf	Total Overflow Volume=	905	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E14	
Drawdown Time=	0.8	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E14
Designer:	Brodie Davis	**Input Planter ID 1:**	E13
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E15

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

Segment 1			**Segment 2**		
Length of Catchment Sheet Flow=	100	ft	**Length of Catchment Sheet Flow=**	0	ft
Approximate Catchment Slope=	11%		**Approximate Catchment Slope=**	8%	
Segment 3			**Segment 4**		
Length of Catchment Shallow Flow=	95	ft	**Length of Catchment Shallow Flow=**	0	ft
Approximate Catchment Slope=	9%		**Approximate Catchment Slope=**	50%	
Flow Velocity Pre Development=	0.8	ft/s	**Flow Velocity Pre Development=**	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	**Flow Velocity Post Development=**	14.0	ft/s
Segment 5			**Segment 6**		
Length of Open Channel Flow=	0	ft	**Length of Open Channel Flow=**	0	ft
Approximate Catchment Slope=	5%		**Approximate Catchment Slope=**	12%	
Cross sectional Area of Flow	0.043	sf	**Cross sectional Area of Flow**	0.045	sf
Wetted Perimeter	1.000	ft	**Wetted Perimeter**	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	**Flow Velocity Pre Development=**	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	**Flow Velocity Post Development=**	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	**Mannings Rough. Coeff. Pre Dev. Open Flow=**	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	**Mannings Rough. Coeff. Post Dev. Open Flow=**	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	3345	sqft	**Total Square Footage Pervious Area=**	0	sqft
Impervious Area CN=	98		**Pervious Area CN=**	85	
Total Square Footage of Drainage Area=	3345	sft	**Time of Concentration Post Development=**	0.9	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		**Time of Concentration Pre-Development=**	20.3	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	**Destination Design=**	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	**Soil Infiltration Rate**		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	303 sqft
Surface Width =	15 ft			**Facility Slope=**	8.33%
Surface Length =	20.2 ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	8 ft	**Free Board: End =**	2.00 in	**Facility Start (Uphill) Slope=**	4 to 1
Bottom Length =	8.53 ft			**Facility End Slope=**	4 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	57.9 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	0.091

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.017	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	175	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	6.1	in	Overflow to Planter:	E15	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.715	cfs	Peak Facility Overflow Rate=	0.701	cfs
Total Runoff Volume to Stormwater Facility =	2249	cf	Total Overflow Volume=	1254	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	1.0	hours	Overflow to Planter:	E15	

Pre-Development Runoff Data

Peak Flow Rate =	0.056	cfs
Total Runoff Volume =	954	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.123	cfs	Peak Facility Overflow Rate=	0.701	cfs
Total Runoff Volume to Stormwater Facility =	1344	cf	Total Overflow Volume=	1254	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E15	
Drawdown Time=	1.0	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E15
Designer:	Brodie Davis	**Input Planter ID 1:**	E14
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E16

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	100	ft	0	ft
Approximate Catchment Slope=	9%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	75	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	4047	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	4047	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	21.4	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	187.5	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12.5	ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	4	to 1
Bottom Length =	3.50	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	31.8	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.046	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.020	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	211	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	9.2	in	Overflow to Planter:	E16	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.850	cfs	Peak Facility Overflow Rate=	0.840	cfs
Total Runoff Volume to Stormwater Facility =	2880	cf	Total Overflow Volume=	2063	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	1.5	hours	Overflow to Planter:	E16	

Pre-Development Runoff Data

Peak Flow Rate =	0.067	cfs
Total Runoff Volume =	1155	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.149	cfs	Peak Facility Overflow Rate=	0.840	cfs
Total Runoff Volume to Stormwater Facility =	1626	cf	Total Overflow Volume=	2063	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E16	
Drawdown Time=	1.5	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E16
Designer:	Brodie Davis	**Input Planter ID 1:**	E15
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E17

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	100	ft	0	ft
Approximate Catchment Slope=	9%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	75	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	4047	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	4047	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	21.4	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	187.5	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12.5	ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	4	to 1
Bottom Length =	3.50	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	31.8	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.046	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.020	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	211	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	9.2	in	Overflow to Planter:	E17	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.989	cfs	Peak Facility Overflow Rate=	0.980	cfs
Total Runoff Volume to Stormwater Facility =	3689	cf	Total Overflow Volume=	2873	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	1.5	hours	Overflow to Planter:	E17	

Pre-Development Runoff Data

Peak Flow Rate =	0.067	cfs
Total Runoff Volume =	1155	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.149	cfs	Peak Facility Overflow Rate=	0.980	cfs
Total Runoff Volume to Stormwater Facility =	1626	cf	Total Overflow Volume=	2873	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E17	
Drawdown Time=	1.5	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E17
Designer:	Brodie Davis	**Input Planter ID 1:**	E16
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E18

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	0	ft	0	ft
Approximate Catchment Slope=	9%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	0.1 sqft	Total Square Footage Pervious Area=	0 sqft
Impervious Area CN=	98	Pervious Area CN=	85
Total Square Footage of Drainage Area=	0 sft	Time of Concentration Post Development=	0.0 min
Weighted Average CN=	98		

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85	Time of Concentration Pre-Development=	0.0 min

Soil Data

Tested Soil Infiltration Rate=	64 in/hr (See Note 4)	Destination Design=	4 in/hr
Design Soil Infiltration Rate=	4 in/hr	Soil Infiltration Rate	

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	180	sqft
Surface Width =	15	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	54.5	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	1800.000	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.1	in	Overflow to Planter:	E18	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.980	cfs	Peak Facility Overflow Rate=	0.968	cfs
Total Runoff Volume to Stormwater Facility =	2873	cf	Total Overflow Volume=	2225	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.3	hours	Overflow to Planter:	E18	

Pre-Development Runoff Data

Peak Flow Rate =	0.000	cfs
Total Runoff Volume =	0	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.000	cfs	Peak Facility Overflow Rate=	0.968	cfs
Total Runoff Volume to Stormwater Facility =	0	cf	Total Overflow Volume=	2225	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E18	
Drawdown Time=	0.3	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E18
Designer:	Brodie Davis	**Input Planter ID 1:**	E17
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E19

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	100	ft	0	ft
Approximate Catchment Slope=	9%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	87	ft	0	ft
Approximate Catchment Slope=	9%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	1325	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	1325	sft	Time of Concentration Post Development=	0.9	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	21.6	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	168	sqft
Surface Width =	14	ft			**Facility Slope=**	8.33%	
Surface Length =	12	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	7	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	7.60	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	12	in			**Basin Volume=**	49.3	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	0.127	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.007	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	69	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	3.5	in	Overflow to Planter:	E19	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	1.017	cfs	Peak Facility Overflow Rate=	1.007	cfs
Total Runoff Volume to Stormwater Facility =	2757	cf	Total Overflow Volume=	2188	cf
Max. Depth of Stormwater in Facility=	12.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.5	hours	Overflow to Planter:	E19	

Pre-Development Runoff Data

Peak Flow Rate =	0.022	cfs
Total Runoff Volume =	378	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.049	cfs	Peak Facility Overflow Rate=	1.007	cfs
Total Runoff Volume to Stormwater Facility =	532	cf	Total Overflow Volume=	2188	cf
Max. Depth of Stormwater in Facility=	12.0	in	Overflow to Planter:	E19	
Drawdown Time=	0.5	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E19
Designer:	Brodie Davis	**Input Planter ID 1:**	E18
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	E20

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

Segment 1			**Segment 2**		
Length of Catchment Sheet Flow=	100	ft	**Length of Catchment Sheet Flow=**	0	ft
Approximate Catchment Slope=	9%		**Approximate Catchment Slope=**	8%	
Segment 3			**Segment 4**		
Length of Catchment Shallow Flow=	117	ft	**Length of Catchment Shallow Flow=**	0	ft
Approximate Catchment Slope=	9%		**Approximate Catchment Slope=**	50%	
Flow Velocity Pre Development=	0.8	ft/s	**Flow Velocity Pre Development=**	14.0	ft/s
Flow Velocity Post Development=	6.0	ft/s	**Flow Velocity Post Development=**	14.0	ft/s
Segment 5			**Segment 6**		
Length of Open Channel Flow=	0	ft	**Length of Open Channel Flow=**	0	ft
Approximate Catchment Slope=	5%		**Approximate Catchment Slope=**	12%	
Cross sectional Area of Flow	0.043	sf	**Cross sectional Area of Flow**	0.045	sf
Wetted Perimeter	1.000	ft	**Wetted Perimeter**	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	**Flow Velocity Pre Development=**	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	**Flow Velocity Post Development=**	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	**Mannings Rough. Coeff. Pre Dev. Open Flow=**	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	**Mannings Rough. Coeff. Post Dev. Open Flow=**	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	4718	sqft	**Total Square Footage Pervious Area=**	0	sqft
Impervious Area CN=	98		**Pervious Area CN=**	85	
Total Square Footage of Drainage Area=	4718	sft	**Time of Concentration Post Development=**	1.0	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85	**Time of Concentration Pre-Development=**	22.3 min

Soil Data

Tested Soil Infiltration Rate=	64 in/hr (See Note 4)	**Destination Design=**	4 in/hr
Design Soil Infiltration Rate=	4 in/hr	**Soil Infiltration Rate**	

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	127.5 sqft
Surface Width =	8.5 ft			**Facility Slope=**	8.33%
Surface Length =	15 ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	1.5 ft	**Free Board: End =**	2.00 in	**Facility Start (Uphill) Slope=**	2 to 1
Bottom Length =	9.10 ft			**Facility End Slope=**	3 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	22.9 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	0.027

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.024	cfs	**Peak Facility Overflow Rate=**	0.011	cfs
Total Runoff Volume to Stormwater Facility =	246	cf	**Total Overflow Volume=**	15	cf
Max. Depth of Stormwater in Facility=	12.0	in	**Overflow to Planter:**	E20	
Drawdown Time=	0.7	hours			

NO **Facility Sizing Meets Pollution Reduction Standards?**

NO **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	1.180	cfs	**Peak Facility Overflow Rate=**	1.174	cfs
Total Runoff Volume to Stormwater Facility =	4083	cf	**Total Overflow Volume=**	3586	cf
Max. Depth of Stormwater in Facility=	12.0	in	**Peak Off-Site Flow Rate Filtration Facility Underdrain=**	N\A	cfs
Drawdown Time=	2.0	hours	**Overflow to Planter:**	E20	

Pre-Development Runoff Data

Peak Flow Rate =	0.077	cfs
Total Runoff Volume =	1346	cf

NO **Facility Sizing Meets Flow Control Standards?**

NO **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.173	cfs	**Peak Facility Overflow Rate=**	1.174	cfs
Total Runoff Volume to Stormwater Facility =	1896	cf	**Total Overflow Volume=**	3586	cf
Max. Depth of Stormwater in Facility=	12.0	in	**Overflow to Planter:**	E20	
Drawdown Time=	2.0	hours			

NO **Facility Sizing Meets Destination Standards?**

NO **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	E20
Designer:	Brodie Davis	**Input Planter ID 1:**	E19
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	None

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	**Yes**
Flow Control (FC)	**Yes**
Destination (DT)	**Yes**

*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	37	ft	63	ft
Approximate Catchment Slope=	15%		3%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	28	ft	0	ft
Approximate Catchment Slope=	1%		50%	
Flow Velocity Pre Development=	2.0	ft/s	14.0	ft/s
Flow Velocity Post Development=	2.0	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.043	sf	0.045	sf
Wetted Perimeter	1.000	ft	1.560	ft
Flow Velocity Pre Development=	0.41	ft/s	0.49	ft/s
Flow Velocity Post Development=	3.72	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	9245	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	9245	sft	Time of Concentration Post Development=	1.2	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	28.6	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	10	in/hr
Design Soil Infiltration Rate=	10	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	1020 sqft
Surface Width =	15 ft			**Facility Slope=**	0.00%
Surface Length =	68 ft	**Free Board: Start =**	1.00 in	**Facility Side Slope=**	3 to 1
Flat Bottom Width =	8 ft	**Free Board: End =**	1.00 in	**Facility Start (Uphill) Slope=**	3 to 1
Bottom Length =	61.50 ft			**Facility End Slope=**	3 to 1
Max. Ponding Depth =	12 in			**Basin Volume=**	676.5 cf
Depth of (Soil) =	24 in			**Ratio of Facility Area to Impervious Area=**	0.110

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.057	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	498	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.0	in	Overflow to Planter:	None	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.671	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	5435	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	11.5	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	None	

Pre-Development Runoff Data

Peak Flow Rate =	0.137	cfs
Total Runoff Volume =	2638	cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.337	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	3714	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	11.5	in	Overflow to Planter:	None	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

SOUTH PLANTER PRESUMPTIVE APPROACH

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	S1
Designer:	Brodie Davis	**Input Planter ID 1:**	None
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	S2

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*If water from non poluted source, or polution pre treatemnt in place infiltration rate may be 10 in/hr
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	45	ft	0	ft
Approximate Catchment Slope=	3%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	12%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.5	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.025	sf	0.045	sf
Wetted Perimeter	0.390	ft	1.560	ft
Flow Velocity Pre Development=	0.53	ft/s	0.49	ft/s
Flow Velocity Post Development=	4.85	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	618	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	618	sft	Time of Concentration Post Development=	0.6	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	17.4	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	239	sqft
Surface Width =	10	ft			**Facility Slope=**	0.02%	
Surface Length =	23.9	ft	**Free Board: Start =**	2.00 in	**Facility Side Slope=**	4	to 1
Flat Bottom Width =	3.3333	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	4	to 1
Bottom Length =	19.23	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	8.00	in			**Basin Volume=**	76.6	cf
Depth of (Soil) =	12	in			**Ratio of Facility Area to Impervious Area=**	0.387	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.003	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	32	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.1	in	Overflow to Planter:	S2	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.023	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	248	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	2.4	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	S2	

Pre-Development Runoff Data

Peak Flow Rate =	0.011	cfs
Total Runoff Volume =	176	cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.023	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	248	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	2.4	in	Overflow to Planter:	S2	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	S2
Designer:	Brodie Davis	**Input Planter ID 1:**	S1
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	S3

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*If water from non poluted source, or polution pre treatemnt in place infiltration rate may be 10 in/hr
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	70	ft	0	ft
Approximate Catchment Slope=	3%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	12%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.5	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.025	sf	0.045	sf
Wetted Perimeter	0.390	ft	1.560	ft
Flow Velocity Pre Development=	0.53	ft/s	0.49	ft/s
Flow Velocity Post Development=	4.85	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	1354	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	1354	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	24.7	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	300	sqft
Surface Width =	10	ft			**Facility Slope=**	1.55%	
Surface Length =	30	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	4	to 1
Flat Bottom Width =	3.3333	ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2	to 1
Bottom Length =	27.29	ft			**Facility End Slope=**	2	to 1
Max. Ponding Depth =	8.00	in			**Basin Volume=**	68.9	cf
Depth of (Soil) =	12	in			**Ratio of Facility Area to Impervious Area=**	0.222	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.007	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	71	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	1.7	in	Overflow to Planter:	S3	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.050	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	544	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	7.3	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	S3	

Pre-Development Runoff Data

Peak Flow Rate =	0.021	cfs
Total Runoff Volume =	386	cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.050	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	544	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	7.3	in	Overflow to Planter:	S3	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	S3
Designer:	Brodie Davis	**Input Planter ID 1:**	S2
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	S4

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*If water from non poluted source, or polution pre treatemnt in place infiltration rate may be 10 in/hr
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	70	ft	0	ft
Approximate Catchment Slope=	3%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	12%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.5	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.025	sf	0.045	sf
Wetted Perimeter	0.390	ft	1.560	ft
Flow Velocity Pre Development=	0.53	ft/s	0.49	ft/s
Flow Velocity Post Development=	4.85	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	1350	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	1350	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	24.7	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	300 sqft
Surface Width =	10 ft			**Facility Slope=**	1.55%
Surface Length =	30 ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	4 to 1
Flat Bottom Width =	3.3333 ft	**Free Board: End =**	0.00 in	**Facility Start (Uphill) Slope=**	2 to 1
Bottom Length =	27.29 ft			**Facility End Slope=**	2 to 1
Max. Ponding Depth =	8.00 in			**Basin Volume=**	68.9 cf
Depth of (Soil) =	12 in			**Ratio of Facility Area to Impervious Area=**	0.222

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.007 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	71 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	1.7 in	Overflow to Planter:	S4
Drawdown Time=	0.2 hours		

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.050 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	542 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	7.3 in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A cfs
Drawdown Time=	0.2 hours	Overflow to Planter:	S4

Pre-Development Runoff Data

Peak Flow Rate =	0.021 cfs
Total Runoff Volume =	385 cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.050 cfs	Peak Facility Overflow Rate=	0.000 cfs
Total Runoff Volume to Stormwater Facility =	542 cf	Total Overflow Volume=	0 cf
Max. Depth of Stormwater in Facility=	7.3 in	Overflow to Planter:	S4
Drawdown Time=	0.2 hours		

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	S4
Designer:	Brodie Davis	**Input Planter ID 1:**	S3
		Input Planter ID 2:	None
Comments		**Overflow Planter ID:**	S5

The infiltration rate used for the pollution controll storm is 4 in/hr. On the larger storms where pollution contol is not the focus, a infiltration rate of 10 in/hr is used.

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*If water from non poluted source, or polution pre treatemnt in place infiltration rate may be 10 in/hr
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	75	ft	0	ft
Approximate Catchment Slope=	3%		8%	
Segment 3			**Segment 4**	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	12%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.5	ft/s	14.0	ft/s
Segment 5			**Segment 6**	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.025	sf	0.045	sf
Wetted Perimeter	0.390	ft	1.560	ft
Flow Velocity Pre Development=	0.53	ft/s	0.49	ft/s
Flow Velocity Post Development=	4.85	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	2066	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	2066	sft	Time of Concentration Post Development=	0.8	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	26.1	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	10	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**			**Facility Surface Area=**	323.3 sqft
Surface Width =	10 ft			**Facility Slope=**	1.55%
Surface Length =	32.33 ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	4 to 1
Flat Bottom Width =	3.3333 ft	**Free Board: End =**	2.00 in	**Facility Start (Uphill) Slope=**	2 to 1
Bottom Length =	28.45 ft			**Facility End Slope=**	3 to 1
Max. Ponding Depth =	8.00 in			**Basin Volume=**	70.5 cf
Depth of (Soil) =	12 in			**Ratio of Facility Area to Impervious Area=**	0.156

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.010	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	108	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	2.3	in	Overflow to Planter:	S5	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.076	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	830	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	6.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	S5	

Pre-Development Runoff Data

Peak Flow Rate =	0.032	cfs
Total Runoff Volume =	589	cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.076	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	830	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	6.0	in	Overflow to Planter:	S5	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

WEST PLANTER PRESUMPTIVE APPROACH

Stormwater Surface Filtration/Infiltration Facility Sizing Spreadsheet
24 Hour Storm, NRCS Type 1A Rainfall Distribution

Project Information

Project Name:	21038.01 - Stonefield Court Subdivison	**Date:**	12/22/2021
Project Address:	Rhodeodendron Drive 18-12-04-44-03800	**Permit Number:**	NA
	Florence, OR 97439	**Planter ID:**	W1
Designer:	Brodie Davis	**Input Planter ID 1:**	None
		Input Planter ID 2:	None
Instructions:		**Overflow Planter ID:**	None

Design Requirements:

Choose "Yes" from the dropdown boxes below next to the design standards requirements for this facility.

Pollution Reduction (PR)	Yes	*If water from non poluted source, or polution pre treatemnt in place infiltration rate may be 10 in/hr
Flow Control (FC)	Yes	
Destination (DT)	Yes	*An infiltration facility must be chosen as the facility type to meet destination requirements (overflow allowed)

Catchment Details:

	Segment 1		Segment 2	
Length of Catchment Sheet Flow=	35	ft	0	ft
Approximate Catchment Slope=	2%		8%	

	Segment 3		Segment 4	
Length of Catchment Shallow Flow=	0	ft	0	ft
Approximate Catchment Slope=	12%		50%	
Flow Velocity Pre Development=	0.8	ft/s	14.0	ft/s
Flow Velocity Post Development=	6.5	ft/s	14.0	ft/s

	Segment 5		Segment 6	
Length of Open Channel Flow=	0	ft	0	ft
Approximate Catchment Slope=	5%		12%	
Cross sectional Area of Flow	0.025	sf	0.045	sf
Wetted Perimeter	0.390	ft	1.560	ft
Flow Velocity Pre Development=	0.53	ft/s	0.49	ft/s
Flow Velocity Post Development=	4.85	ft/s	4.41	ft/s

Mannings Rough. Coeff. Pre Dev. Sheet Flow=	0.8	Mannings Rough. Coeff. Pre Dev. Open Flow=	0.1
Mannings Rough. Coeff. Post Dev. Sheet Flow=	0.011	Mannings Rough. Coeff. Post Dev. Open Flow=	0.011

Site Data-Post Development

Total Square Footage Impervious Area=	119	sqft	Total Square Footage Pervious Area=	0	sqft
Impervious Area CN=	98		Pervious Area CN=	85	
Total Square Footage of Drainage Area=	119	sft	Time of Concentration Post Development=	0.5	min
Weighted Average CN=	98				

Site Data-Pre Development (Data in this section is only used if Flow Control is required)

Pre-Development CN=	85		Time of Concentration Pre-Development=	15.2	min

Soil Data

Tested Soil Infiltration Rate=	64	in/hr (See Note 4)	Destination Design=	4	in/hr
Design Soil Infiltration Rate=	4	in/hr	Soil Infiltration Rate		

Design Storms Used For Calculations

Requirement	Rainfall Depth		Design Storm
Pollution Reduction	0.83	inches	Water Quality
Flow Control	5.06	inches	Flood Control
Destination	5.06	inches	Flood Control
Time of Concentration	3.46	inches	2-Year, 24- Hour Rainfall

Facility Data

Facility Type =	**Infiltration Swale**				**Facility Surface Area=**	247.5	sqft
Surface Width =	15	ft			**Facility Slope=**	0.00%	
Surface Length =	16.5	ft	**Free Board: Start =**	0.00 in	**Facility Side Slope=**	3	to 1
Flat Bottom Width =	8	ft	**Free Board: End =**	2.00 in	**Facility Start (Uphill) Slope=**	0	to 1
Bottom Length =	11.83	ft			**Facility End Slope=**	4	to 1
Max. Ponding Depth =	12.00	in			**Basin Volume=**	130.2	cf
Depth of (Soil) =	24	in			**Ratio of Facility Area to Impervious Area=**	2.080	

Pollution Reduction-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.001	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	6	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.0	in	Overflow to Planter:	None	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Pollution Reduction Standards?**

YES **Meets Requirement of No Facility Flooding?** (Overflow Permitted into Separate Planter to meet Standards)

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Flow Control-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.004	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	48	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.0	in	Peak Off-Site Flow Rate Filtration Facility Underdrain=	N\A	cfs
Drawdown Time=	0.2	hours	Overflow to Planter:	None	

Pre-Development Runoff Data

Peak Flow Rate =	0.002	cfs
Total Runoff Volume =	34	cf

Yes **Facility Sizing Meets Flow Control Standards?**

YES **Meets Requirement for Post Development offsite flow less or equal to Pre-Development Flow?**

YES **Meets Requirement for Maximum of 18 Hour Drawdown Time?**

Destination-Calculation Results

Peak Flow Rate to Stormwater Facility =	0.004	cfs	Peak Facility Overflow Rate=	0.000	cfs
Total Runoff Volume to Stormwater Facility =	48	cf	Total Overflow Volume=	0	cf
Max. Depth of Stormwater in Facility=	0.0	in	Overflow to Planter:	None	
Drawdown Time=	0.2	hours			

Yes **Facility Sizing Meets Destination Standards?**

YES **Meets Requirement of No Facility Flooding?**

YES **Meets Requirement for Maximum of 18 hour Drawdown Time?**

WEST PLANTER PERFORMANCE APPROACH WATER QUALITY STORM

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.133 (Build 0)

****
Project Description
****
File Name ..... 21038.01 - Performance approach West Planters.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. EPA SWMM
Infiltration Method ..... Horton
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Horton, wetted area
Starting Date JUN-01-2022 00:00:00
Ending Date JUN-02-2022 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:05:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00
Routing Time Step ..... 30.00 sec

****
Element Count
****
Number of rain gages 1
Number of subbasins 33
Number of nodes 34
Number of links 33
Number of pollutants 0
Number of land uses 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Equiv. Width ft	Imperv. Area %	Average Slope %	Raingage
W02	0.08	2.00	100.00	12.0000	-
W03	0.00	1.25	100.00	12.0000	-
W04	0.00	1.00	100.00	12.0000	-
W05	0.01	2.00	100.00	12.0000	-
W06	0.01	2.00	100.00	12.0000	-
W07	0.01	3.00	100.00	12.0000	-
W08	0.04	10.50	100.00	12.0000	-
W09	0.02	3.50	100.00	12.0000	-
W10	0.01	1.25	100.00	12.0000	-
W11	0.01	1.25	100.00	12.0000	-
W14	0.02	4.60	100.00	12.0000	-
W15	0.01	1.25	100.00	12.0000	-
W16	0.01	1.25	100.00	12.0000	-
W17	0.01	1.25	100.00	12.0000	-
W18	0.01	1.25	100.00	12.0000	-
W19	0.01	1.25	100.00	12.0000	-
W20	0.01	1.25	100.00	12.0000	-
W21	0.01	1.25	100.00	12.0000	-
W22	0.01	1.25	100.00	12.0000	-
W23	0.01	1.25	100.00	12.0000	-
W24	0.01	1.25	100.00	12.0000	-
W25	0.01	1.25	100.00	12.0000	-

W26	0.01	1.25	100.00	12.0000	-
W27	0.01	1.25	100.00	12.0000	-
W28	0.01	1.25	100.00	12.0000	-
W29	0.01	1.25	100.00	12.0000	-
W30	0.01	1.25	100.00	12.0000	-
W31	0.01	1.25	100.00	12.0000	-
W32	0.01	1.25	100.00	12.0000	-
W33	0.01	1.25	100.00	12.0000	-
W34	0.01	1.25	100.00	12.0000	-
W35	0.01	1.25	100.00	12.0000	-
W36	0.02	4.00	100.00	12.0000	-

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Out-06	OUTFALL	58.50	59.33	0.00	
P02	STORAGE	99.86	100.74	177.50	
P03	STORAGE	98.88	99.75	101.60	
P04	STORAGE	98.18	98.74	92.40	
P05	STORAGE	93.81	94.58	96.20	
P06	STORAGE	92.72	93.47	91.30	
P07	STORAGE	91.65	92.01	113.87	
P08	STORAGE	82.64	83.13	68.70	
P09	STORAGE	81.70	82.19	33.70	
P10	STORAGE	80.86	81.35	33.90	
P11	STORAGE	80.02	80.51	40.90	
P14	STORAGE	77.49	77.99	19.40	
P15	STORAGE	76.66	77.15	33.90	
P16	STORAGE	75.81	76.31	33.90	
P17	STORAGE	74.97	75.47	33.90	
P18	STORAGE	74.13	74.63	33.90	
P19	STORAGE	73.29	73.79	33.90	
P20	STORAGE	72.45	72.95	33.90	
P21	STORAGE	71.61	72.11	33.90	
P22	STORAGE	70.77	71.27	33.90	
P23	STORAGE	69.93	70.43	33.90	
P24	STORAGE	69.09	69.59	33.90	
P25	STORAGE	68.25	68.75	33.90	
P26	STORAGE	67.41	67.91	33.90	
P27	STORAGE	66.57	67.07	33.90	
P28	STORAGE	65.73	66.23	33.90	
P29	STORAGE	64.89	65.39	33.90	
P30	STORAGE	64.05	64.55	33.90	
P31	STORAGE	63.09	63.59	38.80	
P32	STORAGE	62.36	62.86	34.50	
P33	STORAGE	61.65	62.14	37.70	
P34	STORAGE	60.96	61.48	43.00	
P35	STORAGE	60.41	60.97	48.60	
P36	STORAGE	59.94	60.55	70.70	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
OF-04	P04	P05	CONDUIT	29.5	14.7797	0.0150
OF-07	P07	P08	CONDUIT	81.0	10.7407	0.0150
OF-11	P11	P14	CONDUIT	18.3	15.6284	0.0150
OF-36	P36	Out-06	CONDUIT	20.0	10.2500	0.0150
CD-02	P02	P03	WEIR			

CD-03	P03	P04	WEIR
CD-05	P05	P06	WEIR
CD-06	P06	P07	WEIR
CD-08	P08	P09	WEIR
CD-09	P09	P10	WEIR
CD-10	P10	P11	WEIR
CD-14	P14	P15	WEIR
CD-15	P15	P16	WEIR
CD-16	P16	P17	WEIR
CD-17	P17	P18	WEIR
CD-18	P18	P19	WEIR
CD-19	P19	P20	WEIR
CD-20	P20	P21	WEIR
CD-21	P21	P22	WEIR
CD-22	P22	P23	WEIR
CD-23	P23	P24	WEIR
CD-24	P24	P25	WEIR
CD-25	P25	P26	WEIR
CD-26	P26	P27	WEIR
CD-27	P27	P28	WEIR
CD-28	P28	P29	WEIR
CD-29	P29	P30	WEIR
CD-30	P30	P31	WEIR
CD-31	P31	P32	WEIR
CD-32	P32	P33	WEIR
CD-33	P33	P34	WEIR
CD-34	P34	P35	WEIR
CD-35	P35	P36	WEIR

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
OF-04	CIRCULAR	0.33	0.33	1	0.09	0.08	0.63
OF-07	CIRCULAR	0.33	0.33	1	0.09	0.08	0.54
OF-11	CIRCULAR	0.33	0.33	1	0.09	0.08	0.65
OF-36	CIRCULAR	0.83	0.83	1	0.55	0.21	6.08

********** Runoff Quantity Continuity **********	Volume acre-ft	Depth inches
Total Precipitation	0.024	0.829
Evaporation Loss	0.000	0.000
Infiltration Loss	0.000	0.000
Surface Runoff	0.024	0.815
Final Surface Storage	0.000	0.014
Continuity Error (%)	-0.104	

********** Flow Routing Continuity	Volume acre-ft	Volume Mgallons

```
*************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.024         0.008
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.000         0.000
Surface Flooding .........         0.000         0.000
Evaporation Loss .........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....        98.524


***********************************************
EPA SWMM Time of Concentration Computations Report
***********************************************

        Tc = (0.94 * (L^0.6) * (n^0.6)) / ((i^0.4) * (S^0.3))

        Where:

        Tc = Time of Concentration (min)
        L  = Flow Length (ft)
        n  = Manning's Roughness
        i  = Rainfall Intensity (in/hr)
        S  = Slope (ft/ft)

---------------
Subbasin W02
---------------

        Flow length (ft):                          1677.12
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.03453
        Impervious Rainfall Intensity (in/hr):     0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                      39.26

---------------
Subbasin W03
---------------

        Flow length (ft):                            69.70
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.03453
        Impervious Rainfall Intensity (in/hr):     0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.82

---------------
Subbasin W04
---------------

        Flow length (ft):                            69.70
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.03453
        Impervious Rainfall Intensity (in/hr):     0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.82

---------------
Subbasin W05
```

```
---------------

        Flow length (ft):                          143.75
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                      8.99

---------------
Subbasin W06
---------------

        Flow length (ft):                          124.15
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                      8.23

---------------
Subbasin W07
---------------

        Flow length (ft):                          145.21
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                      9.05

---------------
Subbasin W08
---------------

        Flow length (ft):                          165.53
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                      9.79

---------------
Subbasin W09
---------------

        Flow length (ft):                          219.05
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.58

---------------
Subbasin W10
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
```

```
        Slope (%):                                12.00000
        Computed TOC (minutes):                      11.26

---------------
Subbasin W11
---------------

        Flow length (ft):                          271.82
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                      13.18

---------------
Subbasin W14
---------------

        Flow length (ft):                          192.24
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                      10.70

---------------
Subbasin W15
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                      10.09

---------------
Subbasin W16
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                      11.26

---------------
Subbasin W17
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                                12.00000
        Computed TOC (minutes):                      11.26

---------------
Subbasin W18
---------------
```

```
        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     10.09

---------------
Subbasin W19
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W20
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     10.09

---------------
Subbasin W21
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     10.09

---------------
Subbasin W22
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W23
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26
```

```
---------------
Subbasin W24
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W25
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W26
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W27
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     10.09

---------------
Subbasin W28
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W29
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
```

```
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
Subbasin W30
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     14.36

---------------
Subbasin W31
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     14.36

---------------
Subbasin W32
---------------

        Flow length (ft):                          348.49
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     15.29

---------------
Subbasin W33
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     14.36

---------------
Subbasin W34
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.03453
        Impervious Rainfall Intensity (in/hr):    0.03453
        Slope (%):                               12.00000
        Computed TOC (minutes):                     11.26

---------------
```

Subbasin W35

Flow length (ft):	313.64
Pervious Manning's Roughness:	0.10000
Impervious Manning's Roughness:	0.01100
Pervious Rainfall Intensity (in/hr):	0.03453
Impervious Rainfall Intensity (in/hr):	0.03453
Slope (%):	12.00000
Computed TOC (minutes):	14.36

Subbasin W36

Flow length (ft):	196.03
Pervious Manning's Roughness:	0.10000
Impervious Manning's Roughness:	0.01100
Pervious Rainfall Intensity (in/hr):	0.03453
Impervious Rainfall Intensity (in/hr):	0.03453
Slope (%):	12.00000
Computed TOC (minutes):	10.83

****
Subbasin Runoff Summary
****

Subbasin ID	Total Rainfall in	Total Runon in	Total Evap. in	Total Infil. in	Total Runoff in	Peak Runoff cfs	Runoff Coefficient	Time of Concentration days hh:mm:ss
W02	0.83	0.00	0.00	0.00	0.81	0.01	0.974	0 00:39:15
W03	0.83	0.00	0.00	0.00	0.82	0.00	0.989	0 00:05:49
W04	0.83	0.00	0.00	0.00	0.82	0.00	0.989	0 00:05:49
W05	0.83	0.00	0.00	0.00	0.82	0.00	0.988	0 00:08:59
W06	0.83	0.00	0.00	0.00	0.82	0.00	0.988	0 00:08:14
W07	0.83	0.00	0.00	0.00	0.82	0.00	0.988	0 00:09:02
W08	0.83	0.00	0.00	0.00	0.82	0.01	0.987	0 00:09:47
W09	0.83	0.00	0.00	0.00	0.82	0.00	0.986	0 00:11:34
W10	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0 00:11:15
W11	0.83	0.00	0.00	0.00	0.82	0.00	0.986	0 00:13:10
W14	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0 00:10:42
W15	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0 00:10:05
W16	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0 00:11:15
W17	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0

00:11:15								
W18	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:10:05								
W19	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W20	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:10:05								
W21	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:10:05								
W22	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W23	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W24	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W25	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W26	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W27	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:10:05								
W28	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W29	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W30	0.83	0.00	0.00	0.00	0.82	0.00	0.985	0
00:14:21								
W31	0.83	0.00	0.00	0.00	0.82	0.00	0.985	0
00:14:21								
W32	0.83	0.00	0.00	0.00	0.82	0.00	0.985	0
00:15:17								
W33	0.83	0.00	0.00	0.00	0.82	0.00	0.985	0
00:14:21								
W34	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:11:15								
W35	0.83	0.00	0.00	0.00	0.82	0.00	0.985	0
00:14:21								
W36	0.83	0.00	0.00	0.00	0.82	0.00	0.987	0
00:10:49								

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Out-06	0.00	0.00	58.50	0	00:00	0	0	0:00:00
P02	0.30	0.77	100.63	0	08:51	0	0	0:00:00
P03	0.00	0.05	98.93	0	08:10	0	0	0:00:00
P04	0.00	0.02	98.20	0	08:04	0	0	0:00:00
P05	0.37	0.77	94.58	0	08:00	0.00	210	0:00:00
P06	0.31	0.75	93.47	0	08:00	0.00	172	0:00:00
P07	0.32	0.45	92.10	0	11:12	0.00	972	0:00:00
P08	0.41	0.50	83.14	0	08:00	0.00	462	0:00:00
P09	0.28	0.50	82.20	0	08:00	0.00	156	0:00:00
P10	0.11	0.50	81.36	0	08:00	0.00	72	0:00:00
P11	0.12	0.52	80.54	0	08:01	0.00	47	0:00:00
P14	0.30	0.51	78.00	0	08:01	0.00	97	0:00:00
P15	0.08	0.50	77.16	0	08:01	0.00	35	0:00:00

P16	0.09	0.51	76.32	0	08:06	0.00	23	0:00:00
P17	0.09	0.51	75.48	0	08:12	0.00	14	0:00:00
P18	0.07	0.43	74.56	0	08:22	0	0	0:00:00
P19	0.08	0.29	73.58	0	08:15	0	0	0:00:00
P20	0.06	0.26	72.71	0	08:14	0	0	0:00:00
P21	0.06	0.26	71.87	0	08:14	0	0	0:00:00
P22	0.08	0.29	71.06	0	08:15	0	0	0:00:00
P23	0.08	0.29	70.22	0	08:15	0	0	0:00:00
P24	0.08	0.29	69.38	0	08:15	0	0	0:00:00
P25	0.08	0.29	68.54	0	08:15	0	0	0:00:00
P26	0.08	0.29	67.70	0	08:15	0	0	0:00:00
P27	0.06	0.26	66.83	0	08:14	0	0	0:00:00
P28	0.08	0.29	66.02	0	08:15	0	0	0:00:00
P29	0.08	0.29	65.18	0	08:15	0	0	0:00:00
P30	0.12	0.37	64.42	0	08:19	0	0	0:00:00
P31	0.16	0.42	63.51	0	08:18	0	0	0:00:00
P32	0.12	0.36	62.72	0	08:20	0	0	0:00:00
P33	0.08	0.31	61.96	0	08:18	0	0	0:00:00
P34	0.03	0.20	61.16	0	08:14	0	0	0:00:00
P35	0.01	0.15	60.56	0	08:15	0	0	0:00:00
P36	0.03	0.22	60.16	0	08:15	0	0	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	hh:mm
Out-06	OUTFALL	0.00	0.00	0	00:00	0.00		
P02	STORAGE	0.01	0.01	0	08:10	0.00		
P03	STORAGE	0.00	0.00	0	08:00	0.00		
P04	STORAGE	0.00	0.00	0	08:00	0.00		
P05	STORAGE	0.00	0.00	0	08:00	0.00	0	07:43
P06	STORAGE	0.00	0.00	0	08:00	0.00	0	07:36
P07	STORAGE	0.00	0.00	0	08:00	0.00	0	08:00
P08	STORAGE	0.01	0.01	0	08:00	0.00	0	07:42
P09	STORAGE	0.00	0.01	0	08:00	0.00	0	07:42
P10	STORAGE	0.00	0.01	0	08:00	0.00	0	07:49
P11	STORAGE	0.00	0.01	0	08:00	0.01	0	07:56
P14	STORAGE	0.00	0.01	0	08:01	0.00	0	07:57
P15	STORAGE	0.00	0.01	0	08:01	0.01	0	08:00
P16	STORAGE	0.00	0.01	0	08:01	0.00	0	08:05
P17	STORAGE	0.00	0.01	0	08:06	0.00	0	08:11
P18	STORAGE	0.00	0.01	0	08:12	0.00		
P19	STORAGE	0.00	0.00	0	08:00	0.00		
P20	STORAGE	0.00	0.00	0	08:00	0.00		
P21	STORAGE	0.00	0.00	0	08:00	0.00		
P22	STORAGE	0.00	0.00	0	08:00	0.00		
P23	STORAGE	0.00	0.00	0	08:00	0.00		
P24	STORAGE	0.00	0.00	0	08:00	0.00		
P25	STORAGE	0.00	0.00	0	08:00	0.00		
P26	STORAGE	0.00	0.00	0	08:00	0.00		
P27	STORAGE	0.00	0.00	0	08:00	0.00		
P28	STORAGE	0.00	0.00	0	08:00	0.00		
P29	STORAGE	0.00	0.00	0	08:00	0.00		
P30	STORAGE	0.00	0.00	0	08:00	0.00		
P31	STORAGE	0.00	0.00	0	08:00	0.00		
P32	STORAGE	0.00	0.00	0	08:00	0.00		
P33	STORAGE	0.00	0.00	0	08:00	0.00		
P34	STORAGE	0.00	0.00	0	08:00	0.00		
P35	STORAGE	0.00	0.00	0	08:00	0.00		
P36	STORAGE	0.00	0.00	0	08:00	0.00		

****
Storage Node Summary
****

Storage Node ID	Maximum Ponded Volume 1000 ft³	Maximum Ponded Volume (%)	Time of Max Ponded Volume days hh:mm	Average Ponded Volume 1000 ft³	Average Ponded Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Time of Max. Exfiltration Rate hh:mm:ss	Total Exfiltrated Volume 1000 ft³
P02	0.027	77	0 08:50	0.006	16	0.00	0.39	8:50:00	0.224
P03	0.000	0	0 08:10	0.000	0	0.00	0.02	8:10:00	0.002
P04	0.000	0	0 08:04	0.000	0	0.00	0.02	8:00:00	0.001
P05	0.001	100	0 07:05	0.000	54	0.00	0.02	8:00:00	0.016
P06	0.001	100	0 07:35	0.000	46	0.00	0.02	6:40:00	0.015
P07	0.002	100	0 07:49	0.008	503	0.00	0.04	7:45:00	0.020
P08	0.003	100	0 05:34	0.002	73	0.01	0.08	8:00:00	0.093
P09	0.003	100	0 07:10	0.001	34	0.01	0.08	8:00:00	0.056
P10	0.004	100	0 07:48	0.000	11	0.01	0.10	8:00:00	0.027
P11	0.004	100	0 07:55	0.000	10	0.01	0.10	8:00:00	0.028
P14	0.003	100	0 07:43	0.001	37	0.01	0.07	9:20:00	0.053
P15	0.004	100	0 08:00	0.000	7	0.01	0.10	8:00:00	0.021
P16	0.004	100	0 08:05	0.000	7	0.01	0.10	8:05:00	0.022
P17	0.004	100	0 08:11	0.000	6	0.01	0.10	8:10:00	0.021
P18	0.003	71	0 08:22	0.000	4	0.00	0.08	8:20:00	0.017
P19	0.001	30	0 08:14	0.000	3	0.00	0.05	8:15:00	0.018
P20	0.001	23	0 08:14	0.000	2	0.00	0.04	8:10:00	0.015
P21	0.001	23	0 08:14	0.000	2	0.00	0.04	8:10:00	0.015
P22	0.001	30	0 08:14	0.000	3	0.00	0.05	8:15:00	0.018
P23	0.001	30	0 08:14	0.000	3	0.00	0.05	8:15:00	0.018
P24	0.001	30	0 08:14	0.000	3	0.00	0.05	8:15:00	0.018
P25	0.001	30	0 08:14	0.000	3	0.00	0.05	8:15:00	0.018
P26	0.001	30	0 08:14	0.000	3	0.00	0.05	8:15:00	0.018
P27	0.001	23	0 08:14	0.000	2	0.00			

```
0.04       8:10:00        0.015
  P28                      0.001          30       0  08:14      0.000         3          0.00
0.05       8:15:00        0.018
  P29                      0.001          30       0  08:14      0.000         3          0.00
0.05       8:15:00        0.018
  P30                      0.002          51       0  08:19      0.000         7          0.00
0.07       8:15:00        0.027
  P31                      0.002          63       0  08:18      0.000         9          0.00
0.07       8:15:00        0.027
  P32                      0.002          51       0  08:20      0.000         7          0.00
0.08       8:20:00        0.029
  P33                      0.002          38       0  08:18      0.000         5          0.00
0.07       8:15:00        0.027
  P34                      0.001          14       0  08:14      0.000         1          0.00
0.05       8:10:00        0.018
  P35                      0.001          12       0  08:15      0.000         1          0.00
0.08       8:15:00        0.011
  P36                      0.003          16       0  08:14      0.000         1          0.00
0.15       8:15:00        0.047
```

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Out-06	0.00	0.00	0.00
System	0.00	0.00	0.00

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time minutes	Reported Condition
OF-04	CONDUIT	0 00:00	0.00	1.00	0.00	0.63	0.00	0.00	0	Calculated
OF-07	CONDUIT	0 11:13	0.00	1.00	0.00	0.54	0.00	0.01	0	Calculated
OF-11	CONDUIT	0 08:01	2.58	1.00	0.01	0.65	0.01	0.08	0	Calculated
OF-36	CONDUIT	0 00:00	0.00	1.00	0.00	6.08	0.00	0.00	0	Calculated
CD-02	WEIR	0 00:00			0.00			0.00		
CD-03	WEIR	0 00:00			0.00			0.00		
CD-05	WEIR	0 08:00			0.00			0.00		

```
  CD-06                WEIR         0  08:00                          0.00
0.00
  CD-08                WEIR         0  08:00                          0.01
0.00
  CD-09                WEIR         0  08:00                          0.01
0.00
  CD-10                WEIR         0  08:00                          0.01
0.00
  CD-14                WEIR         0  08:01                          0.01
0.00
  CD-15                WEIR         0  08:01                          0.01
0.00
  CD-16                WEIR         0  08:06                          0.01
0.00
  CD-17                WEIR         0  08:12                          0.01
0.00
  CD-18                WEIR         0  00:00                          0.00
0.00
  CD-19                WEIR         0  00:00                          0.00
0.00
  CD-20                WEIR         0  00:00                          0.00
0.00
  CD-21                WEIR         0  00:00                          0.00
0.00
  CD-22                WEIR         0  00:00                          0.00
0.00
  CD-23                WEIR         0  00:00                          0.00
0.00
  CD-24                WEIR         0  00:00                          0.00
0.00
  CD-25                WEIR         0  00:00                          0.00
0.00
  CD-26                WEIR         0  00:00                          0.00
0.00
  CD-27                WEIR         0  00:00                          0.00
0.00
  CD-28                WEIR         0  00:00                          0.00
0.00
  CD-29                WEIR         0  00:00                          0.00
0.00
  CD-30                WEIR         0  00:00                          0.00
0.00
  CD-31                WEIR         0  00:00                          0.00
0.00
  CD-32                WEIR         0  00:00                          0.00
0.00
  CD-33                WEIR         0  00:00                          0.00
0.00
  CD-34                WEIR         0  00:00                          0.00
0.00
  CD-35                WEIR         0  00:00                          0.00
0.00


  ********************************
  Highest Flow Instability Indexes
  ********************************
  All links are stable.


  ************************
  Routing Time Step Summary
  ************************
  Minimum Time Step           :    30.00 sec
  Average Time Step           :    30.00 sec
  Maximum Time Step           :    30.00 sec
  Percent in Steady State     :     0.00
```

```
Average Iterations per Step :     1.00
```

```
Analysis began on:  Mon Jun 13 09:57:18 2022
Analysis ended on:  Mon Jun 13 09:57:20 2022
Total elapsed time: 00:00:02
```

WEST PLANTER PERFORMANCE APPROACH 2YR STORM

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.133 (Build 0)

****
Project Description
****
File Name ..... 21038.01 - Performance approach West Planters.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. EPA SWMM
Infiltration Method ..... Horton
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Horton, wetted area
Starting Date JUN-01-2022 00:00:00
Ending Date JUN-02-2022 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:05:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00
Routing Time Step ..... 30.00 sec

****
Element Count
****
Number of rain gages 1
Number of subbasins 33
Number of nodes 34
Number of links 33
Number of pollutants 0
Number of land uses 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Equiv. Width ft	Imperv. Area %	Average Slope %	Raingage
W02	0.08	2.00	100.00	12.0000	-
W03	0.00	1.25	100.00	12.0000	-
W04	0.00	1.00	100.00	12.0000	-
W05	0.01	2.00	100.00	12.0000	-
W06	0.01	2.00	100.00	12.0000	-
W07	0.01	3.00	100.00	12.0000	-
W08	0.04	10.50	100.00	12.0000	-
W09	0.02	3.50	100.00	12.0000	-
W10	0.01	1.25	100.00	12.0000	-
W11	0.01	1.25	100.00	12.0000	-
W14	0.02	4.60	100.00	12.0000	-
W15	0.01	1.25	100.00	12.0000	-
W16	0.01	1.25	100.00	12.0000	-
W17	0.01	1.25	100.00	12.0000	-
W18	0.01	1.25	100.00	12.0000	-
W19	0.01	1.25	100.00	12.0000	-
W20	0.01	1.25	100.00	12.0000	-
W21	0.01	1.25	100.00	12.0000	-
W22	0.01	1.25	100.00	12.0000	-
W23	0.01	1.25	100.00	12.0000	-
W24	0.01	1.25	100.00	12.0000	-
W25	0.01	1.25	100.00	12.0000	-

W26	0.01	1.25	100.00	12.0000	-
W27	0.01	1.25	100.00	12.0000	-
W28	0.01	1.25	100.00	12.0000	-
W29	0.01	1.25	100.00	12.0000	-
W30	0.01	1.25	100.00	12.0000	-
W31	0.01	1.25	100.00	12.0000	-
W32	0.01	1.25	100.00	12.0000	-
W33	0.01	1.25	100.00	12.0000	-
W34	0.01	1.25	100.00	12.0000	-
W35	0.01	1.25	100.00	12.0000	-
W36	0.02	4.00	100.00	12.0000	-

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Out-06	OUTFALL	58.50	59.33	0.00	
P02	STORAGE	99.86	100.74	177.50	
P03	STORAGE	98.88	99.75	101.60	
P04	STORAGE	98.18	98.74	92.40	
P05	STORAGE	93.81	94.58	96.20	
P06	STORAGE	92.72	93.47	91.30	
P07	STORAGE	91.65	92.01	113.87	
P08	STORAGE	82.64	83.13	68.70	
P09	STORAGE	81.70	82.19	33.70	
P10	STORAGE	80.86	81.35	33.90	
P11	STORAGE	80.02	80.51	40.90	
P14	STORAGE	77.49	77.99	19.40	
P15	STORAGE	76.66	77.15	33.90	
P16	STORAGE	75.81	76.31	33.90	
P17	STORAGE	74.97	75.47	33.90	
P18	STORAGE	74.13	74.63	33.90	
P19	STORAGE	73.29	73.79	33.90	
P20	STORAGE	72.45	72.95	33.90	
P21	STORAGE	71.61	72.11	33.90	
P22	STORAGE	70.77	71.27	33.90	
P23	STORAGE	69.93	70.43	33.90	
P24	STORAGE	69.09	69.59	33.90	
P25	STORAGE	68.25	68.75	33.90	
P26	STORAGE	67.41	67.91	33.90	
P27	STORAGE	66.57	67.07	33.90	
P28	STORAGE	65.73	66.23	33.90	
P29	STORAGE	64.89	65.39	33.90	
P30	STORAGE	64.05	64.55	33.90	
P31	STORAGE	63.09	63.59	38.80	
P32	STORAGE	62.36	62.86	34.50	
P33	STORAGE	61.65	62.14	37.70	
P34	STORAGE	60.96	61.48	43.00	
P35	STORAGE	60.41	60.97	48.60	
P36	STORAGE	59.94	60.55	70.70	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
OF-04	P04	P05	CONDUIT	29.5	14.7797	0.0150
OF-07	P07	P08	CONDUIT	81.0	10.7407	0.0150
OF-11	P11	P14	CONDUIT	18.3	15.6284	0.0150
OF-36	P36	Out-06	CONDUIT	20.0	10.2500	0.0150
CD-02	P02	P03	WEIR			

CD-03	P03	P04	WEIR
CD-05	P05	P06	WEIR
CD-06	P06	P07	WEIR
CD-08	P08	P09	WEIR
CD-09	P09	P10	WEIR
CD-10	P10	P11	WEIR
CD-14	P14	P15	WEIR
CD-15	P15	P16	WEIR
CD-16	P16	P17	WEIR
CD-17	P17	P18	WEIR
CD-18	P18	P19	WEIR
CD-19	P19	P20	WEIR
CD-20	P20	P21	WEIR
CD-21	P21	P22	WEIR
CD-22	P22	P23	WEIR
CD-23	P23	P24	WEIR
CD-24	P24	P25	WEIR
CD-25	P25	P26	WEIR
CD-26	P26	P27	WEIR
CD-27	P27	P28	WEIR
CD-28	P28	P29	WEIR
CD-29	P29	P30	WEIR
CD-30	P30	P31	WEIR
CD-31	P31	P32	WEIR
CD-32	P32	P33	WEIR
CD-33	P33	P34	WEIR
CD-34	P34	P35	WEIR
CD-35	P35	P36	WEIR

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
OF-04	CIRCULAR	0.33	0.33	1	0.09	0.08	0.63
OF-07	CIRCULAR	0.33	0.33	1	0.09	0.08	0.54
OF-11	CIRCULAR	0.33	0.33	1	0.09	0.08	0.65
OF-36	CIRCULAR	0.83	0.83	1	0.55	0.21	6.08

********** Runoff Quantity Continuity **********	Volume acre-ft	Depth inches
Total Precipitation	0.101	3.455
Evaporation Loss	0.000	0.000
Infiltration Loss	0.000	0.000
Surface Runoff	0.100	3.435
Final Surface Storage	0.001	0.023
Continuity Error (%)	-0.105	

********** Flow Routing Continuity	Volume acre-ft	Volume Mgallons

```
*************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.100         0.033
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.025         0.008
Surface Flooding .........         0.000         0.000
Evaporation Loss .........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.001         0.000
Continuity Error (%) .....        73.345


**************************************************
EPA SWMM Time of Concentration Computations Report
**************************************************

        Tc = (0.94 * (L^0.6) * (n^0.6)) / ((i^0.4) * (S^0.3))

        Where:

        Tc = Time of Concentration (min)
        L  = Flow Length (ft)
        n  = Manning's Roughness
        i  = Rainfall Intensity (in/hr)
        S  = Slope (ft/ft)

---------------
Subbasin W02
---------------

        Flow length (ft):                          1677.12
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                      22.17

---------------
Subbasin W03
---------------

        Flow length (ft):                            69.70
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       3.29

---------------
Subbasin W04
---------------

        Flow length (ft):                            69.70
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       3.29

---------------
Subbasin W05
```

```
---------------

        Flow length (ft):                          143.75
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.08

---------------
Subbasin W06
---------------

        Flow length (ft):                          124.15
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.65

---------------
Subbasin W07
---------------

        Flow length (ft):                          145.21
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.11

---------------
Subbasin W08
---------------

        Flow length (ft):                          165.53
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.53

---------------
Subbasin W09
---------------

        Flow length (ft):                          219.05
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.54

---------------
Subbasin W10
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
```

```
        Slope (%):                                12.00000
        Computed TOC (minutes):                       6.36

---------------
Subbasin W11
---------------

        Flow length (ft):                           271.82
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       7.44

---------------
Subbasin W14
---------------

        Flow length (ft):                           192.24
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       6.05

---------------
Subbasin W15
---------------

        Flow length (ft):                           174.25
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.70

---------------
Subbasin W16
---------------

        Flow length (ft):                           209.10
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       6.36

---------------
Subbasin W17
---------------

        Flow length (ft):                           209.10
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.14394
        Impervious Rainfall Intensity (in/hr):     0.14394
        Slope (%):                                12.00000
        Computed TOC (minutes):                       6.36

---------------
Subbasin W18
---------------
```

```
        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.70

---------------
Subbasin W19
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W20
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.70

---------------
Subbasin W21
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.70

---------------
Subbasin W22
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W23
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36
```

```
---------------
Subbasin W24
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W25
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W26
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W27
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.70

---------------
Subbasin W28
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W29
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
```

```
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
Subbasin W30
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      8.11

---------------
Subbasin W31
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      8.11

---------------
Subbasin W32
---------------

        Flow length (ft):                          348.49
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      8.64

---------------
Subbasin W33
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      8.11

---------------
Subbasin W34
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.14394
        Impervious Rainfall Intensity (in/hr):    0.14394
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.36

---------------
```

Subbasin W35

Flow length (ft):	313.64
Pervious Manning's Roughness:	0.10000
Impervious Manning's Roughness:	0.01100
Pervious Rainfall Intensity (in/hr):	0.14394
Impervious Rainfall Intensity (in/hr):	0.14394
Slope (%):	12.00000
Computed TOC (minutes):	8.11

Subbasin W36

Flow length (ft):	196.03
Pervious Manning's Roughness:	0.10000
Impervious Manning's Roughness:	0.01100
Pervious Rainfall Intensity (in/hr):	0.14394
Impervious Rainfall Intensity (in/hr):	0.14394
Slope (%):	12.00000
Computed TOC (minutes):	6.12

****
Subbasin Runoff Summary
****

Subbasin ID	Total Rainfall in	Total Runon in	Total Evap. in	Total Infil. in	Total Runoff in	Peak Runoff cfs	Runoff Coefficient	Time of Concentration days hh:mm:ss
W02	3.45	0.00	0.00	0.00	3.42	0.06	0.989	0 00:22:10
W03	3.45	0.00	0.00	0.00	3.44	0.00	0.997	0 00:03:17
W04	3.45	0.00	0.00	0.00	3.44	0.00	0.997	0 00:03:17
W05	3.45	0.00	0.00	0.00	3.44	0.01	0.997	0 00:05:04
W06	3.45	0.00	0.00	0.00	3.44	0.00	0.997	0 00:04:39
W07	3.45	0.00	0.00	0.00	3.44	0.01	0.997	0 00:05:06
W08	3.45	0.00	0.00	0.00	3.44	0.03	0.996	0 00:05:31
W09	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0 00:06:32
W10	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0 00:06:21
W11	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0 00:07:26
W14	3.45	0.00	0.00	0.00	3.44	0.02	0.996	0 00:06:02
W15	3.45	0.00	0.00	0.00	3.44	0.00	0.996	0 00:05:41
W16	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0 00:06:21
W17	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0

00:06:21								
W18	3.45	0.00	0.00	0.00	3.44	0.00	0.996	0
00:05:41								
W19	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W20	3.45	0.00	0.00	0.00	3.44	0.00	0.996	0
00:05:41								
W21	3.45	0.00	0.00	0.00	3.44	0.00	0.996	0
00:05:41								
W22	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W23	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W24	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W25	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W26	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W27	3.45	0.00	0.00	0.00	3.44	0.00	0.996	0
00:05:41								
W28	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W29	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W30	3.45	0.00	0.00	0.00	3.44	0.01	0.995	0
00:08:06								
W31	3.45	0.00	0.00	0.00	3.44	0.01	0.995	0
00:08:06								
W32	3.45	0.00	0.00	0.00	3.44	0.01	0.995	0
00:08:38								
W33	3.45	0.00	0.00	0.00	3.44	0.01	0.995	0
00:08:06								
W34	3.45	0.00	0.00	0.00	3.44	0.01	0.996	0
00:06:21								
W35	3.45	0.00	0.00	0.00	3.44	0.01	0.995	0
00:08:06								
W36	3.45	0.00	0.00	0.00	3.44	0.02	0.996	0
00:06:06								

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Out-06	0.01	0.48	58.98	0	08:17	0	0	0:00:00
P02	0.80	0.89	100.75	0	08:10	0.00	855	0:00:00
P03	0.33	0.88	99.76	0	08:10	0.00	195	0:00:00
P04	0.08	0.62	98.80	0	08:10	0.00	105	0:00:00
P05	0.74	0.78	94.59	0	08:10	0.00	1362	0:00:00
P06	0.72	0.76	93.48	0	08:02	0.00	1354	0:00:00
P07	0.44	0.53	92.18	0	08:03	0.00	1341	0:00:00
P08	0.49	0.52	83.16	0	08:03	0.00	1391	0:00:00
P09	0.48	0.52	82.22	0	08:03	0.00	1366	0:00:00
P10	0.47	0.53	81.39	0	08:03	0.00	1342	0:00:00
P11	0.48	0.58	80.60	0	08:03	0.00	1285	0:00:00
P14	0.49	0.56	78.05	0	07:56	0.02	1328	0:00:00
P15	0.46	0.57	77.23	0	08:17	0.00	1161	0:00:00

P16	0.43	0.61	76.42	0	08:17	0.00	1013	0:00:00
P17	0.40	0.65	75.62	0	08:17	0.00	869	0:00:00
P18	0.37	0.68	74.81	0	08:17	0.00	750	0:00:00
P19	0.36	0.71	74.00	0	08:17	0.00	648	0:00:00
P20	0.32	0.74	73.19	0	08:17	0.00	539	0:00:00
P21	0.31	0.77	72.38	0	08:17	0.00	466	0:00:00
P22	0.31	0.80	71.57	0	08:17	0.00	397	0:00:00
P23	0.31	0.82	70.75	0	08:17	0.00	375	0:00:00
P24	0.30	0.84	69.93	0	08:17	0.00	355	0:00:00
P25	0.30	0.87	69.12	0	07:51	0.00	336	0:00:00
P26	0.30	0.89	68.30	0	08:17	0.00	318	0:00:00
P27	0.27	0.92	67.49	0	08:17	0.00	298	0:00:00
P28	0.29	0.92	66.65	0	07:51	0.00	285	0:00:00
P29	0.29	0.91	65.80	0	08:17	0.00	258	0:00:00
P30	0.35	0.93	64.98	0	08:17	0.00	254	0:00:00
P31	0.39	0.91	64.00	0	08:17	0.00	252	0:00:00
P32	0.35	0.88	63.24	0	08:17	0.00	253	0:00:00
P33	0.30	0.84	62.49	0	08:17	0.00	237	0:00:00
P34	0.22	0.85	61.81	0	08:17	0.00	220	0:00:00
P35	0.19	0.89	61.30	0	08:17	0.01	188	0:00:00
P36	0.25	1.09	61.03	0	08:17	0.00	163	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Out-06	OUTFALL	0.00	3.77	0	08:17	0.00		
P02	STORAGE	0.06	0.06	0	08:10	0.00	0	07:41
P03	STORAGE	0.00	0.06	0	08:10	0.01	0	07:18
P04	STORAGE	0.00	0.05	0	08:10	0.03	0	07:48
P05	STORAGE	0.01	0.05	0	08:10	0.00	0	07:51
P06	STORAGE	0.00	0.05	0	08:02	0.01	0	07:50
P07	STORAGE	0.01	0.06	0	08:02	0.01	0	07:52
P08	STORAGE	0.03	0.09	0	08:03	0.00	0	07:53
P09	STORAGE	0.01	0.11	0	08:03	0.00	0	07:55
P10	STORAGE	0.01	0.11	0	08:02	0.00	0	07:54
P11	STORAGE	0.01	0.12	0	08:00	0.00	0	07:53
P14	STORAGE	0.02	0.13	0	08:01	0.07	0	07:50
P15	STORAGE	0.00	0.21	0	08:17	0.11	0	08:17
P16	STORAGE	0.01	0.38	0	08:17	0.19	0	08:17
P17	STORAGE	0.01	0.55	0	08:17	0.26	0	08:17
P18	STORAGE	0.00	0.72	0	08:17	0.31	0	08:17
P19	STORAGE	0.01	0.88	0	08:17	0.37	0	08:17
P20	STORAGE	0.00	1.05	0	08:17	0.41	0	08:17
P21	STORAGE	0.00	1.22	0	08:17	0.46	0	08:17
P22	STORAGE	0.01	1.39	0	08:17	0.50	0	08:17
P23	STORAGE	0.01	1.56	0	08:17	0.54	0	08:17
P24	STORAGE	0.01	1.74	0	08:17	0.58	0	08:17
P25	STORAGE	0.01	2.02	0	08:17	0.56	0	07:51
P26	STORAGE	0.01	2.12	0	07:51	0.53	0	08:17
P27	STORAGE	0.00	2.19	0	08:17	0.57	0	08:17
P28	STORAGE	0.01	2.28	0	08:17	0.56	0	07:51
P29	STORAGE	0.01	2.29	0	07:51	0.53	0	08:17
P30	STORAGE	0.01	2.27	0	07:51	0.57	0	08:17
P31	STORAGE	0.01	2.34	0	08:17	0.26	0	08:17
P32	STORAGE	0.01	2.25	0	08:17	0.51	0	08:17
P33	STORAGE	0.01	2.27	0	08:17	0.57	0	08:17
P34	STORAGE	0.01	2.40	0	08:17	0.68	0	08:17
P35	STORAGE	0.01	2.61	0	08:17	0.85	0	08:17
P36	STORAGE	0.02	2.90	0	08:17	0.68	0	08:17

****
Storage Node Summary
****

Storage Node ID	Maximum Ponded Volume 1000 ft³	Maximum Ponded Volume (%)	Time of Max Ponded days hh:mm	Average Ponded Volume 1000 ft³	Average Ponded Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Time of Max. Exfiltration Rate hh:mm:ss	Total Exfiltrated Volume 1000 ft³
P02	0.036	100	0 04:27	0.031	88	0.05	0.45	8:10:00	0.587
P03	0.029	100	0 07:18	0.009	30	0.05	0.37	8:10:00	0.208
P04	0.016	100	0 07:48	0.002	13	0.04	0.36	8:10:00	0.076
P05	0.001	100	0 01:19	0.001	108	0.05	0.02	8:10:00	0.023
P06	0.001	100	0 01:27	0.001	109	0.05	0.02	0:55:00	0.021
P07	0.002	100	0 01:40	0.012	782	0.06	0.04	1:30:00	0.018
P08	0.003	100	0 00:50	0.003	111	0.09	0.09	8:00:00	0.115
P09	0.003	100	0 01:15	0.003	103	0.11	0.09	8:00:00	0.118
P10	0.004	100	0 01:39	0.004	99	0.11	0.10	8:00:00	0.133
P11	0.004	100	0 02:06	0.004	114	0.11	0.12	8:00:00	0.137
P14	0.003	100	0 01:29	0.003	100	0.21	0.07	1:25:00	0.095
P15	0.004	100	0 02:26	0.004	94	0.38	0.11	8:15:00	0.128
P16	0.004	100	0 03:03	0.003	84	0.55	0.12	8:15:00	0.121
P17	0.004	100	0 03:49	0.003	75	0.71	0.12	7:50:00	0.111
P18	0.004	100	0 04:09	0.003	66	0.88	0.12	8:15:00	0.100
P19	0.004	100	0 04:29	0.002	61	1.05	0.12	8:15:00	0.097
P20	0.004	100	0 04:50	0.002	53	1.22	0.12	7:50:00	0.086
P21	0.004	100	0 05:08	0.002	48	1.38	0.12	7:50:00	0.081
P22	0.004	100	0 05:21	0.002	47	1.55	0.12	7:50:00	0.082
P23	0.004	100	0 05:31	0.002	45	1.73	0.12	7:50:00	0.079
P24	0.004	100	0 05:41	0.002	44	2.01	0.12	7:50:00	0.078
P25	0.004	100	0 05:51	0.002	43	2.12	0.12	8:15:00	0.078
P26	0.004	100	0 06:00	0.002	42	2.18	0.12	7:50:00	0.077
P27	0.004	100	0 06:09	0.001	38	2.28			

```
0.12       8:15:00        0.069
  P28                      0.004         100       0  06:16      0.002        41          2.29
0.12       7:50:00        0.075
  P29                      0.004         100       0  06:20      0.002        40          2.27
0.12       7:50:00        0.075
  P30                      0.004         100       0  06:22      0.002        54          2.33
0.12       7:50:00        0.095
  P31                      0.003         100       0  06:23      0.002        61          2.25
0.13       8:15:00        0.093
  P32                      0.004         100       0  06:24      0.002        55          2.27
0.13       7:50:00        0.104
  P33                      0.005         100       0  06:28      0.002        45          2.39
0.15       8:15:00        0.101
  P34                      0.007         100       0  06:36      0.002        28          2.60
0.17       8:15:00        0.088
  P35                      0.011         100       0  06:57      0.003        26          2.89
0.22       8:15:00        0.126
  P36                      0.020         100       0  07:19      0.006        29          3.86
0.38       8:10:00        0.229
```

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Out-06	10.59	0.12	3.77
System	10.59	0.12	3.77

****
Link Flow Summary
****

Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time minutes	Reported Condition
OF-04	CONDUIT	0 08:10	4.19	1.00	0.04	0.63	0.07	0.18	0	Calculated
OF-07	CONDUIT	0 08:03	4.12	1.00	0.06	0.54	0.11	0.23	0	Calculated
OF-11	CONDUIT	0 08:03	5.60	1.00	0.11	0.65	0.17	0.28	0	Calculated
OF-36	CONDUIT	0 08:17	11.63	1.00	3.77	6.08	0.62	0.57	0	Calculated
CD-02	WEIR	0 08:10			0.05			0.00		
CD-03	WEIR	0 08:10			0.05			0.00		
CD-05	WEIR	0 08:10			0.05			0.00		

```
  CD-06                WEIR         0  08:02                          0.05
0.00
  CD-08                WEIR         0  08:03                          0.09
0.00
  CD-09                WEIR         0  08:03                          0.11
0.00
  CD-10                WEIR         0  08:03                          0.11
0.00
  CD-14                WEIR         0  08:17                          0.21
0.00
  CD-15                WEIR         0  08:17                          0.38
0.00
  CD-16                WEIR         0  08:17                          0.55
0.00
  CD-17                WEIR         0  08:17                          0.71
0.00
  CD-18                WEIR         0  08:17                          0.88
0.00
  CD-19                WEIR         0  08:17                          1.05
0.00
  CD-20                WEIR         0  08:17                          1.22
0.00
  CD-21                WEIR         0  08:17                          1.38
0.00
  CD-22                WEIR         0  08:17                          1.55
0.00
  CD-23                WEIR         0  08:17                          1.73
0.00
  CD-24                WEIR         0  08:17                          2.01
0.00
  CD-25                WEIR         0  07:51                          2.12
0.00
  CD-26                WEIR         0  08:17                          2.18
0.00
  CD-27                WEIR         0  08:17                          2.28
0.00
  CD-28                WEIR         0  07:51                          2.29
0.00
  CD-29                WEIR         0  08:17                          2.27
0.00
  CD-30                WEIR         0  08:17                          2.33
0.00
  CD-31                WEIR         0  08:17                          2.25
0.00
  CD-32                WEIR         0  08:17                          2.27
0.00
  CD-33                WEIR         0  08:17                          2.39
0.00
  CD-34                WEIR         0  08:17                          2.60
0.00
  CD-35                WEIR         0  08:17                          2.89
0.00


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link CD-32 (6)
  Link CD-33 (5)
  Link CD-14 (5)
  Link CD-30 (5)
  Link CD-28 (5)


  *************************
  Routing Time Step Summary
  *************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.00
```

```
Analysis began on:  Mon Jun 13 09:51:19 2022
Analysis ended on:  Mon Jun 13 09:51:21 2022
Total elapsed time: 00:00:02
```

WEST PLANTER PERFORMANCE APPROACH 25YR STORM

Autodesk® Storm and Sanitary Analysis 2016 - Version 13.4.133 (Build 0)

****
Project Description
****
File Name ..... 21038.01 - Performance approach West Planters.SPF

****
Analysis Options
****
Flow Units ..... cfs
Subbasin Hydrograph Method. EPA SWMM
Infiltration Method ..... Horton
Link Routing Method ..... Kinematic Wave
Storage Node Exfiltration.. Horton, wetted area
Starting Date JUN-01-2022 00:00:00
Ending Date JUN-02-2022 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:05:00
Wet Time Step 00:05:00
Dry Time Step 01:00:00
Routing Time Step ..... 30.00 sec

****
Element Count
****
Number of rain gages 1
Number of subbasins 33
Number of nodes 34
Number of links 33
Number of pollutants 0
Number of land uses 0

****
Subbasin Summary
****

Subbasin ID	Total Area acres	Equiv. Width ft	Imperv. Area %	Average Slope %	Raingage
W02	0.08	2.00	100.00	12.0000	-
W03	0.00	1.25	100.00	12.0000	-
W04	0.00	1.00	100.00	12.0000	-
W05	0.01	2.00	100.00	12.0000	-
W06	0.01	2.00	100.00	12.0000	-
W07	0.01	3.00	100.00	12.0000	-
W08	0.04	10.50	100.00	12.0000	-
W09	0.02	3.50	100.00	12.0000	-
W10	0.01	1.25	100.00	12.0000	-
W11	0.01	1.25	100.00	12.0000	-
W14	0.02	4.60	100.00	12.0000	-
W15	0.01	1.25	100.00	12.0000	-
W16	0.01	1.25	100.00	12.0000	-
W17	0.01	1.25	100.00	12.0000	-
W18	0.01	1.25	100.00	12.0000	-
W19	0.01	1.25	100.00	12.0000	-
W20	0.01	1.25	100.00	12.0000	-
W21	0.01	1.25	100.00	12.0000	-
W22	0.01	1.25	100.00	12.0000	-
W23	0.01	1.25	100.00	12.0000	-
W24	0.01	1.25	100.00	12.0000	-
W25	0.01	1.25	100.00	12.0000	-

W26	0.01	1.25	100.00	12.0000	-
W27	0.01	1.25	100.00	12.0000	-
W28	0.01	1.25	100.00	12.0000	-
W29	0.01	1.25	100.00	12.0000	-
W30	0.01	1.25	100.00	12.0000	-
W31	0.01	1.25	100.00	12.0000	-
W32	0.01	1.25	100.00	12.0000	-
W33	0.01	1.25	100.00	12.0000	-
W34	0.01	1.25	100.00	12.0000	-
W35	0.01	1.25	100.00	12.0000	-
W36	0.02	4.00	100.00	12.0000	-

****
Node Summary
****

Node ID	Element Type	Invert Elevation ft	Maximum Elev. ft	Ponded Area ft²	External Inflow
Out-06	OUTFALL	58.50	59.33	0.00	
P02	STORAGE	99.86	100.74	177.50	
P03	STORAGE	98.88	99.75	101.60	
P04	STORAGE	98.18	98.74	92.40	
P05	STORAGE	93.81	94.58	96.20	
P06	STORAGE	92.72	93.47	91.30	
P07	STORAGE	91.65	92.01	113.87	
P08	STORAGE	82.64	83.13	68.70	
P09	STORAGE	81.70	82.19	33.70	
P10	STORAGE	80.86	81.35	33.90	
P11	STORAGE	80.02	80.51	40.90	
P14	STORAGE	77.49	77.99	19.40	
P15	STORAGE	76.66	77.15	33.90	
P16	STORAGE	75.81	76.31	33.90	
P17	STORAGE	74.97	75.47	33.90	
P18	STORAGE	74.13	74.63	33.90	
P19	STORAGE	73.29	73.79	33.90	
P20	STORAGE	72.45	72.95	33.90	
P21	STORAGE	71.61	72.11	33.90	
P22	STORAGE	70.77	71.27	33.90	
P23	STORAGE	69.93	70.43	33.90	
P24	STORAGE	69.09	69.59	33.90	
P25	STORAGE	68.25	68.75	33.90	
P26	STORAGE	67.41	67.91	33.90	
P27	STORAGE	66.57	67.07	33.90	
P28	STORAGE	65.73	66.23	33.90	
P29	STORAGE	64.89	65.39	33.90	
P30	STORAGE	64.05	64.55	33.90	
P31	STORAGE	63.09	63.59	38.80	
P32	STORAGE	62.36	62.86	34.50	
P33	STORAGE	61.65	62.14	37.70	
P34	STORAGE	60.96	61.48	43.00	
P35	STORAGE	60.41	60.97	48.60	
P36	STORAGE	59.94	60.55	70.70	

****
Link Summary
****

Link ID	From Node	To Node	Element Type	Length ft	Slope %	Manning's Roughness
OF-04	P04	P05	CONDUIT	29.5	14.7797	0.0150
OF-07	P07	P08	CONDUIT	81.0	10.7407	0.0150
OF-11	P11	P14	CONDUIT	18.3	15.6284	0.0150
OF-36	P36	Out-06	CONDUIT	20.0	10.2500	0.0150
CD-02	P02	P03	WEIR			

CD-03	P03	P04	WEIR
CD-05	P05	P06	WEIR
CD-06	P06	P07	WEIR
CD-08	P08	P09	WEIR
CD-09	P09	P10	WEIR
CD-10	P10	P11	WEIR
CD-14	P14	P15	WEIR
CD-15	P15	P16	WEIR
CD-16	P16	P17	WEIR
CD-17	P17	P18	WEIR
CD-18	P18	P19	WEIR
CD-19	P19	P20	WEIR
CD-20	P20	P21	WEIR
CD-21	P21	P22	WEIR
CD-22	P22	P23	WEIR
CD-23	P23	P24	WEIR
CD-24	P24	P25	WEIR
CD-25	P25	P26	WEIR
CD-26	P26	P27	WEIR
CD-27	P27	P28	WEIR
CD-28	P28	P29	WEIR
CD-29	P29	P30	WEIR
CD-30	P30	P31	WEIR
CD-31	P31	P32	WEIR
CD-32	P32	P33	WEIR
CD-33	P33	P34	WEIR
CD-34	P34	P35	WEIR
CD-35	P35	P36	WEIR

****
Cross Section Summary
****

Link ID	Shape	Depth/ Diameter ft	Width ft	No. of Barrels	Cross Sectional Area ft²	Full Flow Hydraulic Radius ft	Design Flow Capacity cfs
OF-04	CIRCULAR	0.33	0.33	1	0.09	0.08	0.63
OF-07	CIRCULAR	0.33	0.33	1	0.09	0.08	0.54
OF-11	CIRCULAR	0.33	0.33	1	0.09	0.08	0.65
OF-36	CIRCULAR	0.83	0.83	1	0.55	0.21	6.08

********** Runoff Quantity Continuity **********	Volume acre-ft	Depth inches
Total Precipitation	0.147	5.052
Evaporation Loss	0.000	0.000
Infiltration Loss	0.000	0.000
Surface Runoff	0.147	5.031
Final Surface Storage	0.001	0.027
Continuity Error (%)	-0.102	

********** Flow Routing Continuity	Volume acre-ft	Volume Mgallons

************************	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.146	0.048
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.062	0.020
Surface Flooding	0.000	0.000
Evaporation Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.002	0.001
Continuity Error (%)	56.137	

```
************************************************
EPA SWMM Time of Concentration Computations Report
************************************************

        Tc = (0.94 * (L^0.6) * (n^0.6)) / ((i^0.4) * (S^0.3))

        Where:

        Tc = Time of Concentration (min)
        L  = Flow Length (ft)
        n  = Manning's Roughness
        i  = Rainfall Intensity (in/hr)
        S  = Slope (ft/ft)

---------------
Subbasin W02
---------------

        Flow length (ft):                          1677.12
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.21050
        Impervious Rainfall Intensity (in/hr):     0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                      19.05

---------------
Subbasin W03
---------------

        Flow length (ft):                            69.70
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.21050
        Impervious Rainfall Intensity (in/hr):     0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       2.82

---------------
Subbasin W04
---------------

        Flow length (ft):                            69.70
        Pervious Manning's Roughness:              0.10000
        Impervious Manning's Roughness:            0.01100
        Pervious Rainfall Intensity (in/hr):       0.21050
        Impervious Rainfall Intensity (in/hr):     0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       2.82

---------------
Subbasin W05
```

```
---------------

        Flow length (ft):                          143.75
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.36

---------------
Subbasin W06
---------------

        Flow length (ft):                          124.15
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      3.99

---------------
Subbasin W07
---------------

        Flow length (ft):                          145.21
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.39

---------------
Subbasin W08
---------------

        Flow length (ft):                          165.53
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.75

---------------
Subbasin W09
---------------

        Flow length (ft):                          219.05
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.62

---------------
Subbasin W10
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
```

```
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.46

---------------
Subbasin W11
---------------

        Flow length (ft):                          271.82
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       6.39

---------------
Subbasin W14
---------------

        Flow length (ft):                          192.24
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.19

---------------
Subbasin W15
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       4.89

---------------
Subbasin W16
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.46

---------------
Subbasin W17
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                                12.00000
        Computed TOC (minutes):                       5.46

---------------
Subbasin W18
---------------
```

```
        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.89

---------------
Subbasin W19
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W20
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.89

---------------
Subbasin W21
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.89

---------------
Subbasin W22
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W23
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46
```

```
---------------
Subbasin W24
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W25
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W26
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W27
---------------

        Flow length (ft):                          174.25
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      4.89

---------------
Subbasin W28
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W29
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
```

```
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
Subbasin W30
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.96

---------------
Subbasin W31
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.96

---------------
Subbasin W32
---------------

        Flow length (ft):                          348.49
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      7.42

---------------
Subbasin W33
---------------

        Flow length (ft):                          313.64
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      6.96

---------------
Subbasin W34
---------------

        Flow length (ft):                          209.10
        Pervious Manning's Roughness:             0.10000
        Impervious Manning's Roughness:           0.01100
        Pervious Rainfall Intensity (in/hr):      0.21050
        Impervious Rainfall Intensity (in/hr):    0.21050
        Slope (%):                               12.00000
        Computed TOC (minutes):                      5.46

---------------
```

Subbasin W35

Flow length (ft):	313.64
Pervious Manning's Roughness:	0.10000
Impervious Manning's Roughness:	0.01100
Pervious Rainfall Intensity (in/hr):	0.21050
Impervious Rainfall Intensity (in/hr):	0.21050
Slope (%):	12.00000
Computed TOC (minutes):	6.96

Subbasin W36

Flow length (ft):	196.03
Pervious Manning's Roughness:	0.10000
Impervious Manning's Roughness:	0.01100
Pervious Rainfall Intensity (in/hr):	0.21050
Impervious Rainfall Intensity (in/hr):	0.21050
Slope (%):	12.00000
Computed TOC (minutes):	5.25

****
Subbasin Runoff Summary
****

Subbasin ID	Total Rainfall in	Total Runon in	Total Evap. in	Total Infil. in	Total Runoff in	Peak Runoff cfs	Runoff Coefficient	Time of Concentration days hh:mm:ss
W02	5.05	0.00	0.00	0.00	5.01	0.09	0.991	0 00:19:02
W03	5.05	0.00	0.00	0.00	5.04	0.00	0.998	0 00:02:49
W04	5.05	0.00	0.00	0.00	5.04	0.00	0.998	0 00:02:49
W05	5.05	0.00	0.00	0.00	5.04	0.01	0.998	0 00:04:21
W06	5.05	0.00	0.00	0.00	5.04	0.01	0.998	0 00:03:59
W07	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0 00:04:23
W08	5.05	0.00	0.00	0.00	5.04	0.05	0.997	0 00:04:44
W09	5.05	0.00	0.00	0.00	5.04	0.02	0.997	0 00:05:36
W10	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0 00:05:27
W11	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0 00:06:23
W14	5.05	0.00	0.00	0.00	5.04	0.02	0.997	0 00:05:11
W15	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0 00:04:53
W16	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0 00:05:27
W17	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0

00:05:27								
W18	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:04:53								
W19	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W20	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:04:53								
W21	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:04:53								
W22	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W23	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W24	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W25	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W26	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W27	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:04:53								
W28	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W29	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W30	5.05	0.00	0.00	0.00	5.03	0.01	0.996	0
00:06:57								
W31	5.05	0.00	0.00	0.00	5.03	0.01	0.996	0
00:06:57								
W32	5.05	0.00	0.00	0.00	5.03	0.01	0.996	0
00:07:25								
W33	5.05	0.00	0.00	0.00	5.03	0.01	0.996	0
00:06:57								
W34	5.05	0.00	0.00	0.00	5.04	0.01	0.997	0
00:05:27								
W35	5.05	0.00	0.00	0.00	5.03	0.01	0.996	0
00:06:57								
W36	5.05	0.00	0.00	0.00	5.04	0.02	0.997	0
00:05:15								

****
Node Depth Summary
****

Node ID	Average Depth Attained ft	Maximum Depth Attained ft	Maximum HGL Attained ft	Time of Max Occurrence days	Time of Max Occurrence hh:mm	Total Flooded Volume acre-in	Total Time Flooded minutes	Retention Time hh:mm:ss
Out-06	0.02	0.51	59.01	0	07:54	0	0	0:00:00
P02	0.84	0.90	100.76	0	08:00	0.00	1286	0:00:00
P03	0.63	0.89	99.77	0	08:01	0.00	548	0:00:00
P04	0.18	0.64	98.82	0	08:01	0.00	285	0:00:00
P05	0.75	0.79	94.60	0	08:01	0.00	1388	0:00:00
P06	0.73	0.77	93.49	0	08:01	0.00	1381	0:00:00
P07	0.45	0.55	92.20	0	08:02	0.00	1370	0:00:00
P08	0.49	0.53	83.17	0	08:02	0.00	1407	0:00:00
P09	0.49	0.54	82.24	0	08:02	0.00	1394	0:00:00
P10	0.48	0.54	81.40	0	08:01	0.00	1368	0:00:00
P11	0.50	0.61	80.63	0	08:00	0.00	1356	0:00:00
P14	0.50	0.61	78.10	0	07:52	0.03	1334	0:00:00
P15	0.48	0.58	77.24	0	07:50	0.00	1350	0:00:00

P16	0.49	0.63	76.44	0	07:50	0.01	1339	0:00:00
P17	0.48	0.66	75.63	0	07:49	0.01	1329	0:00:00
P18	0.48	0.70	74.83	0	07:49	0.00	1253	0:00:00
P19	0.47	0.73	74.02	0	07:49	0.00	1186	0:00:00
P20	0.45	0.76	73.21	0	07:49	0.00	1116	0:00:00
P21	0.44	0.78	72.39	0	07:49	0.00	1053	0:00:00
P22	0.44	0.81	71.58	0	07:49	0.00	998	0:00:00
P23	0.43	0.85	70.78	0	07:49	0.00	947	0:00:00
P24	0.42	0.96	70.05	0	07:52	0.01	894	0:00:00
P25	0.42	0.94	69.19	0	07:51	0.00	846	0:00:00
P26	0.41	0.91	68.32	0	07:49	0.00	791	0:00:00
P27	0.39	0.90	67.47	0	07:49	0.00	744	0:00:00
P28	0.40	0.90	66.63	0	07:49	0.00	709	0:00:00
P29	0.39	0.92	65.81	0	07:49	0.00	670	0:00:00
P30	0.44	0.91	64.96	0	07:45	0.01	660	0:00:00
P31	0.46	0.91	64.00	0	07:50	0.00	660	0:00:00
P32	0.44	0.89	63.25	0	08:30	0.01	654	0:00:00
P33	0.40	1.02	62.67	0	07:53	0.01	626	0:00:00
P34	0.34	0.87	61.83	0	08:30	0.01	545	0:00:00
P35	0.33	0.94	61.35	0	07:54	0.05	480	0:00:00
P36	0.39	1.12	61.06	0	07:54	0.00	443	0:00:00

****
Node Flow Summary
****

Node ID	Element Type	Maximum Lateral Inflow cfs	Peak Inflow cfs	Time of Peak Inflow Occurrence days	Time of Peak Inflow Occurrence hh:mm	Maximum Flooding Overflow cfs	Time of Peak Flooding Occurrence days	Time of Peak Flooding Occurrence hh:mm
Out-06	OUTFALL	0.00	4.18	0	07:54	0.00		
P02	STORAGE	0.09	0.09	0	08:00	0.01	0	02:36
P03	STORAGE	0.00	0.09	0	08:00	0.00	0	05:25
P04	STORAGE	0.00	0.08	0	08:01	0.01	0	07:43
P05	STORAGE	0.01	0.08	0	08:01	0.00	0	07:43
P06	STORAGE	0.01	0.09	0	08:01	0.00	0	07:43
P07	STORAGE	0.01	0.10	0	08:01	0.01	0	07:45
P08	STORAGE	0.05	0.15	0	08:02	0.00	0	07:47
P09	STORAGE	0.02	0.17	0	08:02	0.00	0	07:47
P10	STORAGE	0.01	0.18	0	08:02	0.00	0	07:42
P11	STORAGE	0.01	0.18	0	08:01	0.01	0	07:43
P14	STORAGE	0.02	0.21	0	08:00	0.09	0	07:50
P15	STORAGE	0.01	0.31	0	07:52	0.13	0	07:49
P16	STORAGE	0.01	0.44	0	07:50	0.22	0	07:50
P17	STORAGE	0.01	0.61	0	07:49	0.28	0	07:50
P18	STORAGE	0.01	0.78	0	07:49	0.34	0	07:50
P19	STORAGE	0.01	0.96	0	07:49	0.38	0	07:50
P20	STORAGE	0.01	1.13	0	07:49	0.44	0	07:50
P21	STORAGE	0.01	1.32	0	08:29	0.51	0	07:50
P22	STORAGE	0.01	1.55	0	07:49	0.50	0	07:49
P23	STORAGE	0.01	1.82	0	07:49	0.55	0	07:49
P24	STORAGE	0.01	2.04	0	07:49	0.53	0	07:52
P25	STORAGE	0.01	2.11	0	07:49	0.74	0	07:51
P26	STORAGE	0.01	2.29	0	07:51	0.56	0	08:29
P27	STORAGE	0.01	2.25	0	07:49	0.54	0	07:44
P28	STORAGE	0.01	2.23	0	07:49	0.52	0	07:53
P29	STORAGE	0.01	2.23	0	07:49	0.58	0	07:53
P30	STORAGE	0.01	2.30	0	07:49	0.53	0	07:44
P31	STORAGE	0.01	2.27	0	07:45	0.49	0	08:29
P32	STORAGE	0.01	2.27	0	07:50	0.54	0	08:29
P33	STORAGE	0.01	2.28	0	08:30	0.66	0	07:53
P34	STORAGE	0.01	2.46	0	08:30	0.84	0	07:53
P35	STORAGE	0.01	2.71	0	08:30	1.04	0	07:53
P36	STORAGE	0.02	3.18	0	07:54	0.75	0	07:54

****
Storage Node Summary
****

Storage Node ID	Maximum Ponded Volume 1000 ft³	Maximum Ponded Volume (%)	Time of Max Ponded Volume days hh:mm	Average Ponded Volume 1000 ft³	Average Ponded Volume (%)	Maximum Storage Node Outflow cfs	Maximum Exfiltration Rate cfm	Time of Max. Exfiltration Rate hh:mm:ss	Total Exfiltrated Volume 1000 ft³
P02	0.036	100	0 02:35	0.034	95	0.08	0.46	8:00:00	0.614
P03	0.029	100	0 05:25	0.018	64	0.08	0.38	8:00:00	0.386
P04	0.016	100	0 06:30	0.005	31	0.08	0.36	8:00:00	0.161
P05	0.001	100	0 00:53	0.001	117	0.08	0.02	8:00:00	0.024
P06	0.001	100	0 01:00	0.001	119	0.09	0.02	0:30:00	0.021
P07	0.002	100	0 01:11	0.013	848	0.10	0.04	1:00:00	0.018
P08	0.003	100	0 00:34	0.003	117	0.15	0.09	8:00:00	0.116
P09	0.003	100	0 00:47	0.003	108	0.17	0.09	8:00:00	0.120
P10	0.004	100	0 01:13	0.004	104	0.17	0.11	8:00:00	0.137
P11	0.004	100	0 01:25	0.005	128	0.18	0.12	7:50:00	0.142
P14	0.003	100	0 01:02	0.003	104	0.31	0.07	9:05:00	0.095
P15	0.004	100	0 01:31	0.004	103	0.44	0.12	7:50:00	0.135
P16	0.004	100	0 01:40	0.004	102	0.60	0.12	8:25:00	0.137
P17	0.004	100	0 01:50	0.004	101	0.77	0.12	7:45:00	0.137
P18	0.004	100	0 02:04	0.004	99	0.95	0.12	7:50:00	0.135
P19	0.004	100	0 02:17	0.004	96	1.13	0.12	7:50:00	0.133
P20	0.004	100	0 02:30	0.004	92	1.31	0.12	8:30:00	0.128
P21	0.004	100	0 02:39	0.003	88	1.55	0.12	7:45:00	0.123
P22	0.004	100	0 02:48	0.003	86	1.81	0.12	7:50:00	0.122
P23	0.004	100	0 02:59	0.003	83	2.03	0.12	8:30:00	0.120
P24	0.004	100	0 03:11	0.003	81	2.10	0.12	7:45:00	0.117
P25	0.004	100	0 03:28	0.003	79	2.28	0.12	7:55:00	0.115
P26	0.004	100	0 03:45	0.003	76	2.25	0.12	7:55:00	0.112
P27	0.004	100	0 03:57	0.003	71	2.23			

```
0.12       8:30:00        0.105
  P28                      0.004         100       0  04:06      0.003        72          2.22
0.12       7:55:00        0.109
  P29                      0.004         100       0  04:14      0.003        70          2.29
0.12       7:55:00        0.107
  P30                      0.004         100       0  04:17      0.003        83          2.26
0.12       7:55:00        0.122
  P31                      0.003         100       0  04:18      0.003        90          2.26
0.13       7:50:00        0.119
  P32                      0.004         100       0  04:20      0.004        84          2.27
0.14       7:50:00        0.133
  P33                      0.005         100       0  04:26      0.004        74          2.46
0.15       8:30:00        0.137
  P34                      0.007         100       0  04:43      0.004        56          2.70
0.18       7:55:00        0.135
  P35                      0.011         100       0  05:05      0.006        51          3.16
0.22       8:05:00        0.186
  P36                      0.020         100       0  05:26      0.011        55          4.24
0.38       8:20:00        0.323
```

****
Outfall Loading Summary
****

Outfall Node ID	Flow Frequency (%)	Average Flow cfs	Peak Inflow cfs
Out-06	27.73	0.11	4.18
System	27.73	0.11	4.18

****
Link Flow Summary
****

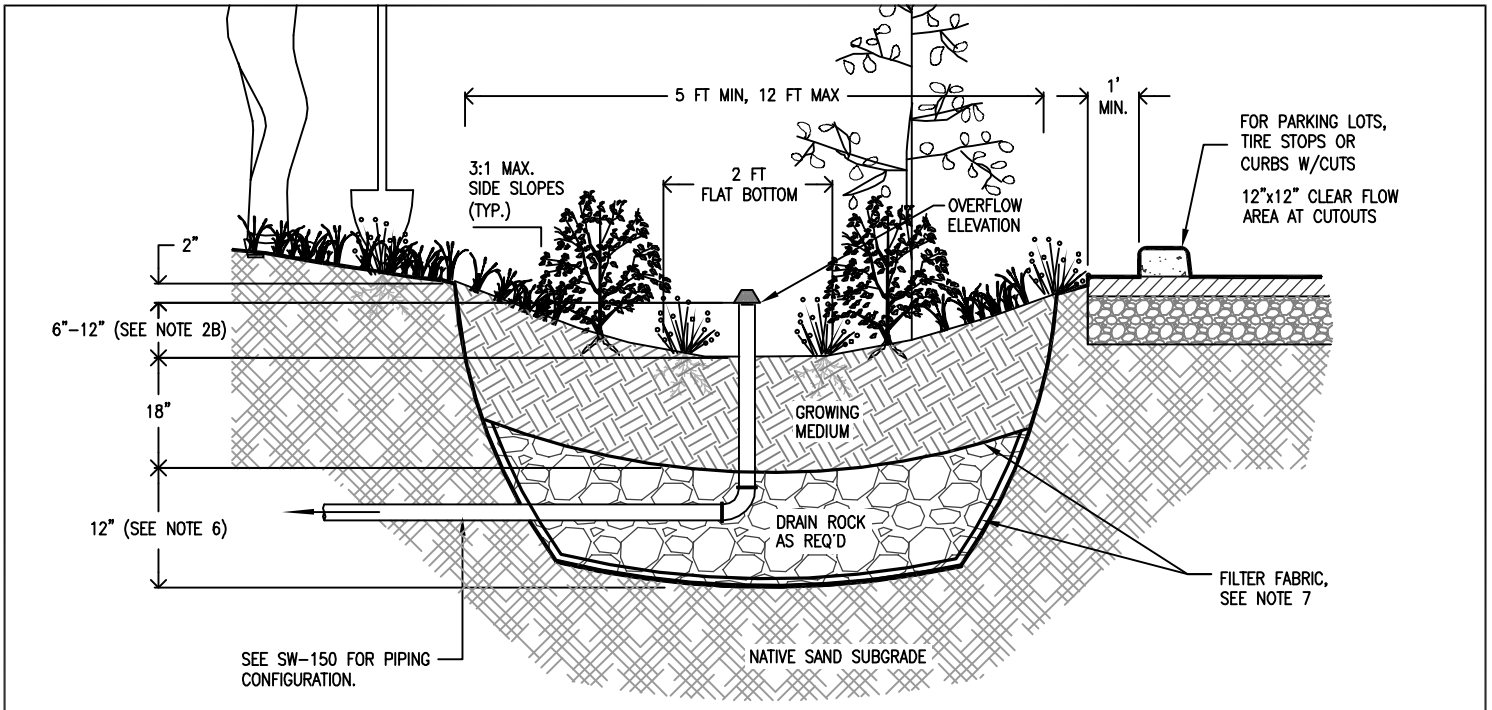
Link ID	Element Type	Time of Peak Flow Occurrence days hh:mm	Maximum Velocity Attained ft/sec	Length Factor	Peak Flow during Analysis cfs	Design Flow Capacity cfs	Ratio of Maximum /Design Flow	Ratio of Maximum Flow Depth	Total Time minutes	Reported Condition
OF-04	CONDUIT	0 08:01	4.88	1.00	0.08	0.63	0.12	0.23	0	Calculated
OF-07	CONDUIT	0 08:02	4.75	1.00	0.10	0.54	0.19	0.29	0	Calculated
OF-11	CONDUIT	0 08:00	6.39	1.00	0.18	0.65	0.28	0.36	0	Calculated
OF-36	CONDUIT	0 07:54	11.93	1.00	4.18	6.08	0.69	0.61	0	Calculated
CD-02	WEIR	0 08:00			0.08			0.00		
CD-03	WEIR	0 08:01			0.08			0.00		
CD-05	WEIR	0 08:01			0.08			0.00		

```
  CD-06                WEIR         0  08:01                          0.09
0.00
  CD-08                WEIR         0  08:02                          0.15
0.00
  CD-09                WEIR         0  08:02                          0.17
0.00
  CD-10                WEIR         0  08:01                          0.17
0.00
  CD-14                WEIR         0  07:52                          0.31
0.00
  CD-15                WEIR         0  07:50                          0.44
0.00
  CD-16                WEIR         0  07:49                          0.60
0.00
  CD-17                WEIR         0  07:49                          0.77
0.00
  CD-18                WEIR         0  07:49                          0.95
0.00
  CD-19                WEIR         0  07:49                          1.13
0.00
  CD-20                WEIR         0  08:29                          1.31
0.00
  CD-21                WEIR         0  07:49                          1.55
0.00
  CD-22                WEIR         0  07:49                          1.81
0.00
  CD-23                WEIR         0  07:49                          2.03
0.00
  CD-24                WEIR         0  07:49                          2.10
0.00
  CD-25                WEIR         0  07:51                          2.28
0.00
  CD-26                WEIR         0  07:49                          2.25
0.00
  CD-27                WEIR         0  07:49                          2.23
0.00
  CD-28                WEIR         0  07:49                          2.22
0.00
  CD-29                WEIR         0  07:49                          2.29
0.00
  CD-30                WEIR         0  07:45                          2.26
0.00
  CD-31                WEIR         0  07:50                          2.26
0.00
  CD-32                WEIR         0  08:30                          2.27
0.00
  CD-33                WEIR         0  08:30                          2.46
0.00
  CD-34                WEIR         0  08:30                          2.70
0.00
  CD-35                WEIR         0  07:54                          3.16
0.00


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link CD-34 (14)
  Link CD-33 (14)
  Link CD-35 (14)
  Link CD-32 (13)
  Link CD-31 (12)


  ************************
  Routing Time Step Summary
  ************************
```

```
Minimum Time Step           :    30.00 sec
Average Time Step           :    30.00 sec
Maximum Time Step           :    30.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.01
```

```
Analysis began on:  Mon Jun 13 09:29:21 2022
Analysis ended on:  Mon Jun 13 09:29:23 2022
Total elapsed time: 00:00:02
```

APPENDIX C: BMP DETAILS



1. Provide protection from all vehicle traffic, equipment staging, and foot traffic in proposed infiltration areas prior to, during, and after construction.

2. Dimensions:
   a. Width of swale: 6'-15' (JBE EDIT)
   b. Depth of swale (from top of growing medium to overflow elevation); Simplified: 9", Presumptive: 6"-12".
   c. Longitudinal slope of swale: Match road grade or less due to site conditions (JBE EDIT)
   d. Flat bottom width: Min 10" due to site conditions (JBE EDIT)
   e. Side slopes of swale: 3:1 maximum.

3. Setbacks (from centerline of facility):
   a. Infiltration swales must be 10' from foundations and 5' from property lines.
   b. Flow-through swales must be lined with connection to approved discharge point according to SWDM Section 2.1.

4. Overflow:
   a. Overflow required for Simplified Approach
   b. Inlet elevation must allow for 2" of freeboard, minimum.
   c. Protect from debris and sediment with strainer or grate.

5. Piping: shall be ABS Sch.40, cast iron, or PVS Sch.40. 3" pipe required for up to 1,500 sq ft of impervious area, otherwise 4" min. Piping must have 1% grade and follow the Uniform Plumbing Code.

6. Drain rock:
   a. Infiltration swale: None required
   b. Size for flow-through swale: ¾" washed
   c. Depth for Simplified and Presumptive: 12"

7. Separation between drain rock and growing medium: Use filter fabric.

8. Growing medium:
   a. 18" minimum
   b. See Appendix B for specification.

9. Vegetation: Follow landscape plans otherwise refer to plant list in SWDM Appendix G. Minimum container size is 1 gallon. # of plantings per 100sf of facility area:
   a. Zone A (wet): 115 herbaceous plants OR 100 herbaceous plants and 4 small shrubs.
   b. Zone B (moderate to dry): 1 tree AND 3 large shrubs / small trees AND 4 small shrubs AND 140 groundcover plants.

   The delineation between Zone A and B shall be either at the outlet elevation or the check dam elevation, whichever is lowest.

10. Waterproof liner: Shall be 30 mil PVC or equivalent for flow-through facilities.

11. Install washed pea gravel or river rock to transition from inlets and splash pad to growing medium.

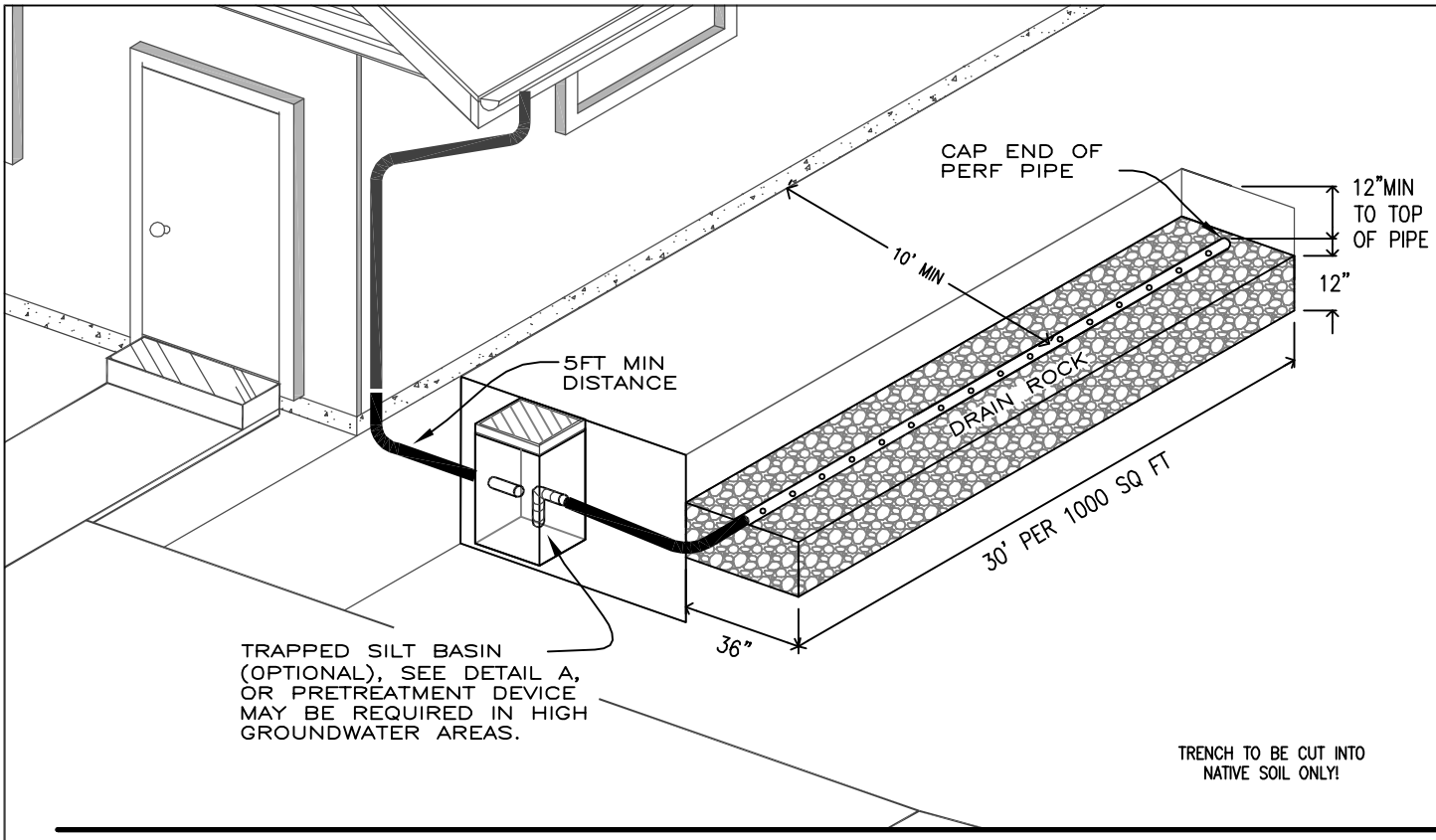
12. Check dams: Shall be placed according to facility design. Refer to SW-340 for profile and spacing.

13. Inspections: Call City of Florence Public Works (541) 997-4106 to schedule appropriate inspections.

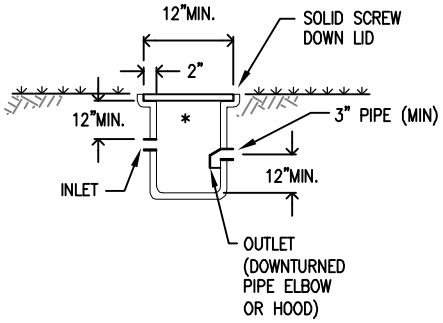
- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

Revision 0	*CITY OF FLORENCE* PUBLIC WORKS DEPARTMENT 989 Spruce Street Florence, OR 97439 Phone: 541-997-4106 DATE: 11-30-10	- Simplified / Presumptive Design Approach - Swale	NUMBER SW-120 August 9, 2022

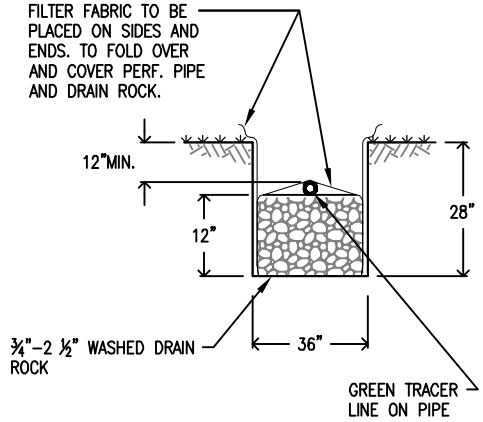


DETAIL A: OPTIONAL TRAPPED SILT BASIN DETAIL



* THE BOTTOM OF THE INLET PIPE MUST NOT BE LOWER THAN THE TOP OF THE OUTLET PIPE.

DETAIL B: SOAKAGE TRENCH CONSTRUCTION



LINE TRENCH SIDES WITH FILTER FABRIC AS SHOWN, ADD 18" OF DRAIN ROCK. PLACE PERF. PIPE AND COVER ALL.

- DRAWING NOT TO SCALE -

STORMWATER MANAGEMENT MANUAL TYPICAL DETAILS

Revision 0	*CITY OF FLORENCE* PUBLIC WORKS DEPARTMENT 989 Spruce Street Florence, OR 97439 Phone: 541-997-4106 DATE: 11-30-10	- Simplified / Presumptive Design Approach - Soakage Trench	NUMBER SW-180 August 9, 2022

APPENDIX D: INSPECTION AND MAINTENANCE AGREEMENT

(SAMPLE)
STORMWATER MANAGEMENT FACILITY
CITY OF FLORENCE, OREGON
OPERATION & MAINTENANCE AGREEMENT

Sediment and other pollutants that degrade water quality will accumulate in urban stormwater facilities. The operation and maintenance of stormwater management facilities including the implementation of pollution reduction facilities is essential to the protection of the city's water quality. Removal of accumulated pollutants and sediment is important for proper operation. All property owners are expected to conduct business in a manner that promotes resource protection. This agreement contains specific provisions with respect to city maintenance of private stormwater management facilities and use of pollution reduction facilities.

Property Address:

Legal description:

Whereas, Stonefield Investments, herein referred to as Owner, has constructed improvements, including but not limited to buildings, pavement, and stormwater management facilities on the property described above. In order to further the goals of the City of Florence to ensure the protection and enhancement of water quality, the City of Florence and Owner hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

Recitals

1. Owner owns the above described property within the City of Florence, Lane County, Oregon.
2. Owner owns and operates stormwater management facilities approved and permitted as required by land use permit _____.
3. Owner has requested the city to provide the functional maintenance of the facility.
4. City approved construction plans dedicating the drainage system conveying the runoff from the residential properties to the stormwater facility as a public drainage system are on file.
5. Access routes for maintenance have been located within a dedicated public easement on private or commonly held property, within the public right-of-way or on city owned property.
6. Sufficient easement area, right-of-way width or property have been provided to accommodate the construction and maintenance of all existing and proposed utilities and public infrastructure.

Owner shall:

1. Implement the stormwater management plan included herein as Attachment "A". (Stormwater disposal and pollution reduction construction details, and source control protection, etc.)
2. Implement the stormwater maintenance plan included herein as Attachment "B". (Owner responsibilities such as vegetation control, debris pickup, etc.)
3. Inspect the facilities monthly and after significant storm events to determine if maintenance activity is warranted.
4. Maintain maintenance and inspection records (in the form of a log book) of steps taken to implement the programs referenced in (1) and (2) above. The log book shall be available for inspection by appointment at 1535 9th Street Florence, OR. The log book shall catalog any action taken, who took the action, when it was taken, how it was done, and any problems encountered or follow-on actions recommended. Maintenance items ("problems") listed in Attachment "A" shall be inspected as specified in the attached instructions or more often if necessary. The Owner and Users are encouraged to photocopy the individual checklists in Attachment "A" and use them to complete its inspections. These completed checklists would then, in combination, comprise the logbook.
5. Submit an annual report to the City of Florence regarding implementation programs referenced in (1) and (2) above. The report must be submitted on or before June 30 of each calendar year after execution of this agreement. At a minimum, the following items shall be included in the report:
    a. Name, address, and telephone number of the businesses, persons, or firms responsible for maintenance plan implementation, and the persons completing the report.

   b. Time period covered by the report.
   c. A chronological summary of activities conducted to implement the program and plan referenced in (1) and (2) above. A photocopy of the applicable sections of the logbook with any additional explanations needed shall suffice. For any activities conducted by paid parties, include a copy of the invoice for services.
   d. Any outline planned activities for the upcoming year.
6. Allow the City of Florence staff to inspect stormwater management facilities at the above referenced site.

City of Florence shall:

1. Execute the following periodic major maintenance on the subdivision's pollution reduction facilities: sediment removal from facilities, resetting orifice sizes and elevations, and adding baffles.
2. Maintain all stormwater management facility elements within the public rights of way and dedicated easements, such as catch basins, weirs, oil-water separators, and pipes.
3. Provide technical assistance to the Owner in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request and as the City of Florence's time and resources permit.
4. Review the annual report and conduct a minimum of one (1) site visit per year to discuss performance and problems with the stormwater management facilities.
5. Review the agreement with the Owner and modify it as necessary at least once every three (3) years.

Remedies:

1. If the City of Florence determines that maintenance that maintenance or repair work is required to be done to the stormwater management facilities located in the subdivision, the City of Florence shall give the Owner notice of the specific maintenance and/or repair required. The City of Florence shall set a reasonable time in which such work is to be completed the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by the City of Florence, written notice will be sent to the Owner stating the City of Florence's intention to perform such maintenance and bill the Owner for all incurred expenses.
2. If, at any time, the City of Florence determines that the existing facility creates any imminent threat to public health, safety, or welfare, the City of Florence may take immediate measures to remedy said threat. No notice to the persons listed in Remedies (1), above shall be required under such circumstances. All other

Owner responsibilities shall remain in effect.

1. The Owner shall grant unrestricted authority to the City of Florence for access to any and all stormwater management facilities for the purpose of performing maintenance or repair as may become necessary under Remedies (1) and/or (2).
2. The Owner shall assume responsibility for the cost of maintenance and repairs to the stormwater management facilities, except for those maintenance actions explicitly assumed by the City of Florence in the preceding section. Such responsibility shall include reimbursement to the City of Florence within 90 days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate for liquidated judgments. If legal action ensues, any costs or fees incurred by the City of Florence will be borne by the parties responsible for said reimbursements. This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the City of Florence. It shall run with the land and be binding on all parties having or acquiring any right, title, or interest or any part thereof, of real property in the subdivision. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof or interest therein, and to the benefit of all citizens of the City of Florence.

This instrument is intended to be binding upon the parties hereto, their heirs, successors and assignees.

In Witness whereof, the undersigned has executed this instrument on this _____ day of _____,20____.

OWNER(s):

Signature _____

_____
(print name)

STATE OF OREGON,
County of Lane, ss:
This instrument was acknowledged before me this _____ day of _____,
20__,by _____, owner(s) of the above described premises.

_____
Notary Public for Oregon

_____
My commission expires

MANAGER, CITY OF FLORENCE
In Witness whereof, the undersigned agent of the City of Florence has executed this instrument and acknowledged
the said instrument to be free and voluntary act and deed on this _____ day of _____,
20____ for the purposes herein mentioned and on oath states he is authorized to execute said instrument.

_____
City Manager

STATE OF OREGON,
County of Lane, ss:
This instrument was acknowledged before me this _____ day of _____,
20__, by _____, owner(s) of the above described premises.

_____
Notary Public for Oregon

_____
My commission expires

APPENDIX E: OPERATIONS & MAINTENANCE PLAN

After Recording Return to:
Name:
Address:

Place Recording Label Here

APPENDIX A.4

Form O&M: Operations and Maintenance Plan

Permit Application No ._____

Owner Name: Stonefield Investments

Phone: (*area code required)* 541-902-5490

Mailing Address: *(return address for records)* 1535 9th Street

City/State/Zip: Florence, OR 97439

Site Address: Rhododendron Drive TL 18-12-04-44-03800

City/State/Zip: Florence, OR 97439

Site Legal Description:
Florence, OR 97439

1 Responsible Party for Maintenance (*check one)*
X Homeowner association _ Property Owner _ Other *(describe)*
_____

2 Contact Information for Responsible Party(ies) if Other than Owner

Daytime Phone: (*area code required)* _____- _____-_____
Emergency/After Hours Phone: _____- _____-_____
Contact Name and Address:
_____
_

Instructions

Simplified Sizing Approach: *Attach O&M Specifications from the Florence Stormwater Design Manual Appendix H.*

Presumptive and Performance Sizing Approach: *Attach the site-specific O&M Plan (See Stormwater Design Manual Section 6).*

3 Site Plan
Show all facility locations in relation to labeled streets, buildings, or other permanent features on the site. Also show the sources of runoff entering the facility, and the final onsite/offsite discharge point.
Please complete the table below

Maintaining the stormwater management facility on this site plan is a required condition of building permit approval for the identified property. The property owner is required to operate and maintain this facility in accordance with the O&M specifications or plan on file with the City of Florence. That requirement is binding on all current and future

owners of the property. Failure to comply with the O&M specifications or plan may result in enforcement action, including penalties. The O&M specifications or plan may be modified by written consent of new owners and written approval by re-filing with the Community Development Department.

Complete and recorded O&M Forms shall be submitted to:
Community Development Department, 250 Highway 101, Florence, OR, 97439
Office hours are 8 - 5, Monday through Friday. Call 541-997-3436 for assistance.

Required Site Plan (insert here or attach separate sheet)

☒ I Have Attached a Site Plan

Please complete this table

Facility Type	Size (sf)	Drainage is from:	Impervious Area Treated (sf)	Discharge Point	
Soakage Trench	See calculations attached to this report				
Swale					

BY SIGNING BELOW *filer accepts and agrees to the terms and conditions contained in this O&M Form and in any document executed by filer and recorded with it. To be signed in the presence of a notary.*

_____
Filer signature

INDIVIDUAL Acknowledgement
STATE of OREGON county of:

_____
This instrument was acknowledged before me on:

_____

By:

_____

Notary Signature:

_____

My Commission Expires: _____ *for notary seal*

CORPORATE Acknowledgement
STATE of OREGON county of:

_____

This instrument was acknowledged before me on:

_____

By:

_____

As (title):

_____

Of (corporation):

_____

Notary Signature:

_____

My Commission Expires: _____

Insects & Rodents shall not be harbored in the soakage trench. Pest control measures shall be taken when insects/rodents are found to be present.

- If a complaint is received or an inspection reveals that a stormwater facility is significantly infested with mosquitoes or other vectors, the property owner/owners or their designee may be required to eliminate the infestation at the City inspector's discretion. Control of the infestation shall be attempted by using first non-chemical methods and secondly, only those chemical methods specifically approved by the City's inspector. Acceptable methods include but are not limited to the following:
  i) Installation of predacious bird or bat nesting boxes.
  ii) Alterations of pond water levels approximately every four days in order to disrupt mosquito larval development cycles.
  iii) Stocking ponds and other permanent water facilities with fish or other predatory species.
  iv) If non-chemical methods have proved unsuccessful, contact the City inspector prior to use of chemical methods such as the mosquito larvicides Bacillus thurengensis var. israeliensis or other approved larvacides. These materials may only be used with City inspector approval if evidence can be provided that these materials will not migrate off-site or enter the public stormwater system. Chemical larvicides shall be applied by a licensed individual or contractor.
- Holes in the ground located in and around the soakage trench shall be filled.

Soakage Trenches

Operations & Maintenance Plan

Soakage Trenches consist of drain rock and sand, and receive stormwater from roof downspouts and/or area drains. There are various components within the system – piping, silt basin and the trench itself. The **Conveyance Piping** consists of an inlet pipe (downspout or area drain), an outlet pipe located between the silt basin and the soakage trench, and a perforated pipe, located on top of the aggregate bed of the soakage trench. The **Silt Basin** is a structure receiving runoff from an inlet pipe and conveying it to the soakage trench. The silt basin serves as the pre-treatment system for the soakage trench, removing sediments and other debris that can impact its proper functioning. All facility components, vegetation, and source controls shall be inspected for proper operations and structural stability. These inspections shall occur, at a minimum, quarterly for the first two years from the date of installation, then two times per year afterwards, or within 48 hours after each major storm. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:

Soakage trench infiltration: If water is noticed on top of the trench within 48 hours of a major storm, the soakage trench may be clogged.

- Check for debris/sediment accumulation, rake and remove and evaluate upland causes (erosion, surface or roof debris, etc
- Assess the condition of the aggregate and the filter fabric in the trench. If there is sediment in the aggregate, excavate and replace.
- If there is a tear in the filter fabric, repair or replace.

Conveyance Piping: If water ponds over the trench for more than 48 hours after a major storm and no other cause if identified, it may be necessary to remove the filter fabric to determine if the perforated pipe is clogged with sediment or debris.

- Any debris or algae growth located on top of the soakage trench should be removed and disposed of properly.
- If the piping has settled more than 1-inch, add fill material. If there are cracks or releases, replace or repair the pipe. If there are signs of erosion around the pipe, this may be an indication of water seeping due to a crack or break.

Silt Basin: If water remains in the soakage trench for 36-48 hours after storm, check for sediment accumulation in the silt basin

- If less than 50% capacity remains in the basin or 6" of sediment has accumulated, remove and dispose the sediment.

Spill Prevention: Virtually all sites, including residential and commercial, present dangers from spills. All homes contain a wide variety of toxic materials including gasoline for lawn mowers, antifreeze for cars, nail polish remover, pesticides, and cleaning aids that can adversely affect groundwater if spilled. It is important to exercise caution when handling substances that can contaminate stormwater.

- Activities that pose the chance of hazardous material spills shall not take place near soakage trenches.

A **Shut-Off Valve or Flow-Blocking Mechanism** may have been required with the construction of the soakage trench to temporarily prevent stormwater from flowing into it, in the event of an accidental toxic material spill. This may also involve mats kept on-site that can be used to cover inlet drains in parking lots. The shut-off valve shall remain in good working order, or if mats or other flow-blocking mechanisms are used, they shall be kept in stock on-site.

Training and/or written guidance information for operating and maintaining soakage trenches shall be provided to all property owners and tenants. A copy of the O&M Plan shall be provided to all property owners and tenants.

Access to the soakage trench is required for efficient maintenance. Egress and ingress routes will be maintained to design standards at inspections.

- Obstacles preventing maintenance personnel and/or equipment access to the swale shall be removed.
- Gravel or ground cover shall be added if erosion occurs, e.g., due to vehicular or pedestrian traffic.

Insects & Rodents shall not be harbored in the swale. Pest control measures shall be taken when insects/rodents are found to be present.

- If a complaint is received or an inspection reveals that a stormwater facility is significantly infested with mosquitoes or other vectors, the property owner/owners or their designee may be required to eliminate the infestation at the City inspector's discretion. Control of the infestation shall be attempted by using first non-chemical methods and secondly, only those chemical methods specifically approved by the City's inspector. Acceptable methods include but are not limited to the following:
  i) Installation of predacious bird or bat nesting boxes.
  ii) Alterations of pond water levels approximately every four days in order to disrupt mosquito larval development cycles.
  iii) Stocking ponds and other permanent water facilities with fish or other predatory species.
  iv) If non-chemical methods have proved unsuccessful, contact the City inspector prior to use of chemical methods such as the mosquito larvicides Bacillus thurengensis var. israeliensis or other approved larvacides. These materials may only be used with City inspector approval if evidence can be provided that these materials will not migrate off-site or enter the public stormwater system. Chemical larvicides shall be applied by a licensed individual or contractor.
- Holes in the ground located in and around the swale shall be filled.

If used at this site, the following will be applicable:

Check Dams shall control and distribute flow.

- Causes for altered water flow shall be identified, and obstructions cleared upon discovery.
- Causes for channelization shall be identified and repaired.

Swales (Vegetated, Grassy, and Street)
Operations & Maintenance Plan

Swales are planted or grassed open channels that trap pollutants by filtering and slowing flows, allowing particles to settle out. The swale should drain within 48 hours of a storm event. All facility components, vegetation, and source controls shall be inspected for proper operations and structural stability, at a minimum, quarterly for the first 2 years from the date of installation, 2 times per year thereafter, and within 48 hours after each major storm event. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:

Swale Inlet (such as curb cuts or pipes) shall maintain a calm flow of water entering the swale.

- Source of erosion shall be identified and controlled when native soil is exposed or erosion channels are forming.
- Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures. Sediment shall be removed if it is more than 4" thick or so thick as to damage or kill vegetation.
- Inlet shall be cleared when conveyance capacity is plugged. Sources of sediment and debris shall be identified and corrected.
- Rock splash pads shall be replenished to prevent erosion.

Side Slopes shall be maintained to prevent erosion that introduces sediment into the swale.

- Slopes shall be stabilized and planted using appropriate erosion control measures when native soil is exposed or erosion channels are forming.

Swale Media shall allow stormwater to percolate uniformly through the landscape swale. If the swale does not drain within 48 hours, it shall be tilled and replanted according to design specifications.

- Annual or semi-annual tilling shall be implemented if compaction or clogging continues.
- Debris in quantities that inhibit operation shall be removed routinely (e.g., no less than quarterly), or upon discovery.

Swale Outlet shall maintain sheet flow of water exiting swale unless a collection drain is used. Source of erosion damage shall be identified and controlled when native soil is exposed or erosion channels are forming.

- Outlets such as drains and overland flow paths shall be cleared when 50% of the conveyance capacity is plugged.
- Sources of sediment and debris shall be identified and corrected.

Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion.
Mulch shall be replenished as needed to ensure survival of vegetation.

- Vegetation, large shrubs or trees that interfere with landscape swale operation shall be pruned.
- Fallen leaves and debris from deciduous plant foliage shall be removed.
- Grassy swales shall be mowed to keep grass 4" to 9" in height. Clippings shall be removed to remove pollutants absorbed in grasses.
- Nuisance and prohibited vegetation from the Eugene Plant List (such as blackberries and English Ivy) shall be removed when discovered. Invasive vegetation contributing up to 25% of vegetation of all species shall be removed and replaced.
- Dead vegetation and woody material shall be removed to maintain less than 10% of area coverage or when swale function is impaired. Vegetation shall be replaced within 3 months, or immediately if required to maintain cover density and control erosion where soils are exposed.

Debris and Litter shall be removed to ensure stormwater conveyance and to prevent clogging of inlet drains and interference with plant growth.

Spill Prevention measures shall be exercised when handling substances that contaminate stormwater. Releases of pollutants shall be corrected as soon as identified.

Training and/or written guidance information for operating and maintaining swales shall be provided to all property owners and tenants. A copy of the O&M Plan shall be provided to all property owners and tenants.

Access to the swale shall be safe and efficient. Egress and ingress routes shall be maintained to design standards. Roadways shall be maintained to accommodate size and weight of vehicles, if applicable.