Wake County Stormwater Hybrid Tool Directions

For additional submittal and design guidance, please see Wake County's SW Manual

The Wake County Stormwater Hybrid Tool is required for all stormwater submittals in Wake County jurisdiction. Engineer will input all data requested that is highlighted in blue. Engineer may follow provided links to view calculations used in this tool. Calculations for peak flow, runoff, time of concentration, etc. are for individual drainage areas. Engineer should complete a worksheet for each drainage area within a project area.

	Complete all inputs on the SITE DATA worksheet. SITE DATA worksheet should be submitted with preliminary plan submittals and modified and submitted for construction plan submittals.
1	Residential Stormwater Details should be completed for all residential submittal.
	Stormwater Narrative should describe the site conditions in pre- and post-development conditions including a description of site improvements and proposed stormwater BMPs.
	Complete DA worksheets. Most of the site data is inputted by the engineer on the DA worksheets. A Links/Comments column provides details regarding individual inputs. Engineers may also enter comments in this column as needed.
2	DA Worksheets will calculate pre and post runoff, time of concentration, peak flow, and volume of runoff per drainage area. Inputs on these sheets will also be used to calculate the site composite curve numbers for pre and post development, Target Curve Number (TCN), and nitrogen and phosphorus loading calculations.
	Offsite values should be included when there is offsite drainage onto the site to ensure that the peak flow is an accurate value. Otherwise, peak flow represents only the site peak flow. Offsite drainage is not used in Target Curve Number or nutrient loading calculations.
	SITE SUMMARY worksheet summarizes the pre and post runoff, Tc, and peak flow per drainage area based on inputs from DA worksheets. This worksheet denotes the volume required for management per drainage area based on high density requirements.
	TCN and composite curve numbers for pre and post development are also calculated and summarized. If the TCN is exceeded, this worksheet will calculate total volume to be managed for the entire site based on TCN requirements.
3	Nitrogen and Phosphorus Loading: Nitrogen and Phosphorus Loading Rates for the site are calculated based on the land use acreages imputed on DA worksheets. This worksheet calculates the total amount of nitrogen and phosphorus for pre and post development. Nitrogen and phosphorus totals will be used on following BMP worksheets.
	Disconnected Impervious - This area will be used to provide an adjusted post development composite curve number (CN _{adjusted}) to allow a credit for the use of disconnected impervious. Site plans should clearly indicate areas of disconnected impervious.
	Note: There is only one engineer input on this sheet and all exeedances from DA worksheets will be flagged in red.
	DA BMP worksheets require engineer to input proposed BMP information. BMPs are categorized by sub-basins within the drainage area. Engineer should input BMP device name, type, and volume provided. BMP requirements are automatically imported from previous inputs.
	Engineer should input land uses by sub-basin. Off-site drainage to the BMP should be included to ensure that the water quality volume required is calculated correctly.
4	BMPs are required in each DA where post-development peak flow is higher than pre-development peak flow by 10%. Note that there is no 10% for projects within the Falls and Jordan Lake Watersheds.
	DA BMP worksheets will ensure that proposed BMPs meet requirements for peak flow, TCN, and for Nitrogen and Phosphorus.
	Engineer must input post-BMP discharge.
	BMP SUMMARY worksheet summarizes the pre and post BMP runoff, and peak flow per drainage area based on inputs from DA BMP worksheets.
5	Nitrogen and Phosphorus Loading: calculated based on the inputs on DA BMP worksheets.
	Note: There are no engineer inputs on this sheet and all exeedances from DA BMP worksheets will be flagged in red.

TOOL DIRECTIONS Page 1



SITE DATA

	Project Information
Project Name:	South Main
Permit No (if known):	
Applicant:	Toy Storage LLC
Applicant Contact Name:	Allen Massey
Applicant Contact Number:	919-604-0505
Contact Email:	Storit@AOL.com
Last Modified Date:	July 26 2022
	Site Data:
River Basin:	Neuse
Regulatory Watershed:	N/A
Physiographic/Geologic Region:	Piedmont
Type of Development (Select from Dropdown menu):	Non-Residential
Zoning:	General Business
Total Site Area (Ac):	2.03
Existing Lake/Pond Area (Ac):	0.00
Proposed Disturbed Area (Ac):	2.16
Proposed Impervious Surface Area from DA Sheets (acre):	1.19
Percent Built Upon Area (BUA):	59%
Is the proposed project a site expansion?	No
Number of Drainage Areas on Site (Points of Analysis):	1
Annual Rainfall (in):	45.41
One-year, 24-hour rainfall (in):	3.00
Two-year, 24-hour rainfall (in):	3.60
Proposed Reside	ential Stormwater Details (if applicable):
Site Square Footage:	88,427
Total Acreage in Lots:	2.03
Lot Square Footage:	88,427
Number of Lots:	1
Average Lot Size (SF):	78,408
Proposed Impervious Surface Area from DA sheets (SF):	51,836
Proposed Impervious Surface Area Devoted to Lots (SF):	
Total Impervious Surface Area Devoted to Roads (SF):	
Other Impervious Surface Area (SF):	

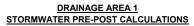
SITE DATA Page 1

Stormwater Narrative (limit to 1,200 characters - attach additional pages with submittal if necessary):

SITE DATA Page 2

Project Name:

South Main



COUNTY NORTH CAROLINA																	
LAND USE & SITE DATA			Р	RE-DEVE	LOPME	NT					P	OST-DEV	ELOPME	NT			
Drainage Area (Acres)=		2.03									2.03						
Site Acreage within Drainage=				2.	.03				2.03								
One-year, 24-hour rainfall (in)=								3.	3.00								
Land Use (acres) by Soil Group:	AS	Soils	В	Soils	C S	oils	D S	oils	AS	oils	В	Soils	c s	oils	D S	Soils	
Commercial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	

Oite Acreage Within Brainage-				۷.	00			2.00									
One-year, 24-hour rainfall (in)=								3.00									
Land Use (acres) by Soil Group:	A S	Soils	в	Soils	c s	oils	D Soils		A Soils		B Soils		C Soils		D Soils		
Commercial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot			0.01	ļ		ļ					0.88						
Roof				Ī		ļ					0.31					į	
Open/Landscaped		i		İ		i		İ		i	0.41	İ		İ		İ	
Industrial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot																	
Roof				1													
Open/Landscaped																	
Transportation	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
High Density (interstate, main)		i		İ		į		i		i		i		i		i	
High Density (Grassed Right-of-ways)				İ		i											
Low Density (secondary, feeder)				1		i											
Low Density (Grassed Right-of-ways)																	
Rural				!													
Rural (Grassed Right-of-ways)				ļ		ļ										ļ	
Sidewalk				İ		Ī											
Misc. Pervious	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Managed pervious (Open Space)			2.02	i		i		i			0.43	i		i		i	
Unmanaged (pasture)				1													
Woods (not on lots)				1													
Residential	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Roadway				Ţ.				ļ				ļ		ļ		ļ	
Grassed Right-of-ways		İ		į		į		į		į		į		į		į	
Driveway		i		i		i		i		i		i		i		i	
Parking lot				i		i										i	
Roof				1													
Sidewalk (Includes Patios)				1													
Lawn				ļ.													
Managed pervious (Open Space)				į													
Woods (on lots)		i		i		i		i		i		i		i		i	
Land Taken up by BMP				i													
JURISDICTIONAL LANDS	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Natural wetland				1													
Riparian buffer (Zone 1 only)				!													
Open water				!		!		!				!		!		!	
Totals (Ac)=	0.00	0.00	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	0.00	0.00	0.00	0.00	0.00	

DA1 Page 1

SITE FLOW	PR	E-DEVELOPMENT T _c	POST-DEVELOPMENT To					
Sheet Flow								
Length (ft)=		50.00	50.00					
Slope (ft/ft)=		0.03	0.03					
Surface Cover:		Grass	Paved, Gravel, or Bare Soil					
n-value=		0.24	0.011					
T _t (hrs)=		0.11	0.01					
Shallow Flow								
Length (ft)=		370.00	211.00					
Slope (ft/ft)=		0.03	0.03					
Surface Cover:		Unpaved	Paved					
Average Velocity (ft/sec)=		2.79	3.52					
T _t (hrs)=		0.04	0.02					
Channel Flow 1								
Length (ft)=		50.00	160.00					
Slope (ft/ft)=		0.03	0.01					
Cross Sectional Flow Area (ft²)=		0.75	0.74					
Wetted Perimeter (ft)=		2.50	3.16					
Channel Lining:		Weeds	Concrete, finished					
n-value=		0.04	0.012					
Hydraulic Radius (ft)=		0.30	0.23					
Average Velocity (ft/sec)=		2.89	4.72					
T_t (hrs)=		0.00	0.01					
Tc (hrs)=								
RESULTS	PF	RE-DEVELOPMENT	POST-DEVELOPMENT					
Site Impervious Surface Area (Ac) =		0.01	1.19					
Lot Impervious Surface Area (Ac) =		0.00	0.00					
1-year, 24-hour storm (Peak Flow)								
Volume of runoff (ft ³) =		2,778	13,071					
Volume change (ft³) =		10	,294					
Runoff (inches) = Q*=		0.3770	1.7739					
Peak Discharge (cfs)= Q=								
Composite Curve Number (DA)=		61	83					
Composite Curve Number (Site only)=		61	83					
DISCONNECTED IMPERVIOUS - Credit given on	ly to residential development w	vith drainage area with less than 30% impervious						
Percent Disconnected Impervious Credit (Residentia	al Only) =		0%					
Disconnected impervious area (Ac) =			0.00					
Drainage Area CN _{adjusted} =			83					
Site Only CN _{adjusted} =		83						

DA1 Page 2

Project Name:

South Main



<u>DRAINAGE AREA 2</u> <u>STORMWATER PRE-POST CALCULATIONS</u>

LAND USE & SITE DATA			Р	RE-DEVE	LOPME	NT			POST-DEVELOPMENT									
Drainage Area (Acres)=				0.	00				0.00									
Site Acreage within Drainage=				0.	00				0.00									
One-year, 24-hour rainfall (in)=								3	3,00									
Land Use (acres) by Soil Group:	Α 6	Soils	В	Soils	C 9	ioils	D.S	Soils	A Soils B Soils C Soils D Soils									
	Site	Offsite	Site	Offsite	Site	I Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	I Offsite	Site	Offsite		
Commercial Parking let	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite		
Parking lot Roof		-		<u> </u>				-		!						-		
		!		!		!		<u> </u>		<u> </u>		!		!		<u> </u>		
Open/Landscaped	C:4-	O#-:+-	0:4-	0#-:+-	0:4-	04-:1-	C:4-	Off-:4-	C:4-	O#-it-	0:4-	04-:1-	0:4-	O#-:4-	C:4-	0#-:+-		
Industrial Parking let	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Parking lot																		
Roof		-																
Open/Landscaped	0.1	011.11	0.1	0" 1	0.1	0" "	0.1	0" "	0.1	0""	0.1	0" "	0.1	0" "	0.1	0" "		
Transportation	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
High Density (Interstate, main)		<u> </u>		ļ		<u> </u>				ļ		<u> </u>		<u> </u>				
High Density (Grassed Right-of-ways)		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		
Low Density (secondary, feeder)								-								-		
Low Density (Grassed Right-of-ways)				1														
Rural		<u> </u>		<u> </u>														
Rural (Grassed Right-of-ways)		<u> </u>		<u> </u>														
Sidewalk										<u> </u>								
Misc. Pervious	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Managed pervious (Open Space)		<u> </u>		<u> </u>														
Unmanaged (pasture)				<u> </u>				<u> </u>		:						<u> </u>		
Woods (not on lots)																		
Residential	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Roadway		<u> </u>		<u> </u>		<u> </u>		!		<u>l</u>		<u> </u>		<u> </u>		<u>!</u>		
Grassed Right-of-ways		į.		į.														
Driveway		<u> </u>		<u> </u>		<u> </u>		ļ		<u> </u>		<u> </u>		<u> </u>		ļ		
Parking lot		<u> </u>		<u> </u>														
Roof		<u> </u>		<u> </u>														
Sidewalk (Includes Patios)		<u> </u>		<u> </u>						!								
Lawn				!														
Managed pervious (Open Space)		į		į				į		į						<u> </u>		
Woods (on lots)		<u> </u>		<u>i</u>				<u> </u>		<u> </u>				<u> </u>		<u>i</u>		
Land Taken up by BMP																		
JURISDICTIONAL LANDS	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Natural wetland																		
Riparian buffer (Zone 1 only)																		
Open water						į.		i		i		į.		İ		i		
Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

DA2 Page 1

SITE FLOW	PR	E-DEVELOPMENT T _c	POST-DEVELOPMENT To
Sheet Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
n-value=			
T _t (hrs)=		0.00	0.00
Shallow Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Channel Flow 1			
Length (ft)=			
Slope (ft/ft)=			
Cross Sectional Flow Area (ft ²)=			
Wetted Perimeter (ft)=			
Channel Lining:			
n-value=			
Hydraulic Radius (ft)=		0.00	0.00
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Tc (hrs)=		0.00	0.00
RESULTS	PI	RE-DEVELOPMENT	POST-DEVELOPMENT
Site Impervious Surface Area (Ac) =		0.00	0.00
Lot Impervious Surface Area (Ac) =		0.00	0.00
1-year, 24-hour storm (Peak Flow)			
Volume of runoff (ft ³) =			
Volume change (ft³) =			
Runoff (inches) = Q*=			
Peak Discharge (cfs)= Q=			
Composite Curve Number (DA)=			
Composite Curve Number (Site only)=			
DISCONNECTED IMPERVIOUS - Credit given onl	ly to residential development w	rith drainage area with less than 30% imper	vious
Percent Disconnected Impervious Credit (Residentia	al Only) =		
Disconnected impervious area (Ac) =			0.00
Drainage Area CN _{adjusted} =			

DA2 Page 2

WAKE

Project Name:

South Main

DRAINAGE AREA 3 STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA			Р	RE-DEVE	LOPME	NT					PC	OST-DEV	ELOPME	NT			
Drainage Area (Acres)=				0.	00				0.00								
Site Acreage within Drainage=				0.	00				0.00								
One-year, 24-hour rainfall (in)=								3.	3.00								
Land Use (acres) by Soil Group:	A S	Soils	В	Soils	C S	ioils	D S	Soils	A S	Soils	В	Soils	C S	oils	D Soils		
Commercial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot																	
Roof																	
Open/Landscaped						!		!		!		!					
Industrial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot																	
Roof								1				1					
Open/Landscaped																	
Transportation	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
High Density (interstate, main)														-			
High Density (Grassed Right-of-ways)						<u> </u>		<u> </u>		<u> </u>		<u> </u>					
Low Density (secondary, feeder)		i		i		i		i		i		i		i		i	
Low Density (Grassed Right-of-ways)																	
Rural																	
Rural (Grassed Right-of-ways)						 		 		 		 					
Sidewalk																	
Misc. Pervious	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Managed pervious (Open Space)	Oito	i Onsic	Oito	Olisic	Oile	l Olisite	Oile	l Olisite	One	l Olisic	Oito	l Onsite	Oito	Olisic	Oile	i Onsite	
Unmanaged (pasture)						-				-							
Woods (not on lots)		1				i		i		i		i				1	
Residential	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Roadway	Oito	Onone	Ono	Onoile	Ono	Cilotto	Ono	Circle	Ono	- Circle	Oito	· · · · · · · ·	Ono	Onoro	Ono	Onone	
Grassed Right-of-ways		-												<u> </u>			
Driveway						•		•		•		•					
Parking lot						<u> </u>		<u> </u>		<u> </u>		<u> </u>				1	
Roof						i		i		i		i					
Sidewalk (Includes Patios)																	
Lawn								1				1					
Managed pervious (Open Space)																	
Woods (on lots)		<u> </u>												!		-	
Land Taken up by BMP																	
JURISDICTIONAL LANDS	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Natural wetland	Oile	Onsid	Oile	Onsite	Oile	Onone	Oito	Chare	Oile	Onsite	Oilo	Chare	Oile	Onside	Oile	Onside	
Riparian buffer (Zone 1 only)																	
Open water																!	
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

SITE FLOW	PR	E-DEVELOPMENT T _c	POST-DEVELOPMENT To
Sheet Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
n-value=			
T _t (hrs)=		0.00	0.00
Shallow Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Channel Flow 1			
Length (ft)=			
Slope (ft/ft)=			
Cross Sectional Flow Area (ft ²)=			
Wetted Perimeter (ft)=			
Channel Lining:			
n-value=			
Hydraulic Radius (ft)=		0.00	0.00
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Tc (hrs)=		0.00	0.00
RESULTS	P	RE-DEVELOPMENT	POST-DEVELOPMENT
Site Impervious Surface Area (Ac) =		0.00	0.00
Lot Impervious Surface Area (Ac) =		0.00	0.00
1-year, 24-hour storm (Peak Flow)			
Volume of runoff (ft ³) =			
Volume change (ft ³) =			
Runoff (inches) = Q*=			
Peak Discharge (cfs)= Q=			
Composite Curve Number (DA)=			
Composite Curve Number (Site only)=			
DISCONNECTED IMPERVIOUS - Credit given on	ly to residential development v	with drainage area with less than 30% imperviou	s
Percent Disconnected Impervious Credit (Residenti	al Only) =		
Disconnected impervious area (Ac) =			0.00
Drainage Area CN _{adjusted} =			
Site Only CN _{adjusted} =			

DA3 Page 2

Project Name:

South Main



DRAINAGE AREA 4 STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA			Р	RE-DEVE	LOPME	NT			POST-DEVELOPMENT									
Drainage Area (Acres)=				0.	00							0.	00					
Site Acreage within Drainage=				0.	00							0.	00					
One-year, 24-hour rainfall (in)=								3	3.00									
Land Use (acres) by Soil Group:	ΔS	Soils	R.S	Soils	C.S	ioils	D.S	Soils		Soils	R S	Soils	C Soils D			Soils		
Commercial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Parking lot	Oite	Olisite	Oite	Olisite	Oite	Olisite	Oite	Olisite	Oite	Olisite	Oite	Olisite	Oile	Olisite	Oite	Olisite		
Roof																		
Open/Landscaped						! !		<u> </u>		<u> </u>		! !		<u> </u>		-		
Industrial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Parking lot	Oite	Olloito	Oito	Onone	Oito	Onoite	Oito	Onoite	Oito	Olioito	Oito	Onoite	Oito	Onoite	Oito	Onone		
Roof		İ		i		!		!		i		!				 		
Open/Landscaped																		
Transportation	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
High Density (interstate, main)	00	0	0.10	0	00	0	00	0	00	0	00	0	0.10		0.10	0		
High Density (Grassed Right-of-ways)										!								
Low Density (secondary, feeder)						 						 						
Low Density (Grassed Right-of-ways)																		
Rural						i		l		l		i		l				
Rural (Grassed Right-of-ways)										i								
Sidewalk														<u> </u>				
Misc. Pervious	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Managed pervious (Open Space)																		
Unmanaged (pasture)		ļ		!		ļ		ļ		ļ		ļ		 		!		
Woods (not on lots)		İ		İ										<u> </u>				
Residential	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Roadway		i		i		i		i		i		i						
Grassed Right-of-ways																		
Driveway																		
Parking lot														1				
Roof						<u> </u>		<u> </u>		!		<u> </u>						
Sidewalk (Includes Patios)						į		į				į						
Lawn		i		i		i		i		i		i		i		i		
Managed pervious (Open Space)		i		i		i		i		i		i						
Woods (on lots)																		
Land Taken up by BMP						!		!		!		!						
JURISDICTIONAL LANDS	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite		
Natural wetland														İ				
Riparian buffer (Zone 1 only)				į		į		į		į		į		İ		1		
Open water		i		i		i		i		i		i		i				
Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

SITE FLOW	PR	E-DEVELOPMENT T _c	POST-DEVELOPMENT Tc
Sheet Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
n-value=			
T _t (hrs)=		0.00	0.00
Shallow Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Channel Flow 1			
Length (ft)=			
Slope (ft/ft)=			
Cross Sectional Flow Area (ft ²)=			
Wetted Perimeter (ft)=			
Channel Lining:			
n-value=			
Hydraulic Radius (ft)=		0.00	0.00
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Tc (hrs)=		0.00	0.00
RESULTS	Р	RE-DEVELOPMENT	POST-DEVELOPMENT
Site Impervious Surface Area (Ac) =		0.00	0.00
Lot Impervious Surface Area (Ac) =		0.00	0.00
1-year, 24-hour storm (Peak Flow)			
Volume of runoff (ft ³) =			
Volume change (ft ³) =			
Runoff (inches) = Q*=			
Peak Discharge (cfs)= Q=			
Composite Curve Number (DA)=			
Composite Curve Number (Site only)=			
DISCONNECTED IMPERVIOUS - Credit given on	ly to residential development v	with drainage area with less than 30% impervious	
Percent Disconnected Impervious Credit (Residentia	al Only) =		
Disconnected impervious area (Ac) =			0.00
Drainage Area CN _{adjusted} =			
Site Only CN _{adjusted} =			
		L	

DA4 Page 2

Project Name:

South Main



DRAINAGE AREA 5 STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA		PRE-DEVELOPMENT								POST-DEVELOPMENT							
Drainage Area (Acres)=		0.00								0.00							
Site Acreage within Drainage=				0.	00				0.00								
One-year, 24-hour rainfall (in)=								3	3.00								
Land Use (acres) by Soil Group:	Α 6	Soils										oils D Soils					
	Site	Offsite	Site	Offsite	Site	I Offsite	Site	Offsite	Site	Offsite Site Offsite					Site	Offsite	
Commercial Parking let	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	Site	Olisite	
Parking lot Roof		-		<u> </u>				-		!						-	
		!		!		!		<u> </u>		<u> </u>		!		!		<u> </u>	
Open/Landscaped	C:4-	O#-:+-	0:4-	0#-:4-	0:4-	04-:1-	C:4-	Off-:4-	C:4-	O#-it-	0:4-	04-:1-	0:4-	0#-:4-	C:4-	0#-:+-	
Industrial Parking let	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot																	
Roof		-															
Open/Landscaped	0.1	011.11	0.1	0" 1	0.1	0" "	0.1	0" "	0.1	0""	0.1	0" "	0.1	0" "	0.1	0" "	
Transportation	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
High Density (Interstate, main)		<u> </u>		ļ		<u> </u>				<u> </u>		<u> </u>		<u> </u>			
High Density (Grassed Right-of-ways)		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Low Density (secondary, feeder)								-								-	
Low Density (Grassed Right-of-ways)				1													
Rural		<u> </u>		<u> </u>													
Rural (Grassed Right-of-ways)		<u> </u>															
Sidewalk										<u> </u>							
Misc. Pervious	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Managed pervious (Open Space)		<u> </u>		<u> </u>													
Unmanaged (pasture)				<u> </u>				<u> </u>		:						<u> </u>	
Woods (not on lots)																	
Residential	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Roadway		<u> </u>		<u> </u>		<u> </u>		!		<u>l</u>		<u> </u>		<u> </u>		!	
Grassed Right-of-ways		į.		į.													
Driveway		<u> </u>		<u> </u>		<u> </u>		ļ		<u> </u>		<u> </u>		<u> </u>		ļ	
Parking lot		<u> </u>		<u> </u>													
Roof		<u> </u>		<u> </u>													
Sidewalk (Includes Patios)		<u> </u>		<u> </u>						!							
Lawn				!													
Managed pervious (Open Space)		į		į				į		į						<u> </u>	
Woods (on lots)		<u> </u>		<u>i</u>				<u> </u>		<u> </u>				<u> </u>		<u>i</u>	
Land Taken up by BMP																	
JURISDICTIONAL LANDS	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Natural wetland																	
Riparian buffer (Zone 1 only)																	
Open water						į .		i		i		į .		i		i	
Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

DA5 Page 1

SITE FLOW	PR	E-DEVELOPMENT T _c	POST-DEVELOPMENT Tc
Sheet Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
n-value=			
T _t (hrs)=		0.00	0.00
Shallow Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Channel Flow 1			
Length (ft)=			
Slope (ft/ft)=			
Cross Sectional Flow Area (ft ²)=			
Wetted Perimeter (ft)=			
Channel Lining:			
n-value=			
Hydraulic Radius (ft)=		0.00	0.00
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Tc (hrs)=		0.00	0.00
RESULTS	Р	RE-DEVELOPMENT	POST-DEVELOPMENT
Site Impervious Surface Area (Ac) =		0.00	0.00
Lot Impervious Surface Area (Ac) =		0.00	0.00
1-year, 24-hour storm (Peak Flow)			
Volume of runoff (ft ³) =			
Volume change (ft ³) =			
Runoff (inches) = Q*=			
Peak Discharge (cfs)= Q=			
Composite Curve Number (DA)=			
Composite Curve Number (Site only)=			
DISCONNECTED IMPERVIOUS - Credit given on	ly to residential development v	with drainage area with less than 30% impervious	
Percent Disconnected Impervious Credit (Residentia	al Only) =		
Disconnected impervious area (Ac) =			0.00
Drainage Area CN _{adjusted} =			
Site Only CN _{adjusted} =			
		L	

DA5 Page 2

Project Name:



South Main

<u>DRAINAGE AREA 6</u> <u>STORMWATER PRE-POST CALCULATIONS</u>

LAND USE & SITE DATA		PRE-DEVELOPMENT								POST-DEVELOPMENT							
Drainage Area (Acres)=				0.	00				0.00								
Site Acreage within Drainage=				0.	00				0.00								
One-year, 24-hour rainfall (in)=								3.	3.00								
Land Use (acres) by Soil Group:	Α 5	Soils	вя	Soils	c s	ioils	DS	Soils	A Soils B Soils			C Soils		D.S	Soils		
Commercial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot						i				i							
Roof						<u> </u>				 						<u> </u>	
Open/Landscaped						!		!		!		!				! 	
Industrial	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Parking lot		 								 				 		1	
Roof		İ				İ				İ				İ		<u> </u>	
Open/Landscaped		İ				<u> </u>				 				İ		i e	
Transportation	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
High Density (interstate, main)	- Cito	Circuto	O.LO	Cilotto	O.KO	Cilotto	- ONG	- Cilotto	0.10	- Cilotto	- Citio	- Cilotto	- Cito	- Onone	0.10	- Cilotto	
High Density (Grassed Right-of-ways)										!							
Low Density (secondary, feeder)																	
Low Density (Grassed Right-of-ways)						į				!						! 	
Rural		i İ		i		i		i		i		i		İ		 	
Rural (Grassed Right-of-ways)						<u> </u>										-	
Sidewalk		<u> </u>												<u> </u>		-	
Misc. Pervious	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Managed pervious (Open Space)	- Cito	Circuto	0.10	Cilcito	- Cito	Cholo	- ONG	Cilotto	0.10	Circle	- Cito	Circuto	O.CO	Onone	0.10	Circle	
Unmanaged (pasture)										! 						! 	
Woods (not on lots)						İ										<u> </u>	
Residential	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Roadway																	
Grassed Right-of-ways										<u> </u>							
Driveway																	
Parking lot						!		-		!		-				!	
Roof																1	
Sidewalk (Includes Patios)				i -		i		i		1		i				 	
Lawn						i										i 	
Managed pervious (Open Space)																	
Woods (on lots)																	
Land Taken up by BMP																<u> </u>	
JURISDICTIONAL LANDS	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite	
Natural wetland	0.10		0.10	0	0.10		0.10		0.1.0		0.10		0.10		0.10	1	
Riparian buffer (Zone 1 only)		i				i		1		i		1		İ		i	
Open water		1				i e				1				1		<u> </u>	
·	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

DA6 Page 1

SITE FLOW	PR	E-DEVELOPMENT T _c	POST-DEVELOPMENT Tc
Sheet Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
n-value=			
T _t (hrs)=		0.00	0.00
Shallow Flow			
Length (ft)=			
Slope (ft/ft)=			
Surface Cover:			
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Channel Flow 1			
Length (ft)=			
Slope (ft/ft)=			
Cross Sectional Flow Area (ft²)=			
Wetted Perimeter (ft)=			
Channel Lining:			
n-value=			
Hydraulic Radius (ft)=		0.00	0.00
Average Velocity (ft/sec)=		0.00	0.00
T _t (hrs)=		0.00	0.00
Tc (hrs)=	_	0.00	0.00
RESULTS	Р	RE-DEVELOPMENT	POST-DEVELOPMENT
Site Impervious Surface Area (Ac) =		0.00	0.00
Lot Impervious Surface Area (Ac) =		0.00	0.00
1-year, 24-hour storm (Peak Flow)			
Volume of runoff (ft ³) =			
Volume change (ft ³) =			T
Runoff (inches) = Q*=			
Peak Discharge (cfs)= Q=			
Composite Curve Number (DA)=			
Composite Curve Number (Site only)=			
DISCONNECTED IMPERVIOUS - Credit given on	ly to residential development v	vith drainage area with less than 30% impervious	
Percent Disconnected Impervious Credit (Residenti	al Only) =		
Disconnected impervious area (Ac) =			0.00
Drainage Area CN _{adjusted} =			
Site Only CN _{adjusted} =			

DA6 Page 2



Project Name: South Main

DA SITE SUMMARY STORMWATER PRE-POST CALCULATIONS

SITE SUMMARY							
DRAINAGE AREA SUMMARIES							
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	
Pre-Development (1-year, 24-hour storm)							
Runoff (in)= Q^* =	0.377						
Peak Flow (cfs)=Q _{post} =							
Post-Development (1-year, 24-hour storm)							
Proposed Impervious Surface (acre) =	1.19						
Runoff (in)= Q^* =	1.774						
Peak Flow (cfs)=Q _{post} =							
TARGET CURVE NUMBER (TCN) - Residential Only							
SITE \SOIL COMPOSITION							
HYDROLOGIC SOIL GROUP	<u>Sit</u>	e Area	0	<u>%</u>	<u>Targe</u>	et CN	
A		0.00	0	%	<u>N</u>	<u>/A</u>	
В	:	2.03	10	0%	<u>N</u>	<u>/A</u>	
С		0.00	0	%	N/A		
D	0.00 0%			%	% <u>N/A</u>		
Total Site Area (acres) =			2.0	3			
Zoning =			General B	Business			
Target Curve Number (TCN) =	N/A						
% Impervious =							
Post Development CN _{adjusted} =	= 83						
Required Volume to be Managed (TCN)= ft ³ =	= N/A						
SITE NITROGEN AND PHOSPHORUS LOADING							
Nitrogen and Phosphorus Targets (Based on Regulatory Watershed)							
Target Nitrogen Load (lb/ac/yr)=			3.6	6			
Target Phosphorus Load (Falls and Jordan Lakes Only) (lb/ac/yr)=			N/A	4			
% N Loading Reduction Option for Expansions (<u>Falls and Jordan Lakes Only</u>) =			N/A	A			
% Loading Reduction Nitrogen Target (Falls and Jordan Lakes Only) (lb/ac/yr)=			N/A	A			
% P Loading Reduction Option for Expansions (Falls and Jordan Lakes Only) =			N/A	A			
% Loading Reduction Phosphorus Target (Falls and Jordan Lakes Only) (lb/ac/yr)=	= N/A						
Pre Development Nitrogen and Phosphorus Load							
Total Nitrogen (lb/ac/yr)=			1.6	4			
Total Phosphorus (lb/ac/yr)=			N/A	Α			
Post Development Nitrogen and Phosphorus Load							
Total Nitrogen (lb/ac/yr)=			8.2	8			
Total Phosphorus (lb/ac/yr)=			N/A	4			

SITE SUMMARY Page 1



Project Name:	South Main

DRAINAGE AREA 1 BMP CALCULATIONS

DRAINAGE AREA 1 - BMP DEVICES	AND ADJUSTMENTS										
DA1 Site Acreage=					2.03						
DA1 Off-Site Acreage=					0.00						
Total Required Storage Volume for Site TCN Requirement (ft³)=											
Will site use underground water harvesting?		Enter %	volume re decir	duction in mal form=					submitted	formation/ d to demor	
ENTER AREA TREATED BY BMP											
Land Use (acres)		DA1(a) Ac)		DA1(b)	Sub-E			DA1(d)		DA1(e) Ac)
Commercial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot		0.88	i		! 						
Roof		0.31									
Open/Landscaped		0.41									
Industrial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot		0.10	On one	5.1.5	On one	5.1.5	0.1. 0.1.0	5.1.5	On one	5.1.5	0.1. 0.1.0
Roof			<u> </u>								
Open/Landscaped											
Transportation		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
High Density (interstate, main)		Oito	OII-3itC	Oile	OII-3ito	Oile	OII-3ito	Oile	OII-3ito	Oile	OII-3itC
High Density (Grassed Right-of-ways)			<u>:</u> 		<u>:</u> I						
Low Density (secondary, feeder)			i		<u>;</u> 						
Low Density (Grassed Right-of-ways)					<u>!</u> :						
Rural			1		<u> </u>						
Rural (Grassed Right-of-ways)					 						
Sidewalk			-								
Misc. Pervious		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
			OII-3itC	Oile	Oll-Sito	Oile	OII-3itC	Oile	OII-3ito	Oile	OII-3itC
Managed pervious		0.43	i I		i I						
Unmanaged (pasture) Woods (not on lots)					i						
,		0:1	0" "	0.1	0" "	0.1	011	0.1	0" "	0.1	0" "
Residential		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Roadway					<u> </u>						
Grassed Right-of-ways											
Driveway Parking lot					<u> </u>						
Roof			<u> </u>		<u> </u>						
Sidewalk			<u> </u>								
Lawn			İ								
Managed pervious			İ		i						
Woods (on lots)			i		<u>; </u>						
Land Taken up by BMP					i						
JURISDICTIONAL LANDS		Site	Off-site	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite
Natural wetland											
Riparian buffer (Zone 1 only)											
	Totals (Ac)=	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-DA1(a) BMP(s)											
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
BMP 1	Bioretention with IWS		1.39	8.28	0.17	1.01	1.04	3.08	0.13	0.39	
		4,256									
∩u#fl.	ow Total Nitrogen (lb/ac/yr)=	2	.08			Outflov	v Total Ph	osphorus ((lb/ac/vr)=	n	.39
Outil	OW TOTAL MILLOGETT (ID/AC/YI)-	3.				Guillov	· rotarrii	ospiioius (ibraoryi j-	U	.00

Sub-DA1(b) BMP(s)											
If Sub-DA1(b) is connected to upstream sub-	hasin(s) select all contributin	n suh-has	in/s from								
dropdown menus):	T	g oub buo	1		I						
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Out	low Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA1 (c) BMP(s)											
If Sub-DA1(c) is connected to upstream sub-	basin(s), select all contributin	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outt	ilow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA1 (d) BMP(s)											
If Sub-DA1(d) is connected to upstream sub-	basin(s), select all contributin	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Out	low Total Nitrogen (lb/ac/yr)=		I		I	Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA1 (e) BMP(s)											
If Sub-DA1(e) is connected to upstream sub-	basin(s), select all contributin	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Out	low Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
		DA1 BN	IP SUMI	MARY							
	Total Volume Treated (c.f.)=						0				
DA1 Out	low Total Nitrogen (lb/ac/yr)=					3	.08				
DA1 Outflow	Total Phosphorus (lb/ac/yr)=					0	.39				
1-year, 24-hour storm											
Pre Development P	eak Discharge (cfs)= Q _{1-year} =										
Post BMP P	eak Discharge (cfs)= Q _{1-year} =										

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Project Name:	South Main

DRAINAGE AREA 2 BMP CALCULATIONS

DRAINAGE AREA 2 - BMP DEVICES	AND ADJUSTMENTS										
DA2 Site Acreage=					0.00						
DA2 Off-Site Acreage=					0.00						
Total Required Storage Volume for Site TCN Requirement (ft³)=											
Will site use underground water harvesting?		Enter %	volume re decii	duction in mal form=					submitted	formation/ d to demor	
ENTER AREA TREATED BY BMP									<u> </u>		
Land Use (acres)		DA2(a) Ac)		DA2(b)		DA2(c)		DA2(d)		DA2(e) Ac)
Commercial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot							<u> </u>				
Roof											
Open/Landscaped											
Industrial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof			 								
Open/Landscaped			ļ								
Transportation		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
High Density (interstate, main)		Oito	OII-3ito	Oile	OII-3itC	Oile	OII-3itC	Oile	OII-3ito	Oile	OII-3ito
High Density (Grassed Right-of-ways)					! 		! 				
Low Density (secondary, feeder)			<u> </u>		<u>;</u> 		<u>;</u> 				
Low Density (Grassed Right-of-ways)					<u>!</u> :		<u>!</u> :				
Rural			!		<u> </u>		<u> </u>				
Rural (Grassed Right-of-ways)							! :				
Sidewalk			<u> </u>								
Misc. Pervious		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
		Oile	OII-SILE	Oile	Oll-Site	Site	Oll-Site	Site	Oll-site	Oile	Oll-Site
Managed pervious			; 		i I		; 				
Unmanaged (pasture)			<u> </u>		<u> </u> 		<u> </u> 				
Woods (not on lots)		0:1	0" "	0"	0" "	0.1	0" "	0.1	0" "	0"	0" "
Residential		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Roadway					!		!				
Grassed Right-of-ways							!				
Driveway			ļ		<u> </u>		<u> </u>				
Parking lot			<u> </u>		<u> </u>		<u> </u>				
Roof Sidewalk			-								
			İ		i		i				
Lawn Managed pervious			i		i i		<u>:</u> 				
Woods (on lots)					<u>. </u>		<u>. </u>				
Land Taken up by BMP					<u> </u>		<u>:</u> :				
JURISDICTIONAL LANDS		Site	Off-site	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite
Natural wetland		0.10	C. G.LC	0.10	- Cilotto	0.10	0	0.10	0.110.110	0.10	Onono
Riparian buffer (Zone 1 only)			<u> </u>								
,	Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-DA2(a) BMP(s)	,		1		1		1		1		1
(-)			Ι		l	1	l	1		l	
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
										l	

Sub-DA2(b) BMP(s)											
If Sub-DA2(b) is connected to upstream sub-t	pasin(s), select all contributin	g sub-bas	in(s from								
dropdown menus):											
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=		I			Outflow	/ Total Ph	osphorus	(lb/ac/yr)=		
Sub-DA2 (c) BMP(s)											
If Sub-DA2(c) is connected to upstream sub-b	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflow	/ Total Ph	osphorus	(lb/ac/vr)=		
Sub-DA2 (d) BMP(s)									,		
If Sub-DA2(d) is connected to upstream sub-l	pasin(s), select all contributin	g sub-bas	in(s):								
ouz 27 (2) 10 0011001.04 to apost out ouz 2	(a), coloct all collandall.		(0).					T		T ()	D
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflow	/ Total Ph	osphorus	(lb/ac/yr)=		
Sub-DA2 (e) BMP(s)											
If Sub-DA2(e) is connected to upstream sub-t	pasin(s), select all contributin	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=		•			Outflow	/ Total Ph	osphorus	(lb/ac/yr)=		
		DA2 BN	IP SUMI	MARY							
	Total Volume Treated (c.f.)=						0				
DA2 Outfl											
DA2 Outflow											
1-year, 24-hour storm											
Pre Development Pe	eak Discharge (cfs)= Q _{1-year} =										
Post BMP Peak Discharge (cfs)= Q _{1-year} =											

DA2_BMPs Page 2



Project Name:	South Main

DRAINAGE AREA 3 BMP CALCULATIONS

DRAINAGE AREA 3 - BMP DEVICES	AND ADJUSTMENTS										
DA3 Site Acreage=					0.00						
DA3 Off-Site Acreage=					0.00						
Total Required Storage Volume for Site TCN Requirement (ft³)=											
Will site use underground water harvesting?		Enter %	volume re decii	duction in mal form=					porting information/details submitted to demonstrate ge.		
ENTER AREA TREATED BY BMP											
Land Use (acres)		DA3(a) Ac)		DA3(b)		DA3(c)		DA3(d)		DA3(e) Ac)
Commercial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof											
Open/Landscaped											
Industrial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof			<u> </u>								
Open/Landscaped			j								
Transportation		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
High Density (interstate, main)									VIII		
High Density (Grassed Right-of-ways)											
Low Density (secondary, feeder)			i		i						
Low Density (Grassed Right-of-ways)											
Rural											
Rural (Grassed Right-of-ways)			!								
Sidewalk			<u> </u>								
Misc. Pervious		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
		Oile	OII-3ito	Oile	OII-3IIC	Oile	OII-3ito	Oito	OII-3itC	Oile	OII-Site
Managed pervious			i I		; 						
Unmanaged (pasture)			<u> </u>		<u> </u>						
Woods (not on lots)		0''									
Residential		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Roadway											
Grassed Right-of-ways			<u> </u>		<u> </u>						
Driveway			<u> </u>		<u> </u>						
Parking lot			<u> </u>		<u> </u>						
Roof			<u> </u>								
Sidewalk			1								
Lawn											
Managed pervious											
Woods (on lots)											
Land Taken up by BMP		0:4-	O# -:+-	0:4-	O#-:+-	0:4-	O#-:4-	0:4-	O#-:+-	0:4-	O#-:1-
JURISDICTIONAL LANDS		Site	Off-site	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite
Natural wetland			<u> </u>								
Riparian buffer (Zone 1 only)	Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O. I. DAG(-) PMP(-)	Totals (Ac)-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-DA3(a) BMP(s)		Т	ı		Т	ı		ı		ı	
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	Outflow Total Nitrogen (lb/ac/yr)=		<u> </u>		<u> </u>	Outflov	v Total Ph	osphorus	(lb/ac/vr)=		
Odin								,	/		

Sub-DA3(b) BMP(s)											
If Sub-DA3(b) is connected to upstream sub-ldropdown menus):	pasin(s), select all contributing	g sub-bas	in(s from								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
								, ,,			, ,
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	/ Total Ph	osphorus ((lb/ac/vr)=		
Sub-DA3 (c) BMP(s)								<u>'</u>	,		
If Sub-DA3(c) is connected to upstream sub-t	pasin(s), select all contributing	g sub-basi	n(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=				l	Outflov	/ Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA3 (d) BMP(s)											
If Sub-DA3(d) is connected to upstream sub-l	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	/ Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA3 (e) BMP(s)											
If Sub-DA3(e) is connected to upstream sub-l	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
		DA3 BN	IP SUMI	MARY							
	Total Volume Treated (c.f.)=						0				
DA3 Outfl	ow Total Nitrogen (lb/ac/yr)=										
DA3 Outflow	Total Phosphorus (lb/ac/yr)=										
1-year, 24-hour storm											
Pre Development Po	eak Discharge (cfs)= Q _{1-year} =										
Post BMP Peak Discharge (cfs)= Q _{1-year} =											

DA3_BMPs Page 2



Project Name:	South Main

DRAINAGE AREA 4 BMP CALCULATIONS

DRAINAGE AREA 4 - BMP DEVICES	AND ADJUSTMENTS										
DA4 Site Acreage=					0.00						
DA4 Off-Site Acreage=					0.00						
Total Required Storage Volume for Site TCN Requirement (ft³)=											
Will site use underground water harvesting?		Enter %	volume re decii	duction in mal form=					submitte	formation/ d to demor	
ENTER AREA TREATED BY BMP											
Land Use (acres)		DA4(a) Ac)		DA4(b)		0A4(c) .c)	Sub-E	0A4(d)		DA4(e) Ac)
Commercial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof											
Open/Landscaped											
Industrial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof			<u> </u>								
Open/Landscaped			j								
Transportation		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
High Density (interstate, main)									VIII		
High Density (Grassed Right-of-ways)											
Low Density (secondary, feeder)			i		i						
Low Density (Grassed Right-of-ways)											
Rural											
Rural (Grassed Right-of-ways)			!								
Sidewalk			<u> </u>								
Misc. Pervious		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
		Oito	OII-3ito	Oile	OII-3IIC	Oile	OII-3ito	Oile	OII-3itC	Oile	OII-Site
Managed pervious			i I		; 						
Unmanaged (pasture)			<u> </u>		<u> </u>						
Woods (not on lots)											
Residential		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Roadway											
Grassed Right-of-ways											
Driveway			<u> </u>		<u> </u>						
Parking lot			<u> </u>		<u> </u>						
Roof			<u> </u>								
Sidewalk			1								
Lawn											
Managed pervious											
Woods (on lots)											
Land Taken up by BMP		0:4-	O# -:+-	0:4-	O#-:-	0:4-	O#-:4-	0:4-	O#-:+-	0:4-	O#-:1-
JURISDICTIONAL LANDS		Site	Off-site	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite
Natural wetland			<u> </u>								
Riparian buffer (Zone 1 only)	Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O. I. DA4(a) PMP(a)	Totals (Ac)-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-DA4(a) BMP(s)		Т	ı		Т	ı		ı		ı	
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	Outflow Total Nitrogen (lb/ac/yr)=		<u> </u>		<u> </u>	Outflov	v Total Ph	osphorus ((lb/ac/vr)=		
Odin								,	/		

Sub-DA4(b) BMP(s)											
If Sub-DA4(b) is connected to upstream sub-tdropdown menus):	pasin(s), select all contributin	g sub-bas	in(s from								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
		. ,									, ,
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/vr)=		
Sub-DA4 (c) BMP(s)									,		
If Sub-DA4(c) is connected to upstream sub-t	pasin(s) select all contributing	n sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=		l		l	Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA4 (d) BMP(s)											
If Sub-DA4(d) is connected to upstream sub-t	pasin(s), select all contributin	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=		Outflow Total Phosphorus (lb/ac/yr)=								
Sub-DA4 (e) BMP(s)											
If Sub-DA4(e) is connected to upstream sub-t	pasin(s), select all contributin	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
		DA4 BN	IP SUMI	MARY							
	Total Volume Treated (c.f.)=						0				
DA4 Outfl	ow Total Nitrogen (lb/ac/yr)=										
DA4 Outflow	Total Phosphorus (lb/ac/yr)=										
1-year, 24-hour storm											
Pre Development Pe	eak Discharge (cfs)= Q _{1-year} =										
Post BMP Peak Discharge (cfs)= Q _{1-year} =											

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Project Name:	South Main

DRAINAGE AREA 5 BMP CALCULATIONS

DRAINAGE AREA 5 - BMP DEVICES	AND ADJUSTMENTS										
DA5 Site Acreage=					0.00						
DA5 Off-Site Acreage=					0.00						
Total Required Storage Volume for Site TCN Requirement (ft³)=											
Will site use underground water harvesting?		Enter %	inter % volume reduction in decimal form= Note: Supporting informs should be submitted to water usage.								
ENTER AREA TREATED BY BMP											
Land Use (acres)		DA5(a) Ac)		DA5(b)	Sub-E	DA5(c)	Sub-E	A5(d)		DA5(e) Ac)
Commercial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof							i				
Open/Landscaped											
Industrial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof			<u> </u>								
Open/Landscaped			j				į				
Transportation		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
High Density (interstate, main)			On one	5.1.5	0.11 0.110	00	0.1. 0.1.0	0.10	011 0110	5.1.5	0.1. 0.1.0
High Density (Grassed Right-of-ways)					İ		; 				
Low Density (secondary, feeder)			i		i		i				
Low Density (Grassed Right-of-ways)											
Rural							! !				
Rural (Grassed Right-of-ways)					<u> </u>		<u> </u> 				
Sidewalk											
Misc. Pervious		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Managed pervious		0.10	on one	5.1.5	0.1. 0.1.0	00	0.1. 0.1.0	0.10	On one	0.1.0	0.1. 0.1.0
Unmanaged (pasture)			<u>. </u>		<u> </u>		I				
Woods (not on lots)			<u>:</u> 		<u> </u>		<u>:</u> 				
Residential		Cito	Off-site	Cito	Off-site	Cito	Off-site	Cito	Off-site	Cito	Off-site
		Site	OII-SILE	Site	OII-SILE	Site	OII-SILE	Site	OII-SILE	Site	OII-SILE
Roadway			<u> </u>		<u> </u>		<u> </u>				
Grassed Right-of-ways							<u> </u>				
Driveway			<u> </u>		<u> </u> 		 				
Parking lot Roof			 		ļ		ļ				
Sidewalk											
Lawn			<u>. </u>				<u>. </u>				
Managed pervious					i		i				
Woods (on lots)			1				<u> </u>				
Land Taken up by BMP											
JURISDICTIONAL LANDS		Site	Off-site	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite
Natural wetland											
Riparian buffer (Zone 1 only)							!				
	Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-DA5(a) BMP(s)			•								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
O.:44	ow Total Nitrogen (Ib/ochre)					Outflow	v Total Dh	osphorus ((lh/ac/\r)-		
Outri	ow Total Nitrogen (lb/ac/yr)=					Guillov	v iolai Pii	ospiioius ((ib/ac/yi)-		

Sub-DA5(b) BMP(s)											
If Sub-DA5(b) is connected to upstream sub-ldropdown menus):	pasin(s), select all contributing	g sub-bas	in(s from								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	/ Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA5 (c) BMP(s)											
If Sub-DA5(c) is connected to upstream sub-t	pasin(s), select all contributing	g sub-bas	n(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=				I	Outflov	/ Total Ph	osphorus ([lb/ac/yr)=		
Sub-DA5 (d) BMP(s)											
If Sub-DA5(d) is connected to upstream sub-l	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	/ Total Ph	osphorus (lb/ac/yr)=		
Sub-DA5 (e) BMP(s)											
If Sub-DA5(e) is connected to upstream sub-l	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	/ Total Ph	osphorus ((lb/ac/yr)=		
		DA5 BN	IP SUMI	MARY							
	Total Volume Treated (c.f.)=						0				
DA5 Outfl	ow Total Nitrogen (lb/ac/yr)=										
DA5 Outflow	Total Phosphorus (lb/ac/yr)=										
1-year, 24-hour storm											
Pre Development Peak Discharge (cfs)= Q _{1-year} =											
Post BMP Peak Discharge (cfs)= Q _{1-year} =											

DA5_BMPs Page 2



Project Name:	South Main

DRAINAGE AREA 6 BMP CALCULATIONS

DRAINAGE AREA 6 - BMP DEVICES	AND ADJUSTMENTS										
DA6 Site Acreage=					0.00						
DA6 Off-Site Acreage=					0.00						
Total Required Storage Volume for Site TCN Requirement (ft³)=											
Will site use underground water harvesting?		Enter %	volume re decir	duction in mal form=	should be	ote: Supporting information/details ould be submitted to demonstrate ater usage.					
ENTER AREA TREATED BY BMP											
Land Use (acres)		DA6(a) Ac)		DA6(b)	Sub-E	DA6(c)	Sub-E)A6(d)		DA6(e) Ac)
Commercial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof							i				
Open/Landscaped							:				
Industrial		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Parking lot											
Roof			<u> </u>								
Open/Landscaped							İ				
Transportation		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
		Sile	OII-SILE	Sile	OII-SILE	Sile	OII-SILE	Sile	OII-SILE	Site	OII-SILE
High Density (interstate, main)			!		<u>!</u> !		<u>!</u> !				
High Density (Grassed Right-of-ways)					<u> </u>		<u> </u>				
Low Density (Secondary, feeder)					!		!				
Low Density (Grassed Right-of-ways)					<u> </u>		<u> </u>				
Rural (Crassed Bight of ways)			<u> </u>		<u> </u>		<u> </u>				
Rural (Grassed Right-of-ways)											
Sidewalk											
Misc. Pervious		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Managed pervious											
Unmanaged (pasture)											
Woods (not on lots)							<u> </u>				
Residential		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Roadway											
Grassed Right-of-ways							į				
Driveway											
Parking lot					İ		i				
Roof											
Sidewalk											
Lawn							!				
Managed pervious			ļ		ļ		!				
Woods (on lots)			į		į		į				
Land Taken up by BMP			İ		<u> </u>		<u> </u>				
JURISDICTIONAL LANDS		Site	Off-site	Site	Offsite	Site	Offsite	Site	Offsite	Site	Offsite
Natural wetland							<u> </u>				
Riparian buffer (Zone 1 only)											
	Totals (Ac)=	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-DA6(a) BMP(s)											
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outflow Total Nitrogen (lb/ac/yr)=			ı		1	Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
	3 (, /		

Sub-DA6(b) BMP(s)											
If Sub-DA6(b) is connected to upstream sub-ldropdown menus):	pasin(s), select all contributing	g sub-bas	in(s from								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA6 (c) BMP(s)											
If Sub-DA6(c) is connected to upstream sub-t	pasin(s), select all contributing	g sub-bas	n(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=				I	Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA6 (d) BMP(s)											
If Sub-DA6(d) is connected to upstream sub-l	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
Sub-DA6 (e) BMP(s)											
If Sub-DA6(e) is connected to upstream sub-l	pasin(s), select all contributing	g sub-bas	in(s):								
Device Name (As Shown on Plan)	Device Type	Water Quality Volume (c.f.)	Inflow N EMC (mg/L)	Total Inflow N (lb/ac/yr)	Inflow P EMC (mg/L)	Total Inflow P (lb/ac/yr)	Outflow N EMC (mg/L)	Total Outflow N (lb/ac/yr)	Outflow P EMC (mg/L)	Total Outflow P (lb/ac/yr)	Provided Volume Managed (c.f.)
Outfl	ow Total Nitrogen (lb/ac/yr)=					Outflov	v Total Ph	osphorus ((lb/ac/yr)=		
		DA6 BN	IP SUMI	MARY							
	Total Volume Treated (c.f.)=						0				
DA6 Outflow Total Nitrogen (lb/ac/yr)=											
DA6 Outflow	Total Phosphorus (lb/ac/yr)=										
1-year, 24-hour storm											
Pre Development Peak Discharge (cfs)= Q _{1-year} =											
Post BMP Peak Discharge (cfs)= Q _{1-year} =											

DA6_BMPs Page 2



Project Name:	South Main

DA SITE SUMMARY BMP CALCULATIONS

BMP SUMMARY								
DRAINAGE AREA SUMMARIES								
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6		
Post-Development (1-year, 24-hour storm)								
Peak Flow (cfs)=Q _{1-year} =								
Post-Development wit	h BMPs (1	-year, 24-h	our storm)				
% Impervious =			59	9%				
Volume Managed (CF)=			(0				
Post BMP Peak Discharge (cfs)= Q _{1-year} =								
Have Target Curve Number Requirements been met?	N/A							
Pre Development Nit	Pre Development Nitrogen and Phosphorus Load							
Total Nitrogen (lb/ac/yr)=			1.	64				
Total Phosphorus (lb/ac/yr)=	Total Phosphorus (lb/ac/yr)= N/A							
Post Development Nitrogen and Phosphorus Load								
Total Nitrogen (lb/ac/yr)=	8.28							
Total Phosphorus (lb/ac/yr)= N/A								
Post-BMP Nitrogen Loading								
Outflow Total Nitrogen (lb/ac/yr)=			3.	08				
Outflow Total Phosphorus (lb/ac/yr)=	0.39							
Has site met the Target?	YES							
Has site met requirements for offsetting?			YI	ES				

CALCULATIONS AND REFERENCE

MAXIMUM CURVE NUMBER AFTER DEVELOPMENT							
ZONING DISTRICT	Α	В	С	D			
R-80W and R-80	37	60	73	79			
R-40W and R-40	41	62	75	80			
R-30, R-20, R-15, R-10, R-5, Residential Highway, General Business and Office and Institutional	43	63	76	81			

WEIGHTED CURVE NUMBER							
RUNOFF CURVE NUMBERS FOR URBAN AREAS							
LAND USE	Α	В	С	D			
COMMERCIAL							
Parking lot	98	98	98	98			
Roof	98	98	98	98			
Open/Landscaped	39	61	74	80			
INDUSTRIAL							
Parking lot	98	98	98	98			
Roof	98	98	98	98			
Open/Landscaped	39	61	74	80			
TRANSPORTATION							
High Density (interstate, main)	98	98	98	98			
Low Density (secondary, feeder)	98	98	98	98			
Rural	98	98	98	98			
Sidewalk	98	98	98	98			
MISC. PERVIOUS							
Managed pervious	39	61	74	80			
Unmanaged (pasture)	39	61	74	80			
Woods	30	55	70	77			
RESIDENTIAL							
Roadway	98	98	98	98			
Driveway	98	98	98	98			
Parking lot	98	98	98	98			
Roof	98	98	98	98			
Sidewalk	98	98	98	98			
Lawn	39	61	74	80			
Managed pervious	39	61	74	80			
Woods	30	55	70	77			
Jurisdictional Lands	Jurisdictional Lands						
Natural wetland	30	55	70	77			
Riparian buffer	39	61	74	80			

SCS RUNOFF METHOD

Q*= (P-.2s)²/(P+.8s)
Where:
Q*= Runoff (in)
P= Precipitation (in)
S= Potential max retention after runoff begins (in) = (1000/CN)-10

Notes:

Calculations used on Drainage Area Sheets

DISCRETE RUNOFF METHOD

 $Q = Q^*_{(imp) \ X} DA_{(imp)} + Q^*_{(pervious)} \ X \ DA_{(pervious)}$

 $Q^{\star}_{(imp)}$ = Runoff from Impervious Area (in)

DA_(imp) = Drainage from impervious area (acre)

Q*_(pervious) = Runoff from pervious area (in)

DA_(pervious) = Drainage from pervious area (acre)

CALCULATIONS and TABLES Page 1

PEAK FLOW

Method: TR-55 Graphical Peak Discharge Method for Type II Distribution

 $\log(q_u) = C_o + C_1 \log(Tc) + C_2 [\log(Tc)]^2$ Where: C_0 , C_1 , C_2 = coefficient from Table F-1

T_c = time of concentration (hr)

 $Q_p = q_uAmQ*Fp$

Where:

Q_p = Peak Discharge (cfs)

q_u = Unit peak discharge (csm/in) *TR-55 Appendix F*

 A_m = Drainage Area (mi²) Q* = runoff (inches) F_p = pond adjustment factor

Limitations: The watershed must be hydrologically homogeneous

The watershed may have only one main stream or, if more than one, the branches must have nearly equal Tc's.

The Fp factor can be applied only for ponds or swamps that are not in the $T_{\rm c}$ flow path

This method should be used only if the weighted CN is greater than 40.

When this method is used to develop estimates of peak discharge for both pre and post development, use the same procedure for estimating Tc.

 $\rm T_{\rm c}$ values with this method may range from 0.1 to 10 hours.

CALCULATIONS and TABLES

					TIME	OF CONCENTRATION		
$T_{t} = \underbrace{L}_{3600V} \qquad T_{t} = \text{travel time (hr)}$ $L = \text{flow length (ft)}$ $V = \text{average velocity (ft/s)}$ $3600 = \text{conversion factor fi}$						L = flow length (ft)	ours	
			T _c =	sum of T _t va	lues for cons	ecutive flow segments		
$T_c = T_1 + T_2 + T_3 + T_m$								
						T _c = time of concentration (hr) m = # of flow segments		
	ults to 5 minute							
SF	HEET FLOW	(FOR FLOV	V LESS TH	AN 300 FEI	ET)	Surface Cover	ALLOW FLOW	
T _t =	0.007(nL) ^{0.8}					Unpaved: V= 16.1345(s) ^{0.5}		
	0.007(nL) ^{0.8} (P ₂) ^{0.5} s ^{0.4}					Paved: V= 20.3282(s) ^{0.6}		
	T _t =travel time	(hr)				V=Average Velocity (ft/s)		
	n = Manning's	roughness o	pefficient (Tab	le 3-1)		s = slope of hydraulic grade lin	ne (watercourse slope, ft/ft)	
	L = flow length $P_2 = 2$ -year, 2		I. 3.6 inches			T. = L		
	s = slope of hy			pe, ft/ft)		$T_{t} = \frac{L}{3600V}$		
						T _t =travel time (hr)		
						L = flow length (ft)		
						V = average velocity (ft/s) 3600 = conversion factor from	seconds to hours	
	Modified	Table 3-1 f	or Stormwa	ter Tool			CHANNEL FLOW	
CUBEACE DI	ESCRIPTION				n	V= 4.40.2/3.1/2		
	el, or Bare Soil				0.011	V= 1.49r ^{2/3} s ^{1/2}		
Grass					0.24			
Woods	ods 0.40				0.40	V=Average Velocity (ft/s)		
	TABLE 4-1, TR-55 I _a values for runoff curve numbers				r = hydraulic radius (ft)			
						-	- Albania I alama (MM)	
	l _a valu			bers		s = slope of hydraulic grade lir		
CN	l _a valu			bers	l _a (in)	-		
CN 40	-	ies for runo	ff curve num		I _a (in)	s = slope of hydraulic grade lir		
	I _a (in)	cn	ff curve num	CN		s = slope of hydraulic grade lir n = Manning's roughness coef		
40	I _a (in)	CN 60	I _a (in)	CN 80	0.500	s = slope of hydraulic grade lir	fficient for open channel flow	
40 41	I _a (in) 3.000 2.878	CN 60 61	I _a (in) 1.333 1.279	CN 80 81	0.500 0.469	s = slope of hydraulic grade lir n = Manning's roughness coef r =a	fficient for open channel flow $T_t = \underline{ \qquad L}$	
40 41 42	I _a (in) 3.000 2.878 2.762	CN 60 61 62	I _a (in) 1.333 1.279 1.226	CN 80 81 82	0.500 0.469 0.439	s = slope of hydraulic grade lir n = Manning's roughness coef r =a p _w	fficient for open channel flow $T_t = \underline{ \qquad L}$	
40 41 42 43	l _a (in) 3.000 2.878 2.762 2.651	CN 60 61 62 63	I _a (in) 1.333 1.279 1.226 1.175	CN 80 81 82 83	0.500 0.469 0.439 0.410	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ a = cross sectional flow area (ft2)	T _t = $\frac{L}{3600\text{V}}$	
40 41 42 43 44	I _a (in) 3.000 2.878 2.762 2.651 2.545	CN 60 61 62 63 64	I _a (in) 1.333 1.279 1.226 1.175 1.125	80 81 82 83 84	0.500 0.469 0.439 0.410 0.381	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ a = cross sectional flow area (ft2) p_w =wetted perimeter (ft)	T _t = $\frac{L}{3600 \text{V}}$	
40 41 42 43 44 45	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444	CN 60 61 62 63 64 65	I _a (in) 1.333 1.279 1.226 1.175 1.125 1.077	80 81 82 83 84 85	0.500 0.469 0.439 0.410 0.381 0.353	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ a = cross sectional flow area (ft2) p_w =wetted perimeter (ft)	T _t = $\frac{L}{3600V}$ T _t = travel time (hr)	
40 41 42 43 44 45 46	l _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348	CN 60 61 62 63 64 65 66	I _a (in) 1.333 1.279 1.226 1.175 1.125 1.077 1.030	CN 80 81 82 83 84 85	0.500 0.469 0.439 0.410 0.381 0.353	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ a = cross sectional flow area (ft2) p_w =wetted perimeter (ft)	T _t = $\frac{L}{3600V}$ T _t = travel time (hr) L = flow length (ft) V = average velocity (ft/s)	
40 41 42 43 44 45 46 47	l _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255	CN 60 61 62 63 64 65 66 67	I _a (in) 1.333 1.279 1.226 1.175 1.125 1.077 1.030 0.985	CN 80 81 82 83 84 85 86 87	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ a = cross sectional flow area (ft2) p_w =wetted perimeter (ft)	$T_t = \frac{L}{3600 \text{V}}$ $T_t = \frac{L}{1000 \text{ F}}$ $T_t = \text{travel time (hr)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$	
40 41 42 43 44 45 46 47 48	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167	CN 60 61 62 63 64 65 66 67 68	I _a (in) 1.333 1.279 1.226 1.175 1.125 1.077 1.030 0.985 0.941	CN 80 81 82 83 84 85 86 87 88	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ $a = cross sectional flow area (ft2) p_w = wetted perimeter (ft)$	T _t = L 3600V T _t = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs)	
40 41 42 43 44 45 46 47 48	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082	CN 60 61 62 63 64 65 66 67 68 69	I, (in) 1.333 1.279 1.226 1.175 1.125 1.077 1.030 0.985 0.941 0.899	CN 80 81 82 83 84 85 86 87 88 89	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ $a = cross sectional flow area (ft2) p_w = wetted perimeter (ft)$	$T_t = \frac{L}{3600 \text{V}}$ $T_t = \frac{L}{1000 \text{ F}}$ $T_t = \text{travel time (hr)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$ $T_t = \text{flow length (ft)}$	
40 41 42 43 44 45 46 47 48 49	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000	CN 60 61 62 63 64 65 66 67 68 69 70	I, (in) 1.333 1.279 1.226 1.175 1.125 1.077 1.030 0.985 0.941 0.899 0.857	CN 80 81 82 83 84 85 86 87 88 89 90	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ $a = cross sectional flow area (ft2) p_w = wetted perimeter (ft)$	T _t = L 3600V T _t = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs)	
40 41 42 43 44 45 46 47 48 49 50	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000 1.922	CN 60 61 62 63 64 65 66 67 68 69 70 71	Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle Langle L	CN 80 81 82 83 84 85 86 87 88 89 90 91	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247 0.222 0.198	s = slope of hydraulic grade lir n = Manning's roughness coef r =a a = cross sectional flow area (ft2) p_w=wetted perimeter (ft) TAE Rational	T ₁ = L 3600V T ₁ = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs) SLE 3-9, TR-55 Runoff Coefficients	
40 41 42 43 44 45 46 47 48 49 50 51	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000 1.922 1.846	CN 60 61 62 63 64 65 66 67 68 69 70 71 72	Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land	CN 80 81 82 83 84 85 86 87 88 89 90 91 92	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247 0.222 0.198 0.174	s = slope of hydraulic grade lir n = Manning's roughness coef $r = \frac{a}{p_w}$ a = cross sectional flow area (ft2) p_w =wetted perimeter (ft) TAE Rational	T _t = L 3600V T _t = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs) SLE 3-9, TR-55 Runoff Coefficients n 0.016	
40 41 42 43 44 45 46 47 48 49 50 51 52 53	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000 1.922 1.846 1.774	CN 60 61 62 63 64 65 66 67 68 69 70 71 72 73	Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land	CN 80 81 82 83 84 85 86 87 88 89 90 91 92 93	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247 0.222 0.198 0.174 0.151	s = slope of hydraulic grade lir n = Manning's roughness coef r =a a = cross sectional flow area (ft2) p_w=wetted perimeter (ft) TAE Rational CHANNEL LINING Asphalt	T _t = L 3600V T _t = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs) SLE 3-9, TR-55 Runoff Coefficients n 0.016 0.012	
40 41 42 43 44 45 46 47 48 49 50 51 52 53 54	I _a (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000 1.922 1.846 1.774 1.704	CN 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74	Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land Land	CN 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247 0.222 0.198 0.174 0.151	s = slope of hydraulic grade lir n = Manning's roughness coef r = a = cross sectional flow area (ft2) p_w=wetted perimeter (ft) TAE Rational CHANNEL LINING Asphalt Concrete, finished	T ₁ = L 3600V T ₁ = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs) BLE 3-9, TR-55 Runoff Coefficients	
40 41 42 43 44 45 46 47 48 49 50 51 52 53 54	La (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000 1.922 1.846 1.774 1.704 1.636	CN 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75	Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lang	CN 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247 0.222 0.198 0.174 0.151	s = slope of hydraulic grade lir n = Manning's roughness coef r =a a = cross sectional flow area (ft2) p_w=wetted perimeter (ft) TAE Rational CHANNEL LINING Asphalt Concrete, finished Concrete, unfinished Grass	T _t = L 3600V T _t = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor (sec-hrs) BLE 3-9, TR-55 Runoff Coefficients n 0.016 0.012 0.014	
40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55	La (in) 3.000 2.878 2.762 2.651 2.545 2.444 2.348 2.255 2.167 2.082 2.000 1.922 1.846 1.774 1.704 1.636 1.571	CN 60 61 62 63 64 65 66 67 70 71 72 73 74 75 76	Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lange Lang	CN 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96	0.500 0.469 0.439 0.410 0.381 0.353 0.326 0.299 0.273 0.247 0.222 0.198 0.174 0.151 0.128 0.105	s = slope of hydraulic grade lir n = Manning's roughness coef r =a a = cross sectional flow area (ft2) p_w=wetted perimeter (ft) TAE Rational CHANNEL LINING Asphalt Concrete, finished Concrete, unfinished	$T_t = \frac{L}{3600V}$ $T_t = \frac{L}{3600V}$ $T_t = \text{flow length (ft)}$ $V = \text{average velocity (ft/s)}$ $3600 = \text{conversion factor (sec-hrs)}$ $BLE 3-9, TR-55$ $Runoff Coefficients$ n 0.016 0.012 0.014 0.035	

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DISCONNECTED IMPERVIOUS CALCULATION

 $CN_{adjusted} = CN_p + [(P_{imp})^*(98-CN_p)^*(1-(0.5^*R))]$

Where:

 ${
m CN_{adjusted}}$ = Composite Curve Number ${
m CN_p}$ = Pervious runoff curve number ${
m P_{imp}}$ = Percent Imperviousness

R = ratio of unconnected impervious area to total impervious area

BMP DETAILS								
Figure 7, Jordan/Falls Lake Stormwater Load Accounting Tool User's Manual								
BMPs	TN Mass Removal %	TN EMC (mg/L)	TP Mass Removal %	TP EMC (mg/L)				
Bioretention with IWS	0.55	0.95	0.6	0.12				
Bioretention without IWS	0.55	1	0.6	0.12				
Dry Detention Pond	0.15	1.2	0.1	0.2				
Grassed Swale	0	1.21	0.5	0.258				
Green Roof	0.2	1.08	0.2	0.15				
Level Spreader, Filter Strip	0.6	1.2	0.45	0.154				
Permeable Pavement	0.4	1.44	0.7	0.39				
Sand Filter	0.4	0.92	0.45	0.14				
Water Harvesting*	0	1.08	0	0.15				
Wet Detention Pond	0.28	1.01	0.45	0.113				
Wetland	0.5	1.08	0.65	0.117				

Representative TN and TP Concentrations	Impervious Percentage (%)	TN (mg/L)	TP (mg/L)
COMMERCIAL			
Parking lot	1	1.44	0.16
Roof	1	1.08	0.15
Open/Landscaped	0	2.24	0.44
INDUSTRIAL			
Parking lot	1	1.44	0.39
Roof	1	1.08	0.15
Open/Landscaped	0	2.24	0.44
TRANSPORTATION			
High Density (interstate, main)	1	3.67	0.43
Low Density (secondary, feeder)	1	1.4	0.52
Rural	1	1.14	0.47
Sidewalk	1	1.4	1.16
MISC. PERVIOUS			
Managed pervious (includes grassed right-of-ways)	0	3.06	0.59
Unmanaged (pasture)	0	3.61	1.56
Woods	0	1.47	0.25
RESIDENTIAL			
Roadway	1	1.4	0.52
Driveway	1	1.44	0.39
Parking lot	1	1.44	0.39
Roof	1	1.08	0.15
Sidewalk	1	1.4	1.16
Lawn	0	2.24	0.44
Managed pervious (includes grassed right-of-ways)	0	3.06	0.59
Woods	0	1.47	0.25
LAND TAKEN UP BY BMP	1	1.08	0.15

Note: Adapted from Jordan/Falls Lake Stormwater Load Accounting Tool User's Manual

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