MEMORANDUM

DATE: 02/05/2021

TO: City of La Crosse – Engineering Department
Attn: Yuri Nasonovs

FROM: Kristopher Roppe, PE

SUBJECT: East Ward Commerce Center - Stormwater Management

This stormwater management memo has been prepared to accompany the submitted plans and stormwater calculations for the proposed East Ward Commerce Center improvements located at 2615 East Avenue in La Crosse. The project will consist of the construction of 2 new buildings along with parking lot, concrete walk, utilities, erosion control, stormwater management, and site restoration. A project location map is provided on Sheet G1-10 in the submitted plan set.

Design Standards

Stormwater management plans and calculations have been prepared to meet the requirements of NR 151 as listed below.

Table 1. Design Criteria

	Performance Standard	Requirements
Wisconsin Department of Natural Resources NR 151	Total Suspended Solids NR 151.122	Redevelopment – 40% TSS reduction from parking areas and roads.
	Peak Discharge NR 151.123	Exempt per NR 151.123(2)(b) – Redevelopment Site.
	Infiltration NR 151.124	Exempt per NR 151.124 (3)(b)3 – Redevelopment Site.
	Protective Areas NR 151.125	N/A – No protective areas within proposed site.
	Fueling & Vehicle Maintenance NR 151.126	N/A – No fueling or maintenance areas within proposed site.
	Location NR 151.127	BMP's will be located on site.
	Timing NR 151.128	BMP's will be installed prior to final stabilization.

Stormwater Management Facilities

The existing site consists of 2 buildings, parking lot, and landscaped areas. The existing site has one watershed area as shown on the Existing Drainage Map. The existing site runoff flows through the overall outfall located on the east side of the site.

The proposed site has been separated into 2 watersheds as shown on the Proposed Drainage Map. DA-1 consists of the parking area and north building. This area will drain to a proposed bio-infiltration basin to provide peak flow

reductions and treatment. DA-2 consists of the second building which will flow to the outfall of the site. The proposed outfall will remain as existing on the east of the site. The proposed project will reduce impervious area by 0.192 AC.

The proposed watersheds along with locations and details of the stormwater management facilities on site can be found in the plan sheets accompanying this submittal.

Calculation summary

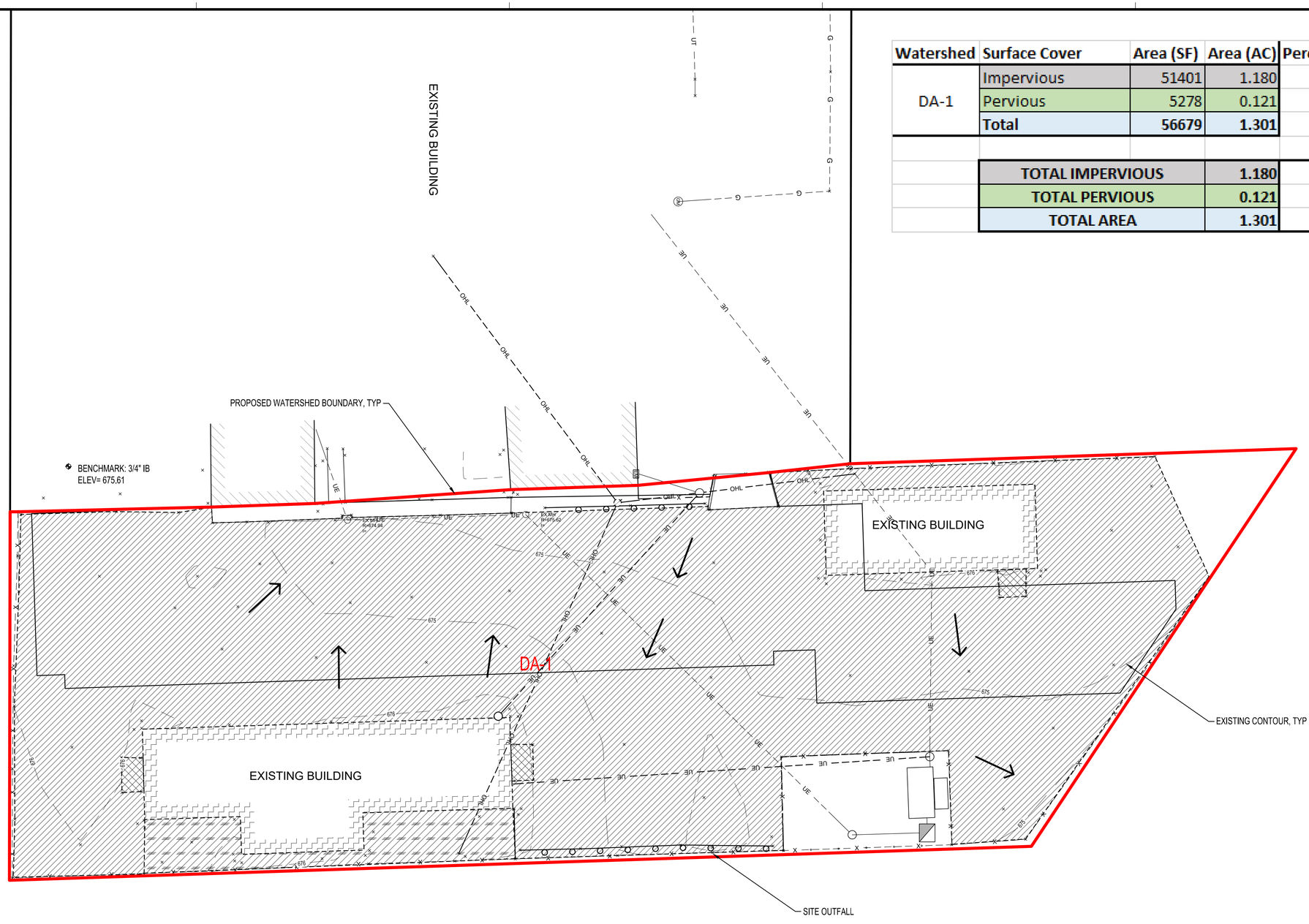
Water quality calculations were completed by utilizing the design data and the WinSLAMM Version 10.4.1 computer modeling system. This was used to provide analysis of the reduction in total suspended solids for the stormwater management system. Results show a reduction of 87.81% of the total suspend solids from parking areas for the proposed site conditions using suitable parameters for the La Crosse area when compared to no controls. The WinSLAMM Input and Output Report can be found in the enclosures.

A maintenance agreement with the City will be required for the stormwater management facilities. A draft agreement can be found in the enclosures.

Enclosures:

Site Plans
Existing Drainage Map
Proposed Drianage Map
WinSLAMM Report
Draft Maintenance Agreement

Watershed	Surface Cover	Area (SF)	Area (AC)	Percent Impervious
DA-1	Impervious	51401	1.180	91%
	Pervious	5278	0.121	
	Total	**56679**	**1.301**	
	TOTAL IMPERVIOUS		**1.180**	91%
	TOTAL PERVIOUS		**0.121**	
	TOTAL AREA		**1.301**	



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SCALE IN FEET

ISG

FOR REVIEW ONLY

PROJECT

EAST WARD

COMMERCE CENTER

LA CROSSE WISCONSIN

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	20-24527
FILE NAME	24527 EXISTING STORMWATER 1
DRAWN BY	CLF
DESIGNED BY	CLF
REVIEWED BY	KBR
ORIGINAL ISSUE DATE	02/05/2021
CLIENT PROJECT NO.	-

TITLE

EXISTING DRAINAGE MAP

SHEET

1

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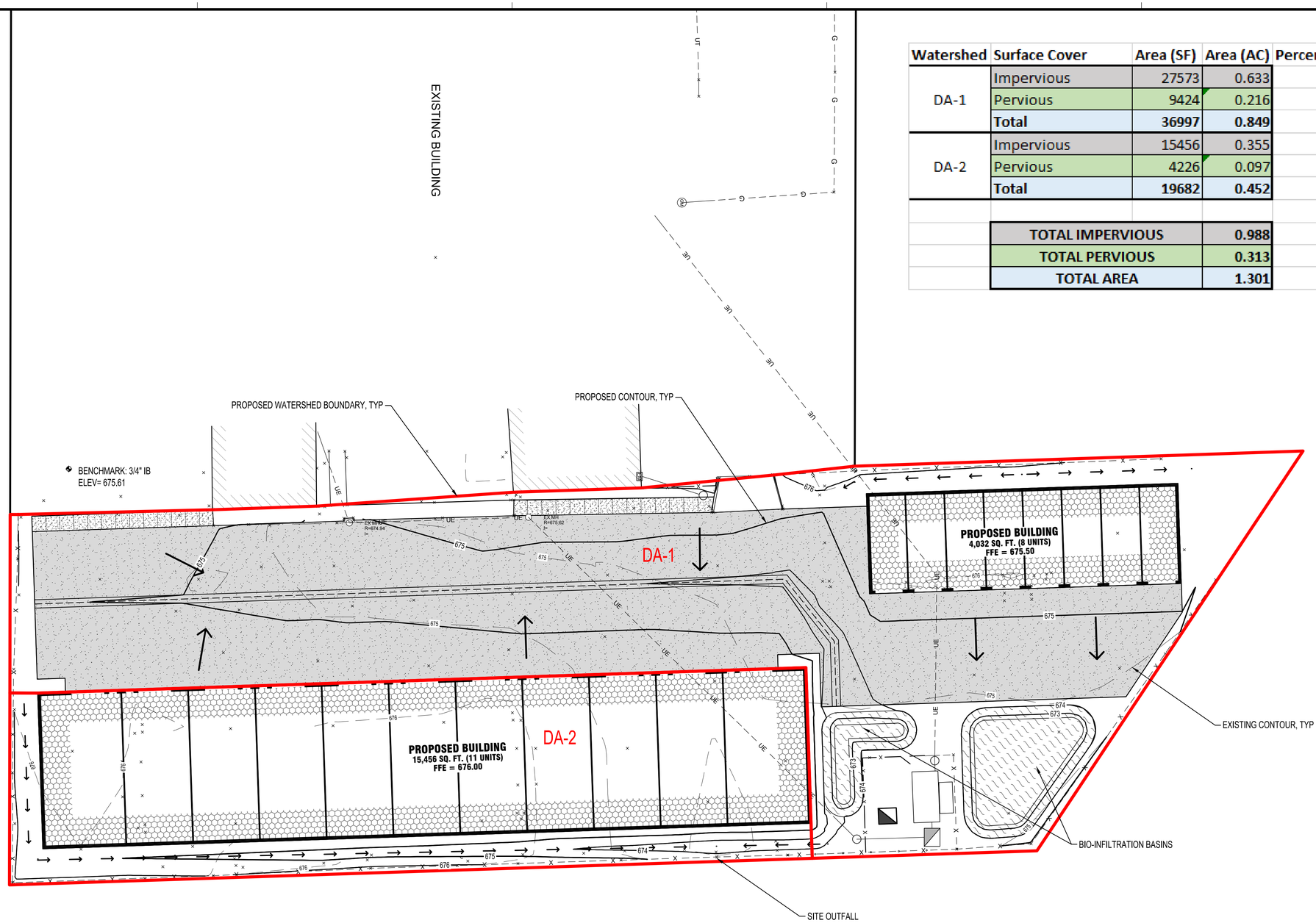
FOR REVIEW ONLY

Watershed	Surface Cover	Area (SF)	Area (AC)	Percent Impervious
DA-1	Impervious	27573	0.633	75%
	Pervious	9424	0.216	
	Total	**36997**	**0.849**	
DA-2	Impervious	15456	0.355	79%
	Pervious	4226	0.097	
	Total	**19682**	**0.452**	
	TOTAL IMPERVIOUS		**0.988**	76%
	TOTAL PERVIOUS		**0.313**	
	TOTAL AREA		**1.301**	



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SCALE IN FEET

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FOR REVIEW ONLY

PROJECT

EAST WARD

COMMERCE CENTER

LA CROSSE WISCONSIN

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	20-24527
FILE NAME	24527 PROPOSED STORMWATER
DRAWN BY	CLF
DESIGNED BY	CLF
REVIEWED BY	KBR
ORIGINAL ISSUE DATE	02/05/2021
CLIENT PROJECT NO.	-

TITLE

PROPOSED DRAINAGE MAP

SHEET

2

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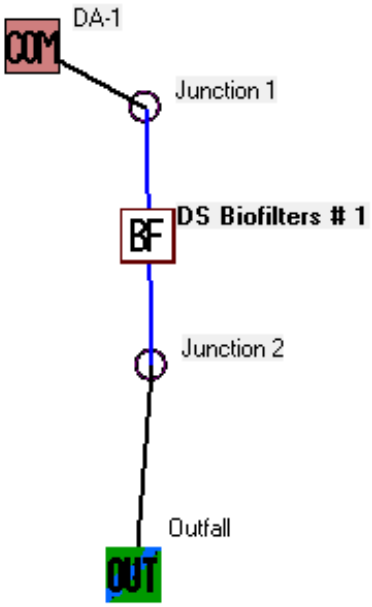
FOR REVIEW ONLY


DA-1
COM
Junction 1
DS Biofilters # 1
BF
Junction 2
Outfall
OUT

Data file name: \\isgfile1\Shared\Projects\24000 PROJ\24500-24599\24527 East Ward Storage Units La Crosse, WI\24527 Civil-Survey\Civil Calcs\24527 Proposed Co
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Minneapolis MN 1959.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/02/59 Study period ending date: 12/28/59
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 02-05-2021 Time: 12:04:32
Site information:

LU# 1 - Commercial: DA-1 Total area (ac): 0.849
1 - Roofs 1: 0.093 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#2
13 - Paved Parking 1: 0.540 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.216 ac. Moderately Compacted Sandy PSD File: C:\WinSLAMM Files\NURP.cpz OD-CP#3

Control Practice 1: Biofilter CP# 1 (DS) - DS Biofilters # 1
1. Top area (square feet) = 2500
2. Bottom aea (square feet) = 1320
3. Depth (ft): 3.5
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.5
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.01
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0
Soil Data Soil Type Fraction in Eng. Soil
User-Defined Soil Type 1.000
Saturation water content percent (Porosity) = 0
Field capacity (%) = 0
Permanent Wilting Point (%) = 0
Infiltration rate (in/hr) = 3.6
Biofilter Outlet/Discharge Characteristics:
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 2
2. Weir crest width (ft): 5
3. Height of datum to bottom of weir opening: 3.25
Control Practice 2: Other Device CP# 1 (SA) - SA Device, LU# 1 ,SA# 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0
Control Practice 3: Other Device CP# 2 (SA) - SA Device, LU# 1 ,SA# 51
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

SLAMM for Windows Version 10.4.1

Data file name: \\isgfile1\Shared\Projects\24000 PROJ\24500-24599\24527 East Ward Storage Units La Crosse, WI\24527 Civil-Survey\Civil Calcs\24527 Proposed Co
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Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
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Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/02/59 Study period ending date: 12/28/59
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/02/59 Model Run End Date: 12/28/59
Date of run: 02-05-2021 Time of run: 12:03:38
Total Area Modeled (acres): 0.849
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	50566	-	86.50	273.1	-
Outfall Total with Controls:	5819	88.49%	91.64	33.29	87.81%
Annualized Total After Outfall Controls:	5900			33.75	