



WinSLAMM v 10.0 User's Guide

Stormwater Control Devices

Control Devices Summary

 Biofiltration

 Catch Basins

 Cisterns

 Filter Strips

 Grass Swales

 Hydrodynamic Devices

 Media Filters

 Other Control Device

 Porous Pavement

 Street Cleaning

 Wet Detention Pond

Control Devices

After the Parameter File and Source Area data are entered, Control Devices can be added to analyze their ability to reduce stormwater runoff volume and/or pollutants.

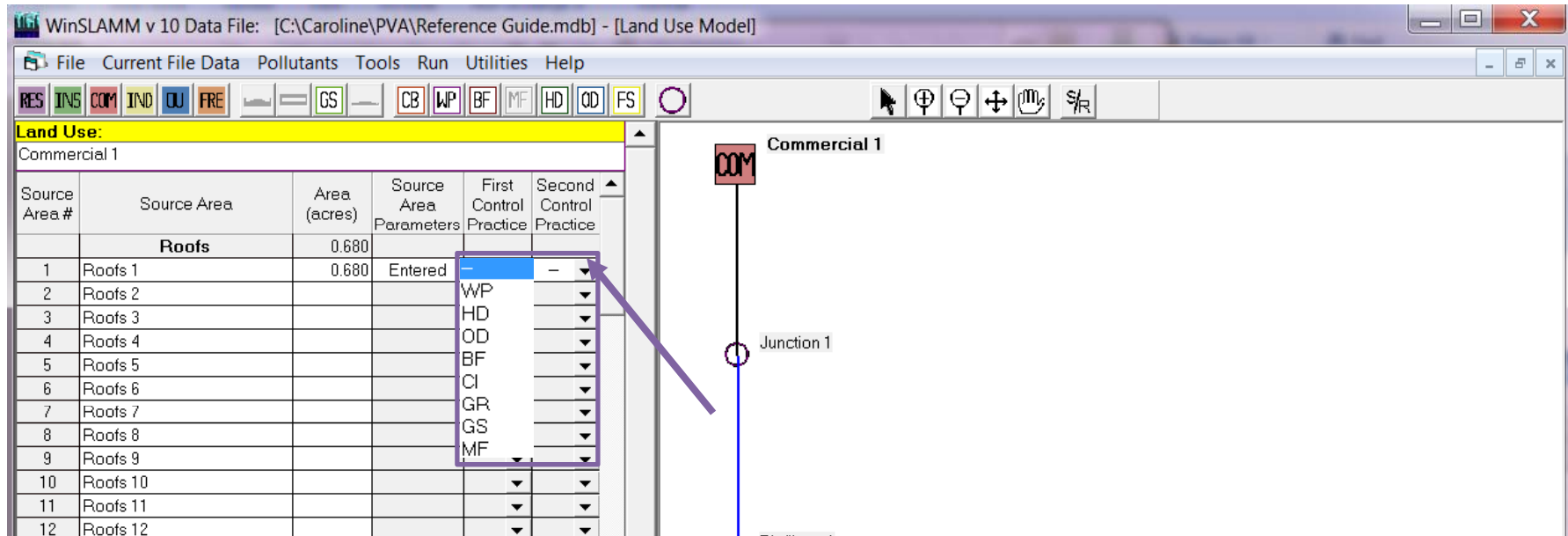
There are two types of control devices in the model:

1. Source Area Control Devices
2. Drainage System Control Devices

Depending upon the location in the program, not all Control Devices are available. For example, Street Cleaning is not available for the Roof Source Area.

All Control Devices have a “Copy/Paste” function. Data entered for one Control Device may be pasted into a new Control Device within the same model file.

Source Area Control Device

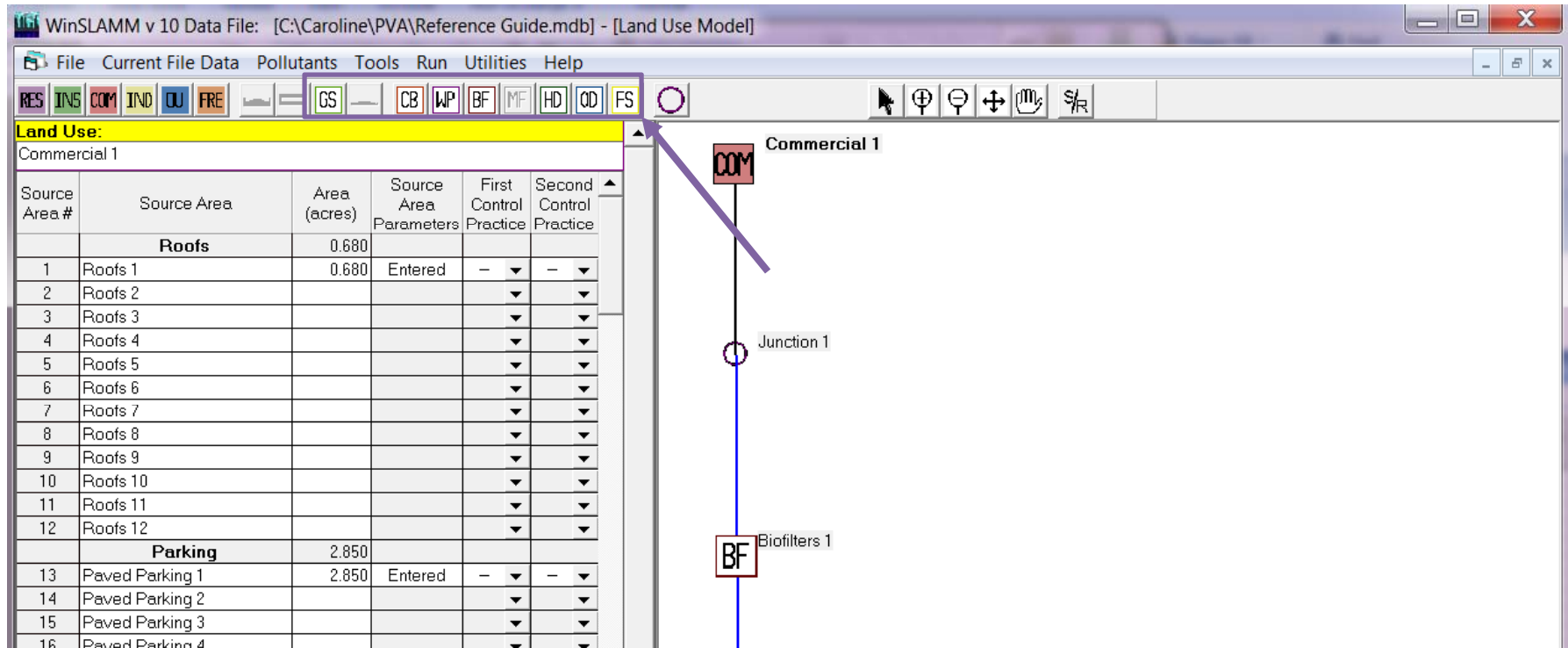


Source Area Control Devices are accessed from the Source Area Grid. To access a Source Area Control Device, select the pull-down menu under “First Control Practice” or “Second Control Practice” and then select the desired Control Device. A Source Area Control Device will only treat one source area.

The letters represent the following Control Devices:

WP – Wet Detention Pond	PP – Porous Pavement
HD – Hydrodynamic Device	FS – Filter Strip
OD - Other Device	CB – Catch Basin
BF – Biofiltration	SC - Street Cleaning
CI - Cistern	GS – Grass Swale

Drainage System Control Device



Drainage System Control Devices are accessed from the main toolbar. To access a Drainage System Control Device, click on the desired Control Device, then click on the white map space. The Control Device Icon will appear.

The letters represent the following Control Devices:

GS – Grass Swale

CB – Catch Basin

WP – Wet Detention Pond

BF – Biofiltration

MF – Media Filter

HD – Hydrodynamic Device

OD – Other Device

FS – Filter Strip

Control Devices – Biofiltration

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties **Biofilter Number 1**

Top Area (sf)	1363	Weir Length (ft)		Stage Number	Stage (ft)	Other Outflow Rate (cfs)	Month	Evapotranspiration (in/day)	Evaporation (in/day)
Bottom Area (sf)	1363	Height from datum to bottom of weir opening (ft)		1			Jan		
Total Depth (ft)	3.50			2			Feb		

Typical Width

Native Soil Infiltration

Infiltration Rate Fraction

Rock Filled Drains

Rock Fill Porosity

Engineered Media

Engineered Media Infiltration Rate

Engineered Media Infiltration Rate Fraction

Engineered Media Infiltration Rate Fraction

Engineered Media Infiltration Rate Fraction

Engineered Media Infiltration Rate Fraction

Percent solids

Engineered Media Infiltration Rate

Inflow Hydrograph

Flow Ratio

Number of Drains

Upstream Drainage

☐ Activate P

Diameter (ft)

Length (ft)

Within Biofilter

Perforated (ch)

Bottom Elevation

Discharge Or

Select Natural Media

☐ Sand - 8

☐ Loamy s

☐ Sandy lo

☐ Loam - 0

☐ Silt loam - 0.3 in/hr

☐ Clay - 0.02 in/hr

☐ Sandy silt loam - 0.2 in/hr

☐ Rain Barrel/Cistern - 0.00 in/hr

Paste Biofilter Data

Select Particle Size File **C:\Program Files\WinSLAMM v10\NURP.CPZ**

Refresh Schematic **Delete** **Cancel** **Continue**

Control Practice # : 1 **CP Index # : 1**

The Biofiltration Control Device allows the user to model many different types of stormwater control measures including:

- Infiltration Basins (without engineered soil)
- Biofilters (with engineering soil)
- Infiltration Trenches
- Rain Gardens

The stormwater control measures can be modeled with:

- Evaporation
- Evapotranspiration
- Impermeable Liners
- Drain Tiles
- Stone Storage Layers

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties Biofilter Number 1

Top Area (sf)	1363
Bottom Area (sf)	1363
Total Depth (ft)	3.50
Typical Width (ft) (Cost est. only)	10.00
Native Soil Infiltration Rate (in/hr)	0.020
Native Soil Infiltration Rate COV	N/A
Infil. Rate Fraction-Bottom (0-1)	1.00
Infil. Rate Fraction-Sides (0-1)	1.00
Rock Filled Depth (ft)	1.00
Rock Fill Porosity (0-1)	0.33
Engineered Media Type	Media Data
Engineered Media Infiltration Rate	3.84
Engineered Media Infiltration Rate COV	N/A
Engineered Media Depth (ft)	2.00
Engineered Media Porosity (0-1)	0.44
Percent solids reduction due to Engineered Media (0-100)	N/A
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Upstream Drainage System	31

☐ Activate Pipe or Box Storage ☐ Pipe ☐ Box

Diameter (ft)	
Length (ft)	
Within Biofilter (check if Yes)	<input type="checkbox"/>
Perforated (check if Yes)	<input type="checkbox"/>
Bottom Elevation (ft above datum)	
Discharge Orifice Diameter (ft)	

Select Native Soil Infiltration Rate

<input type="radio"/> Sand - 8 in/hr	<input type="radio"/> Clay loam - 0.1 in/hr
<input type="radio"/> Loamy sand - 2.5 in/hr	<input type="radio"/> Silty clay loam - 0.05 in/hr
<input type="radio"/> Sandy loam - 1.0 in/hr	<input type="radio"/> Sandy clay - 0.05 in/hr
<input type="radio"/> Loam - 0.5 in/hr	<input type="radio"/> Silty clay - 0.04 in/hr
<input type="radio"/> Silt loam - 0.3 in/hr	<input type="radio"/> Clay - 0.02 in/hr
<input type="radio"/> Sandy silt loam - 0.2 in/hr	<input type="radio"/> Rain Barrel/Cistern - 0.00 in/hr

Change Geometry

Select Particle Size File: C:\Program Files\WinSLAMM v10\NURP.CPZ

Control Practice #: 1 CP Index #: 1

Vertical Stand Pipe

Pipe diameter (ft)	
Height above datum (ft)	

Surface Discharge Pipe

Pipe Diameter (ft)	
Invert elevation above datum (ft)	
Number of pipes at invert elev.	

Drain Tile/Underdrain

Pipe Diameter (ft)	0.50
Invert elevation above datum (ft)	0.50
Number of pipes at invert elev.	1

Biofilter Geometry Schematic

10.00'

3.50'

3.40'

2.00'

1.00'

0.50'

0.50'

Top of Engineered Media

Top of Rock Fill

Initial Water Surface Elevation (ft) 0.00

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice: **Add** **Sharp Crested Weir** **Add** **Other Outlet**

Device Properties **Bifilter Number 1**

Top Area (sf): 1363

Bottom Area (sf):

Total Depth (ft):

Typical Width (ft) (Cost est. only):

Native Soil Infiltration Rate (in/hr):

Native Soil Infiltration Rate COV:

Infil. Rate Fraction-Bottom (0-1):

Infil. Rate Fraction-Sides (0-1):

Rock Filled Depth (ft):

Rock Fill Porosity (0-1):

Engineered Media Type:

Engineered Media Infiltration Rate:

Engineered Media Infiltration Rate COV:

Engineered Media Depth (ft):

Engineered Media Porosity (0-1):

Percent solids reduction due to Engineered Media (0-100):

Inflow Hydrograph Peak to Average Flow Ratio:

Number of Devices in Source Area Upstream Drainage System:

☐ Activate Pipe or Box Storage

Diameter (ft):

Length (ft):

Within Biofilter (check if Yes):

Perforated (check if Yes):

Bottom Elevation (ft above datum):

Discharge Orifice Diameter (ft):

Select Native Soil Infiltration

☐ Sand - 8 in/hr

Detailed Media Characteristics

Soil Type Texture	Saturation Water Content % (Porosity)	Field Capacity (Percent)	Permanent Wilting Point (Percent)	Infiltration Rate (in/hr)	Fraction of Soil Type Texture in Engineered Soil (0-1)
<input type="checkbox"/> User-Defined Soil Type	0.0	0.0	0.0	0.000	0.000
Gravel	32	4	0	40	0.000
Sands	38	8	2.5	13	0.800
Loamy Sands	39	13.5	4.5	2.5	0.000
Sandy Loams	40	19.5	6.5	1	0.000
Fine Sandy Loams	42	26.5	10.5	0.5	0.000
Loams & Silt Loams	43	34	14	0.15	0.000
Clay Loams/Silty Clay Loams	50	34.5	17	0.1	0.000
Silty Clays & Clays	55	33.5	18	0.015	0.000
Peat as Amendment	78	59	5	3	0.100
Compost as Amendment	61	55	5	3	0.100
Composite Soil Mixture Properties	44.3	17.8	3.0	13.000	1.000

☐ Apply Soil Mixture Values as a User Defined Soil Mixture

☒ Apply Porosity ☒ Apply Field Capacity ☒ Apply Wilting Point ☒ Apply Infiltration Rate ☒ Apply All Values

Cancel **Continue**

Plant Types

2	3	4

Continue

Enter the fraction of each Soil Type in the column on the right. The total should equal 1 when finished. To apply the various soil properties to the Control Devices, check the applicable boxes on the bottom of the form. Then select "Continue".

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties **Biofilter Number 1**

Top Area (sf)	1363
Bottom Area (sf)	1363
Total Depth (ft)	3.50
Typical Width (ft) (Cost est. only)	10.00
Native Soil Infiltration Rate (in/hr)	0.020
Native Soil Infiltration Rate COV	N/A
Infil. Rate Fraction-Bottom (0-1)	1.00
Infil. Rate Fraction-Sides (0-1)	1.00
Rock Filled Depth (ft)	1.00
Rock Fill Porosity (0-1)	0.33
Engineered Media Type	Media Data
Engineered Media Infiltration Rate	3.84
Engineered Media Infiltration Rate COV	N/A
Engineered Media Depth (ft)	2.00
Engineered Media Porosity (0-1)	0.44
Percent solids reduction due to Engineered Media (0-100)	N/A
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Upstream Drainage System	31

☐ Activate Pipe or Box Storage ☐ Pipe ☐ Box

Diameter (ft)	
Length (ft)	
Within Biofilter (check if Yes)	<input type="checkbox"/>
Perforated (check if Yes)	<input type="checkbox"/>
Bottom Elevation (ft above datum)	
Discharge Orifice Diameter (ft)	

Select Native Soil Infiltration Rate

☐ Sand - 8 in/hr ☐ Clay loam - 0.1 in/hr
☐ Loamy sand - 2.5 in/hr ☐ Silty clay loam - 0.05 in/hr
☐ Sandy loam - 1.0 in/hr ☐ Sandy clay - 0.05 in/hr
☐ Loam - 0.5 in/hr ☐ Silty clay - 0.04 in/hr
☐ Silt loam - 0.3 in/hr ☐ Clay - 0.02 in/hr
☐ Sandy silt loam - 0.2 in/hr ☐ Rain Barrel/Cistern - 0.00 in/hr

Select Particle Size File: C:\Program Files\WinSLAMM v10\NURP.CPZ

Control Practice #: 1 CP Index #: 1

Add Sharp Crested Weir

Weir Length (ft)	
Height from datum to bottom of weir opening (ft)	

Remove Broad Crested Weir

Weir crest length (ft)	10.00
Weir crest width (ft)	2.00
Height from datum to bottom of weir opening (ft)	3.40

Add Vertical Stand Pipe

Pipe diameter (ft)	
Height above datum (ft)	

Add Other Outlet

Stage Number	Stage (ft)	Other Outflow Rate (cfs)
1		
2		
3		
4		
5		

Add Evapotranspiration

Soil porosity (saturation moisture content, 0-1)	
Soil field moisture capacity (0-1)	

Evaporation

Month	Evapotranspiration (in/day)	Evaporation (in/day)
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		

Biofilter Geometry Schematic

Refresh Schematic Delete Cancel Continue

The Engineered Media Infiltration Rate and Media Porosity will be populated once the Media Data information and Engineered Media Depth is entered.

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties **Biofilter Number 1**

Top Area (sf)	1363
Bottom Area (sf)	1363
Total Depth (ft)	3.50
Typical Width (ft) (Cost est. only)	10.00
Native Soil Infiltration Rate (in/hr)	0.020
Native Soil Infiltration Rate COV	N/A
Infil. Rate Fraction-Bottom (0-1)	1.00
Infil. Rate Fraction-Sides (0-1)	1.00
Rock Filled Depth (ft)	1.00
Rock Fill Porosity (0-1)	0.33
Engineered Media Type	Media Data
Engineered Media Infiltration Rate	3.84
Engineered Media Infiltration Rate COV	N/A
Engineered Media Depth (ft)	2.00
Engineered Media Porosity (0-1)	0.44
Percent solids reduction due to Engineered Media (0-100)	N/A
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Upstream Drainage System	31

☐ Activate Pipe or Box Storage ☐ Pipe ☐ Box

Diameter (ft)	
Length (ft)	
Within Biofilter (check if Yes)	<input type="checkbox"/>
Perforated (check if Yes)	<input type="checkbox"/>
Bottom Elevation (ft above datum)	
Discharge Orifice Diameter (ft)	

Select Native Soil Infiltration Rate

<input type="radio"/> Sand - 8 in/hr	<input type="radio"/> Clay loam - 0.1 in/hr
<input type="radio"/> Loamy sand - 2.5 in/hr	<input type="radio"/> Silty clay loam - 0.05 in/hr
<input type="radio"/> Sandy loam - 1.0 in/hr	<input type="radio"/> Sandy clay - 0.05 in/hr
<input type="radio"/> Loam - 0.5 in/hr	<input type="radio"/> Silty clay - 0.04 in/hr
<input type="radio"/> Silt loam - 0.3 in/hr	<input type="radio"/> Clay - 0.02 in/hr
<input type="radio"/> Sandy silt loam - 0.2 in/hr	<input type="radio"/> Rain Barrel/Cistern - 0.00 in/hr

Select Particle Size File: C:\Program Files\WinSLAMM v10\NURP.CPZ

Control Practice #: 1 CP Index #: 1

Add Sharp Crested Weir

Weir Length (ft)	
Height from datum to bottom of weir opening (ft)	

Remove Broad Crested Weir

Weir crest length (ft)	10.00
Weir crest width (ft)	2.00
Height from datum to bottom of weir opening (ft)	3.40

Add Vertical Stand Pipe

Pipe diameter (ft)	
Height above datum (ft)	

Add Surface Discharge Pipe

Pipe Diameter (ft)	
Invert elevation above datum (ft)	
Number of pipes at invert elev.	

Remove Drain Tile/Underdrain

Pipe Diameter (ft)	0.50
Invert elevation above datum (ft)	0.50
Number of pipes at invert elev.	1

Add Other Outlet

Stage Number	Stage (ft)	Other Outflow Rate (cfs)
1		
2		
3		
4		
5		

Add Evapotranspiration

Soil porosity (saturation moisture content, 0-1)	
Soil field moisture capacity (0-1)	
Permanent wilting point (0-1)	
Supplemental irrigation used? <input type="checkbox"/>	
Fraction of available capacity when irrigation starts (0-1)	
Fraction of available capacity when irrigation stops (0-1)	

Evaporation

Month	Evapotranspiration (in/day)	Evaporation (in/day)
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		
Oct		
Nov		
Dec		

Plant Types

1	2	3	4
Fraction of biofilter that is vegetated <input type="checkbox"/>			
Plant type <input type="checkbox"/>			
Root depth (ft) <input type="checkbox"/>			
ET Crop Adjustment Factor <input type="checkbox"/>			

Biofilter Geometry Schematic

Change Geometry

Copy Biofilter Data

Paste Biofilter

If unknown, select the Native Soil Seepage Rate from the list of default values

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties

Biofilter Number 1

Top Area (sf)	1363
Bottom Area (sf)	1363
Total Depth (ft)	3.50
Typical Width (ft) (Cost est. only)	10.00
Native Soil Infiltration Rate (in/hr)	0.020
Native Soil Infiltration Rate COV	N/A
Infil. Rate Fraction-Bottom (0-1)	1.00
Infil. Rate Fraction-Sides (0-1)	1.00
Rock Filled Depth (ft)	1.00
Rock Fill Porosity (0-1)	0.33
Engineered Media Type	Media Data
Engineered Media Infiltration Rate	3.84
Engineered Media Infiltration Rate COV	N/A
Engineered Media Depth (ft)	2.00
Engineered Media Porosity (0-1)	0.44
Percent solids reduction due to Engineered Media (0-100)	N/A
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Upstream Drainage System	31

☐ Activate Pipe or Box Storage ☐ Pipe ☐ Box

Diameter (ft)	
Length (ft)	
Within Biofilter (check if Yes)	<input type="checkbox"/>
Perforated (check if Yes)	<input type="checkbox"/>
Bottom Elevation (ft above datum)	
Discharge Orifice Diameter (ft)	

Select Native Soil Infiltration Rate

<input type="radio"/> Sand - 8 in/hr	<input type="radio"/> Clay loam - 0.1 in/hr
<input type="radio"/> Loamy sand - 2.5 in/hr	<input type="radio"/> Silty clay loam - 0.05 in/hr
<input type="radio"/> Sandy loam - 1.0 in/hr	<input type="radio"/> Sandy clay - 0.05 in/hr
<input type="radio"/> Loam - 0.5 in/hr	<input type="radio"/> Silty clay - 0.04 in/hr
<input type="radio"/> Silt loam - 0.3 in/hr	<input type="radio"/> Clay - 0.02 in/hr
<input type="radio"/> Sandy silt loam - 0.2 in/hr	<input type="radio"/> Rain Barrel/Cistern - 0.00 in/hr

Change Geometry

Copy Biofilter Data

Paste Biofilter Data

Select Particle Size File

Control Practice # : 1 **CP Index # : 1**

Add **Sharp Crested Weir**

Weir Length (ft)	
Height from datum to bottom of weir opening (ft)	

Remove **Broad Crested Weir**

Weir crest length (ft)	10.00
Weir crest width (ft)	
Height from datum to bottom of weir opening (ft)	

Add **Other Outlet**

Stage Number	Stage (ft)	Other Outflow Rate (cfs)
1		
2		
3		

Evaporation

Month	Evapotranspiration (in/day)	Evaporation (in/day)
Jan		
Feb		
Mar		

Plant Types

	1	2	3	4
Fraction of available capacity when irrigation stops (0-1)				
Fraction of biofilter that is vegetated				
Plant type				
Root depth (ft)				
ET Crop Adjustment Factor				

Drain Tile/Underdrain

Pipe Diameter (ft)	0.50
Invert elevation above datum (ft)	0.50
Number of pipes at invert elev.	1

Use Random Number

☐ Generation to Account for Infiltration Rate Uncertainty

Initial Water Surface Elevation (ft)

Biofilter Geometry Schematic

Refresh Schematic **Delete** **Cancel** **Continue**

If applicable, check the box to account for the uncertainty in the system. This is generally used for academic purposes.

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties

Top Area (sf)

1363

Bottom Area (sf)

1363

Total Depth (ft)

3.50

Typical Width (ft) (Cost est. only)

10.00

Native Soil Infiltration Rate (in/hr)

0.020

Native Soil Infiltration Rate COV

N/A

Infil. Rate Fraction-Bottom (0-1)

1.00

Infil. Rate Fraction-Sides (0-1)

1.00

Rock Filled Depth (ft)

1.00

Rock Fill Porosity (0-1)

0.33

Engineered Media Type

Media Data

Engineered Media Infiltration Rate

3.84

Engineered Media Infiltration Rate COV

N/A

Engineered Media Depth (ft)

2.00

Engineered Media Porosity (0-1)

0.44

Percent solids reduction due to Engineered Media (0-100)

N/A

Inflow Hydrograph Peak to Average Flow Ratio

3.80

Number of Devices in Source Area or Upstream Drainage System

31

Add

Sharp Crested Weir

Weir Length (ft)

Height from datum to bottom of weir opening (ft)

Remove

Broad Crested Weir

Weir crest length (ft)

10.00

Weir crest width (ft)

2.00

Height from datum to bottom of weir opening (ft)

3.40

Add

Vertical Stand Pipe

Pipe diameter (ft)

Height above datum (ft)

Add

Surface Discharge Pipe

Pipe Diameter (ft)

Invert elevation above datum (ft)

Number of pipes at invert elev.

Remove

Drain Tile/Underdrain

Pipe Diameter (ft)

0.50

Invert elevation above datum (ft)

0.50

Number of pipes at invert elev.

1

Add

Other Outlet

Stage Number

1

Stage (ft)

Other Outflow Rate (cfs)

Add

Evapotranspiration

Soil porosity (saturation moisture content, 0-1)

Soil field moisture capacity (0-1)

Permanent wilting point (0-1)

Supplemental irrigation used? ☐

Fraction of available capacity when irrigation starts (0-1)

Fraction of available capacity when irrigation stops (0-1)

Evaporation

Add

Month

Jan

Evapotranspiration (in/day)

Evaporation (in/day)

Plant Types

1

2

3

4

Fraction of biofilter that is vegetated ☐

Plant type

Root depth (ft)

ET Crop Adjustment Factor

☐ Activate Pipe or Box Storage

☐ Pipe

☐ Box

Diameter (ft)

☐ Use Random Number

☐ Generation to Account for Infiltration Rate Uncertainty

Bottom Elevation (ft above datum)

Discharge Orifice Diameter (ft)

Select Native Soil Infiltration Rate

☐ Sand - 8 in/hr

☐ Clay loam - 0.1 in/hr

☐ Loamy sand - 2.5 in/hr

☐ Silty clay loam - 0.05 in/hr

☐ Sandy loam - 1.0 in/hr

☐ Sandy clay - 0.05 in/hr

☐ Loam - 0.5 in/hr

☐ Silty clay - 0.04 in/hr

☐ Silt loam - 0.3 in/hr

☐ Clay - 0.02 in/hr

☐ Sandy silt loam - 0.2 in/hr

☐ Rain Barrel/Cistern - 0.00 in/hr

Change Geometry

Copy Biofilter Data

Paste Biofilter Data

Select Particle Size File

C:\Program Files\WinSLAMM v10\NURP.CPZ

Control Practice #: 1

CP Index #: 1

Biofilter Geometry Schematic

10.00'

Top of Engineered Media

3.50'

3.40'

2.00'

0.50'

Top of Rock Fill

0.50'

1.00'

Refresh Schematic

Delete

Cancel

Continue

Enter the particle size distribution file.

Biofiltration Control Device

Enter the outlet structure information. To add an outlet structure, select "Add", then enter the required data.

To delete an outlet structure, select "Remove"

Data describing the inputs for each Outlet can be found in the Help File.

Data describing the outlet structures will also be reflected in the schematic. You must have a Broad Crested Weir as an emergency overflow.

The software interface is divided into several sections:

- Left Panel:** A list of structures with columns for Number, Diameter (ft), and Invert Elevation (ft). The list includes:

Number	Diameter (ft)	Invert Elevation (ft)
1363		
1363		
3.50		
10.00		
0.020		
I/A		
1.00		
1.00		
1.00		
0.33		
3.84		
I/A		
2.00		
0.44		
I/A		
3.80		
31		
- Sharp Crested Weir:**
 - Add: Weir Length (ft), Height from datum to bottom of weir opening (ft)
 - Remove: Broad Crested Weir
 - Weir crest length (ft): 10.00
 - Weir crest width (ft): 2.00
 - Height from datum to bottom of weir opening (ft): 3.40
- Vertical Stand Pipe:**
 - Add: Pipe diameter (ft), Height above datum (ft)
- Surface Discharge Pipe:**
 - Add: Pipe Diameter (ft), Invert elevation above datum (ft), Number of pipes at invert elev.
- Drain Tile/Underdrain:**
 - Remove: Pipe Diameter (ft): 0.50, Invert elevation above datum (ft): 0.50, Number of pipes at invert elev.: 1
- Other Outlet:**
 - Add: Stage Number, Stage (ft), Other Outflow Rate (cfs)
- Evapotranspiration:**
 - Add: Soil porosity (saturation moisture content, 0-1), Soil field moisture capacity (0-1), Permanent wilting point (0-1), Supplemental irrigation used? (checkbox), Fraction of available capacity when irrigation starts (0-1), Fraction of available capacity when irrigation stops (0-1)
- Evaporation:**

Month	Evapotranspiration (in/day)	Evaporation (in/day)
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		
Oct		
Nov		
Dec		
- Plant Types:**

1	2	3	4
- Additional Parameters:**
 - Fraction of biofilter that is vegetated (checkbox)
 - Plant type (dropdown)
 - Root depth (ft) (checkbox)
 - ET Crop Adjustment Factor (checkbox)
- Biofilter Geometry Schematic:**
 - Top of Engineered Media: 10.00'
 - Top of Rock Fill: 0.50'
 - Other dimensions: 3.50', 3.40', 2.00', 1.00', 0.50'
- Buttons:** Refresh Schematic, Delete, Cancel, Continue
- Footer:** Control Practice #: 1, CP Index #: 1

Biofiltration Control Device

Biofiltration Control Device

Drainage System Control Practice

Device Properties

Biofilter Number 1

Top Area (sf)	1363
Bottom Area (sf)	1363
Total Depth (ft)	3.50
Typical Width (ft) (Cost est. only)	10.00
Native Soil Infiltration Rate (in/hr)	0.020
Native Soil Infiltration Rate COV	N/A
Infil. Rate Fraction-Bottom (0-1)	1.00
Infil. Rate Fraction-Sides (0-1)	1.00
Rock Filled Depth (ft)	
Rock Fill Porosity (0-1)	
Engineered Media Type	
Engineered Media Infil. Rate	
Engineered Media Depth	
Engineered Media Porosity	
Percent solids reduction due to Engineered Media (0-100)	N/A
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Upstream Drainage System	31

☐ Activate Pipe or Box Storage ☐ Pipe ☐ Box

Diameter (ft)	
Length (ft)	
Within Biofilter (check if Yes)	<input type="checkbox"/>
Perforated (check if Yes)	<input type="checkbox"/>
Bottom Elevation (ft above datum)	
Discharge Orifice Diameter (ft)	

Select Native Soil Infiltration Rate

☐ Sand - 8 in/hr
☐ Loamy sand - 2.5 in/hr
☐ Sandy loam - 1.0 in/hr
☐ Loam - 0.5 in/hr
☐ Silt loam - 0.3 in/hr
☐ Sandy silt loam - 0.2 in/hr
☐ Clay loam - 0.1 in/hr
☐ Silty clay loam - 0.05 in/hr
☐ Sandy clay - 0.05 in/hr
☐ Silty clay - 0.04 in/hr
☐ Clay - 0.02 in/hr
☐ Rain Barrel/Cistern - 0.00 in/hr

Change Geometry

Copy Biofilter Data

Paste Biofilter Data

Select Particle Size File C:\Program Files\WinSLAMM v10\NURP.CPZ

Control Practice #: 1 CP Index #: 1

Add Sharp Crested Weir

Weir Length (ft)	
Height from datum to bottom of weir opening (ft)	

Remove Broad Crested Weir

Weir crest length (ft)	10.00
Weir crest width (ft)	2.00
Height from datum to bottom of weir opening (ft)	3.40

Add Vertical Stand Pipe

Add Other Outlet

Stage Number	Stage (ft)	Other Outflow Rate (cfs)
1		
2		
3		
4		
5		

Add Evapotranspiration

Month	Evapotranspiration (in/day)	Evaporation (in/day)
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		

Soil porosity (saturation)

Types

3 4

Remove Drain Tile/Underdrain

Pipe Diameter (ft)	0.50
Invert elevation above datum (ft)	0.50
Number of pipes at invert elev.	1

Fraction of biofilter that is vegetated

Plant type

Root depth (ft)

ET Crop Adjustment Factor

Biofilter Geometry Schematic

Refresh Schematic

Delete **Cancel** **Continue**

Detailed output from the Biofiltration Control Device can be generated by selecting the option in the Program Options screen.

Biofiltration Control Device

Program Options

Detailed Output File Options

Biofilters

☐ Detailed Biofilter Output

☐ Irreducible Concentration Detailed Output

☐ Particulate Reduction Output

☐ Stage-Outflow

☐ Stochastic Seepage Rate Detail

☒ **Water Balance**

☐ Evapotranspiration Detail

Catchbasins

☐ Performance by Event Output

☐ Performance By Step Output

☐ Stage-Inflow Data

☐ Stage-Outflow

Cisterns

☐ Detailed Output

☐ Outfall Discharge Hydrograph

☐ Water Balance

Filter Strips

☐ Hydraulics and Concentration by E

☐ Hydraulics Detailed Output

☐ Incremental Performance Output

☐ Irreducible Concentration Detailed Output

☐ Particulate Reduction Output

☐ Critical Particle Size Calculation Detailed Output File

Flow Duration Curve Data

☐ Detailed Data

☐ Plotting Calculations

Freeway Data

☐ Freeway Washoff Detail

Street Cleaning

☐ Street Dirt/Accumulation Plots

☐ Street Dirt Removal

☐ Washoff or Street Cleaning Detail

Summary Statistics

	Rain Depth (in)	Rain Duration (hrs)		Maximum BioF Stage (ft)	Minimum BioF Stage (ft)	Event Peak Flow (cfs)	Surface Ponding Duration (hrs)	Total Ponding Duration (hrs)	Event Inflow Volume (ac-ft)	Event Hydraulic Outflow (ac-ft)
Number of Events	112	112	-	112	112	112	112	112	112	1
Total	27.87	28.71	-	-	-	-	0.7	887.401	5.295	2.7
Equivalent Annual Total	28.25	29.1	-	-	-	-	0.709	899.413	5.366	2.8
Minimum	0.01	0.04	0	0.003	0	0.003	0	0.8	0	
Maximum	2.34	1.08	0	3.599	0	2.429	0.7	29.3	0.49	0.4
Average of All Events	0.2	0.2		0.4	0	0.2	0	7	0	
Median	0.1	0.2		0.1	0	0	0	6	0	
Std. Deviation	0.3	0.2		0.5	0	0.3	0	6	0	
COV	1	0.9		1	7		10	0.8	1	
First Rain Date: 01/02/69										
Last Rain Date: 12/28/69										
Total Time Period (yrs): 0.9866439										

☐ Water Balance

File Update Options

This shows an example of the Biofilter Water Balance detailed output that can be generated for a Biofiltration Control Device. Notice data on the Surface Ponding Duration and the Total Ponding Duration.

Control Devices – Catchbasins

Catchbasin Control Device

Catchbasin Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Paved Parking 1

1. Fraction of drainage area served by catchbasins (0 - 1):

☒ 2a. Catchbasin density (cb/ac):

☐ 2b. Number of Catchbasins:

3. Average sump depth below catchbasin outlet invert (ft):

4. Depth of sediment in catchbasin sump at beginning of study period (ft):

5. Typical outlet pipe diameter (ft):

6. Typical outlet pipe Manning's n:

7. Ty
8. Ty
9. Ca
10. In
11. Le
12. S

Enter either the Catchbasin Density (catchbasins per acre) or the total number of Catchbasins in the drainage system or watershed you are modeling.

C:\WinSLAMM Files\NURP.CPZ

Typical Catchbasin Densities

☐ Low density residential (0.25 inlets/acre)
☐ Medium density residential (0.5 inlets/acre)
☐ High density residential (1 inlet/acre)
☐ Strip commercial (1.2 inlets/acre)

☐ Shopping center (1.2 inlets/acre)
☐ Industry (0.8 inlets/acre)
☐ Freeways (1 inlet/acre)

Catchbasin Cleaning Dates

Catchbasin Cleaning No.	Catchbasin Cleaning Date (mm/dd/yy)
1	
2	
3	
4	
5	

OR

Copy Catchbasin Data

Paste Catchbasin Data

☒ Catchbasin Cleaning Frequency

☐ Monthly
☐ Three Times per Year
☐ Semi-Annually
☒ Annually
☐ Every Two Years
☐ Every Three Years
☐ Every Four Years
☐ Every Five Years

Inflow Bypass and Lamella Plate Data

Delete Control Clear Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Catchbasin Control Device

Catchbasin Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Paved Parking 1

1. Fraction of drainage area served by catchbasins (0 - 1):

2a. ☒ Catchbasin density (cb/ac):

2b. ☐ Number of Catchbasins:

3. Average sump depth below catchbasin outlet invert (ft):

4. Depth of sediment in catchbasin sump at beginning of study period (ft):

5. Typical outlet pipe diameter (ft):

6. Typical outlet pipe Manning's n:

7. Typical outlet pipe slope (ft/ft):

8. Typical catchbasin sump surface area (sf):

9. Catchbasin Depth from Sump Bottom to street level (ft):

10. Inflow Hydrograph Peak to Average Flow Ratio:

11. Leakage rate through sump bottom (in/hr):

12. Critical Particle Size file name:

Typical Catchbasin Densities

☐ Low density residential (0.25 inlets/acre)
☐ Medium density residential (0.5 inlets/acre)
☐ High density residential (1 inlet/acre)
☐ Strip commercial (1.2 inlets/acre)
☐ Shopping center (1.2 inlets/acre)
☐ Industry (0.8 inlets/acre)
☐ Freeways (1 inlet/acre)

Catchbasin Cleaning Dates

Catchbasin Cleaning No.	Catchbasin Cleaning Date
1	
2	
3	
4	
5	

Select OR ☒ **Catchbasin Cleaning Frequency**

☐ Monthly
☐ Three Times per Year

You can select a typical catchbasin density or enter your own value

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Catchbasin Control Device

Catchbasin Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Paved Parking 1

1. Fraction of drainage area served by catchbasins (0 - 1):

☒ 2a. Catchbasin density (cb/ac):

☐ 2b. Number of Catchbasins:

3. Average sump depth below catchbasin outlet invert (ft):

4. Depth of sediment in catchbasin sump at beginning of study period (ft):

5. Typical outlet pipe diameter (ft):

6. Typical outlet pipe Manning's n:

10. Inflow Hydrograph Peak to Average Flow Ratio:

11. Leakage rate through sump bottom (in/hr):

12. Select Critical Particle Size file name:

Typical Catchbasin Densities

☐ Low density residential (0.25 inlets/acre)
☐ Medium density residential (0.5 inlets/acre)
☐ High density residential (1 inlet/acre)
☐ Strip commercial (1.2 inlets/acre)

☐ Shopping center (1.2 inlets/acre)
☐ Industry (0.8 inlets/acre)
☐ Freeways (1 inlet/acre)

Catchbasin Cleaning Dates

Catchbasin Cleaning No.	Catchbasin Cleaning Date (mm/dd/yy)
1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>
4	<input type="text"/>
5	<input type="text"/>

OR

Copy Catchbasin Data
Paste Catchbasin Data

☒ Catchbasin Cleaning Frequency

☐ Monthly
☐ Three Times per Year
☐ Semi-Annually
☒ Annually
☐ Every Two Years
☐ Every Three Years
☐ Every Four Years
☐ Every Five Years

Inflow Bypass and Lamella Plate Data

Delete Control Clear Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Enter a leakage rate only if the sump bottom is not sealed. This rate will not change over time.

Catchbasin Control Device

Catchbasin Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Paved Parking 1

1. Fraction of drainage area served by catchbasins (0 - 1):

☒ 2a. Catchbasin density (cb/ac):

☐ 2b. Number of Catchbasins:

7. Typical outlet pipe slope (ft/ft):

8. Typical catchbasin sump surface area (sf):

9. Catchbasin Depth from Sump Bottom to street level (ft):

10. Inflow Hydrograph Peak to Average Flow Ratio:

11. Leakage rate through sump bottom (in/hr):

12. Critical Particle Size file name:

Typical Catchbasin Densities

☐ Medium density residential (0.5 inlets/acre)

☐ High density residential (1 inlet/acre)

☐ Strip commercial (1.2 inlets/acre)

☐ Shopping center (1.2 inlets/acre)

☐ Industry (0.8 inlets/acre)

☐ Freeways (1 inlet/acre)

Catchbasin Cleaning Dates

Catchbasin Cleaning No.	Catchbasin Cleaning Date (mm/dd/yy)
1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>
4	<input type="text"/>
5	<input type="text"/>

Select

OR

☒ **Catchbasin Cleaning Frequency**

☐ Monthly

☐ Three Times per Year

☐ Semi-Annually

☒ **Annually**

☐ Every Two Years

☐ Every Three Years

☐ Every Four Years

☐ Every Five Years

Control Practice #: 2 Land Use #: 1 Source Area #: 13

You can enter specific catchbasin cleaning dates or select a catchbasin cleaning frequency.

Catchbasin Control Device

Catchbasin Control Device

Total Basin Area: 100.00 acres

1. Area served by catchbasins (acres):

☒ 2a. Catchbasin density (cb/ac):

☐ 2b. Number of Catchbasins:

3. Average sump depth below catchbasin outlet invert (ft):

4. Depth of sediment in catchbasin sump at beginning of study period (ft):

5. Typical outlet pipe diameter (ft):

6. Typical outlet pipe Manning's n:

7. Typical outlet pipe slope (ft/ft):

8. Typical catchbasin sump surface area (sf):

9. Catchbasin Depth from Sump Bottom to street level (ft):

10. Inflow Hydrograph Peak to Average Flow Ratio:

11. Leakage rate through sump bottom (in/hr):

12. Critical Particle Size file name:

Typical Catchbasin: ☐ Low density residential (0.25 inlets/acre) ☐ Medium density residential (0.5 inlets/acre) ☐ Shopping center (1.2 inlets/acre) ☐ Industry (0.8 inlets/acre) ☐ Freeways (1 inlet/acre)

☒ Catchbasin Cleaning Frequency

☐ Monthly ☐ Three Times per Year ☐ Semi-Annually ☒ Annually ☐ Every Two Years ☐ Every Three Years ☐ Every Four Years ☐ Every Five Years

Inflow Bypass and Lamella Plate Data

4	
5	

If modeling a catch basin with an overflow structure, a hydrodynamic device at the drainage level system, or a system with Lamella Plates, select the "Inflow Bypass and Lamella Plate Data" button.

Catchbasin Control Device

The data required for this control device when using the bypass is the same data required for the hydrodynamic device.

Enter the Maximum Flow to the In-Line Sump if known.
Or enter the characteristics of the diversion and the program will calculate the maximum flow.

Catchbasin Flow Bypass Data

☒ **Maximum Flow to In-Line Sump**

9999.00 Maximum Flow to In-Line Sump (cfs)

☐ **Flow Inlet Diversion Elevation**

____ Diameter of Orifice that Controls Flow to In-Line Sump (ft)

____ Inflow Orifice Invert Elevation (ft)

____ Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir

____ Elevation of Overflow Structure to Bypass Inline Sump (ft above sump base)

☐ **Lamella Plates or Tube Settlers**

Fraction of device area with plates or tubes _____

Average tube diameter or distance between plates (ft): _____

Number of plates or tubes that a vertical line will intercept _____

Clear and Exit Continue

Enter the data for the Lamella Plates if relevant.

Catchbasin Control Device

Program Options

Detailed Output File Options

Biofilters

- ☐ Detailed Biofilter Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Water Balance
- ☐ Evapotranspiration Detail

Catchbasins

- ☐ Performance by Event Output
- ☐ Performance By Step Output
- ☐ Stage-Inflow Data
- ☐ Stage-Outflow

Cisterns

- ☐ Detailed Output
- ☐ Outfall Discharge Hydrograph
- ☐ Water Balance

Filter Strips

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

☐ Critical Particle Size Calculation Detailed Output File

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Freeway Data

- ☐ Freeway Washoff Detail

Grass Swales

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

Hydrodynamic Devices

- ☐ Detailed Output
- ☐ Performance By Event
- ☐ Stage-Inflow Data
- ☐ Stage-Outflow

Porous Pavement

- ☐ Detailed
- ☐ Stage-Outflow
- ☐ Stochastic
- ☐ Surface
- ☐ Water Balance

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

Wet Detention Ponds

- ☐ Detailed Output
- ☐ Pond Stage-Area-Volume Data
- ☐ Stage-Outflow
- ☐ Stone Weeper Detailed Output
- ☐ Water Balance Summary of All Ponds

☐ Uncheck All Detailed Output File Options

☐ Check All Detailed Output File Options

File Update Options

Cancel Changes **Save .INI File**

Detailed output for each catchbasin can be obtained using the Detailed Output Files through Program Options.

Control Devices – Cisterns

Cistern Control Device

Cistern Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1

Total Area: 0.680 acres
Cistern No. 1

Device Properties

Top Surface Area (sf)	0.0
Bottom Surface Area (sf)	0.0
Height to Overflow (ft)	0.00
Rock Filled Depth (ft)	0.00
Rock Fill Porosity (0-1)	0.00
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Land Use	0
Runoff Fraction Entering Devices (0-1)	1.00

Source Area Water Use Rate Multiplier =

Apply Rate Multiplier

Copy Cistern Data

Paste Cistern Data

Water Use Rate

Month	Water Use Rate	Source Area
January		
February		
March		
April		
May		
June		
July		
August	0.00	0.00
September	0.00	0.00
October	0.00	0.00
November	0.00	0.00
December	0.00	0.00

Enter data describing each Cistern or Rain Barrel

Delete

Cancel

Continue

Control Practice #: 2

Land Use #: 1

Source Area #: 1

Cistern Control Device

Cistern Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1

Total Area: 0.680 acres
Cistern No. 1

Device Properties

Top Surface Area (sf)	0.0
Bottom Surface Area (sf)	0.0
Height to Overflow (ft)	0.00
Rock Filled Depth (ft)	0.00
Rock Fill Porosity (0-1)	0.00
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Land Use	0
	1.00

liar =

Water Use Rate

Month	Water Use Rate per Cistern (gal/day)	Source Area Water Use Rate (gal/day)
January	0.00	0.00
February	0.00	0.00
March	0.00	0.00
April	0.00	0.00
May	0.00	0.00
June	0.00	0.00
July	0.00	0.00
August	0.00	0.00
September	0.00	0.00
October	0.00	0.00
November	0.00	0.00
December	0.00	0.00

Delete Cancel Continue

: 1 Source Area # : 1

Enter the information regarding the water use rates for each month. If water will not be used during a certain month, enter "0" for that month.

Cistern Control Device

Cistern Control Device

First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1

Total Area: 0.680 acres
Cistern No. 1

Device Properties

Top Surface Area (sf)	0.0
Bottom Surface Area (sf)	0.0
Height to Overflow (ft)	0.00
Rock Filled Depth (ft)	0.00
Rock Fill Porosity (0-1)	0.00
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Land Use	0
Runoff Fraction Entering Devices (0-1)	1.00

Source Area Water Use Rate Multiplier =

Control Practice #: 2 Land Use #: 1 Source Area #: 1

Water Use Rate

Month	Water Use Rate per Cistern (gal/day)	Source Area Water Use Rate (gal/day)
January	0.00	0.00
February	0.00	0.00
March	0.00	0.00
April	0.00	0.00
May	0.00	0.00
June	0.00	0.00
July	0.00	0.00
August	0.00	0.00
September	0.00	0.00
October	0.00	0.00
November		
December		

The Rate Multiplier can be used to quickly adjust the water use rates for sensitivity analyses.

Cistern Control Device

Program Options

Detailed Output File Options

Biofilters

- ☐ Detailed Biofilter Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Water Balance
- ☐ Evapotranspiration Detail

Catchbasins

- ☐ Performance by Event Output
- ☐ Performance By Step Output
- ☐ Stage-Inflow Data
- ☐ Stage-Outflow

Cisterns

- ☐ Detailed Output
- ☐ Outfall Discharge Hydrograph
- ☐ Water Balance

Filter Strips

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output
- ☐ Critical Particle Size Calculation Detailed Output File

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Freeway Data

- ☐ Freeway Washoff Detail

Grass Swales

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

Hydrodynamic Devices

- ☐ Detailed Output
- ☐ Performance
- ☐ Stage-Inflow
- ☐ Stage-Outflow

Porous Pavement

- ☐ Detailed
- ☐ Stage-Outflow
- ☐ Stochastic
- ☐ Surface
- ☐ Water Balance

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

Wet Detention Ponds

- ☐ Detailed Output
- ☐ Pond Stage-Area-Volume Data
- ☐ Stage-Outflow
- ☐ Stone Weeper Detailed Output
- ☐ Water Balance Summary of All Ponds

☐ Uncheck All Detailed Output File Options

☐ Check All Detailed Output File Options

File Update Options

Cancel Changes **Save .INI File**

Detailed output for each cistern can be obtained using the Detailed Output Files through Program Options.

Control Devices – Filter Strips

Filter Strip Control Device

Filter Strip Control Device

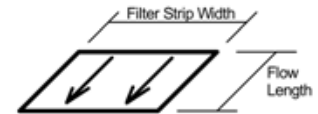
Land Use: **Commercial 1** Total Area:
Source Area: **Paved Parking 1** Filter Strip No. **1**

First Source Area Control Practice

Device Properties

Total Area in Source Area (ac)	2.850
Area Fraction Served by Filter Strips (0-1)	1.00
Total Filter Strip Width (ft)	0
Flow Length (ft)	0
Dynamic Infiltration Rate (in/hr)	0.000
Typical Longitudinal Slope (Fraction)	0.000
Typical Grass Height (in)	0.0
Grass Retardance Factor	<input type="text"/>
Use Stochastic Analysis to account for Infiltration Rate Uncertainty	<input type="checkbox"/>
Native Soil Infiltration Rate COV	
Surface Clogging Load (lbs/sf)	3.50

Filter Strip Area to Drainage Area Ratio = 0.000.
This ratio must be greater than 0.05 to activate the filter strip.



[View Retardance Table](#)

Select Particle Size File
C:\WinSLAMM Files\NURP.CPZ

Select Native Soil Dynamic Infiltration Rate

<input type="radio"/> Sand - 4 in/hr	<input type="radio"/> Clay loam - 0.05 in/hr
<input type="radio"/> Loamy sand - 1.25 in/hr	<input type="radio"/> Silty clay loam - 0.025 in/hr
<input type="radio"/> Sandy loam - 0.5 in/hr	<input type="radio"/> Sandy clay - 0.025 in/hr
<input type="radio"/> Loam - 0.25 in/hr	<input type="radio"/> Silty clay - 0.02 in/hr
<input type="radio"/> Silt loam - 0.15 in/hr	<input type="radio"/> Clay - 0.01 in/hr
<input type="radio"/> Sandy silt loam - 0.1 in/hr	

[Copy Filter Strip Data](#) [Paste Filter Strip Data](#)

[Delete](#) [Cancel](#) [Continue](#)

Control Practice # : 2 Land Use # : 1 Source Area # : 13

Enter data describing each Filter Strip

Check that the correct particle size distribution file is referenced.

If unknown, select a default Dynamic Infiltration Rate based on the project site's soil data description.

Filter Strip Control Device

Program Options

Detailed Output File Options

Biofilters

- ☐ Detailed Biofilter Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Water Balance
- ☐ Evapotranspiration Detail

Catchbasins

- ☐ Performance by Event Output
- ☐ Performance By Step Output
- ☐ Stage-Inflow Data
- ☐ Stage-Outflow

Cisterns

- ☐ Detailed Output
- ☐ Outfall Discharge Hydrograph
- ☐ Water Balance

Filter Strips

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

☐ Critical Particle Size Calculation Detailed Output File

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Freeway Data

- ☐ Freeway Washoff Detail

Grass Swales

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

Hydrodynamic Devices

- ☐ Detailed Output
- ☐ Performance
- ☐ Stage-Inflow
- ☐ Stage-Outflow

Porous Pavement

- ☐ Detailed
- ☐ Stage-Outflow
- ☐ Stochastic
- ☐ Surface
- ☐ Water Balance

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

Wet Detention Ponds

- ☐ Detailed Output
- ☐ Pond Stage-Area-Volume Data
- ☐ Stage-Outflow
- ☐ Stone Weeper Detailed Output
- ☐ Water Balance Summary of All Ponds

☐ Uncheck All Detailed Output File Options

☐ Check All Detailed Output File Options

File Update Options

Cancel Changes **Save .INI File**

Detailed output for each filter strip can be obtained using the Detailed Output Files through Program Options.

Control Devices – Grass Swales

Grass Swales

Grass Swales

First Source Area Control Practice Grass Swale Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1 Total Area: 2.850 acres

Grass Swale Data	
Total Drainage Area (ac)	2.850
Fraction of Drainage Area Served by Swales (0-1)	0.00
Swale Density (ft/ac)	0.00
Total Swale Length (ft)	0
Average Swale Length to Outlet (ft)	0
Typical Bottom Width (ft)	0.0
Typical Swale Side Slope (__ ft H : 1 ft V)	0.0
Typical Longitudinal Slope (ft/ft, V/H)	0.000
Swale Retardance Factor	
Typical Grass Height (in)	0.0
Swale Dynamic Infiltration Rate (in/hr)	0.000
Typical Swale Depth (ft) for Cost Analysis (Optional)	0.0

☐ Use Total Swale Length Instead of Swale Density for Infiltration Calculations

Total area served by swales (acres): 0.000

Select infiltration rate by soil type

- ☐ Sand - 4 in/hr
- ☐ Loamy sand - 1.25 in/hr
- ☐ Sandy loam - 0.5 in/hr
- ☐ Loam - 0.25 in/hr
- ☐ Silt loam - 0.15 in/hr
- ☐ Sandy clay loam - 0.1 in/hr
- ☐ Clay loam - 0.05 in/hr
- ☐ Silty clay loam - 0.025 in/hr
- ☐ Sandy clay - 0.025 in/hr
- ☐ Silty clay - 0.02 in/hr
- ☐ Clay - 0.01 in/hr

Enter the data for each grass swale. The “Average Swale Length to Outlet” will automatically populate after other swale data is entered.

Select Swale Density by Land Use

- ☐ Low density residential - 240 ft/ac
- ☐ Medium density residential - 350 ft/ac
- ☐ High density residential - 375 ft/ac
- ☐ Strip commercial - 410 ft/ac
- ☐ Shopping center - 90 ft/ac
- ☐ Industrial - 260 ft/ac
- ☐ Freeways (shoulder only) - 480 ft/ac
- ☐ Freeways (center and shoulder) - 540 ft/ac

Copy Swale Data Paste Swale Data Delete Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Grass Swales

Grass Swales

First Source Area Control Practice Grass Swale Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1 Total Area: 2.850 acres

Grass Swale Data	
Total Drainage Area (ac)	2.850
Fraction of Drainage Area Served by Swales (0-1)	0.00
Swale Density (ft/ac)	0.00
Total Swale Length (ft)	0
Average Swale Length to Outlet (ft)	0
Typical Bottom Width (ft)	0.0
Typical Swale Side Slope (__ ft H : 1 ft V)	0.0
Typical Longitudinal Slope (ft/ft, V/H)	0.000
Swale Retardance Factor	
Typical Grass Height (in)	0.0
Swale Dynamic Infiltration Rate (in/hr)	0.000
Typical Swale Depth (ft) for Cost Analysis (Optional)	0.0

☐ Use Total Swale Length Instead of Swale Density for Infiltration Calculations

Select infiltration rate by soil type

- ☐ Sand - 4 in/hr
- ☐ Loamy sand - 1.25 in/hr
- ☐ Sandy loam - 0.5 in/hr
- ☐ Loam - 0.25 in/hr
- ☐ Silt loam - 0.15 in/hr
- ☐ Sandy clay loam - 0.1 in/hr
- ☐ Clay loam - 0.05 in/hr
- ☐ Silty clay loam - 0.025 in/hr
- ☐ Sandy clay - 0.025 in/hr
- ☐ Silty clay - 0.02 in/hr
- ☐ Clay - 0.01 in/hr

Total area served by swales (acres): 0.000
Total area (acres): 2.850

Select Particle Size Distribution File Particle Size Distribution File Name

C:\WinSLAMM Files\NLRP.CP7

View Retardance Table

Copy Swale Data Paste Swale Data Delete Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

If the swale length is known instead of the swale density, check the box next to “Use Total Swale Length...” and the swale length can then be entered.

Grass Swales

Grass Swales

First Source Area Control Practice Grass Swale Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1 Total Area: 2.850 acres

Grass Swale Data	
Total Drainage Area (ac)	2.850
Fraction of Drainage Area Served by Swales (0-1)	0.00
Swale Density (ft/ac)	0.00
Total Swale Length (ft)	0
Average Swale Length to Outlet (ft)	0
Typical Bottom Width (ft)	0.0
Typical Swale Side Slope (__ ft H : 1 ft V)	0.0
Typical Longitudinal Slope (ft/ft V/H)	0.000

Select infiltration rate by soil type

- ☐ Sand - 4 in/hr
- ☐ Loamy sand - 1.25 in/hr
- ☐ Sandy loam - 0.5 in/hr
- ☐ Loam - 0.25 in/hr
- ☐ Silt loam - 0.15 in/hr
- ☐ Sandy clay loam - 0.1 in/hr
- ☐ Clay loam - 0.05 in/hr
- ☐ Silty clay loam - 0.025 in/hr

If the swale density and swale length are unknown, select a value based on land use.

☐ Use Total Swale Length Instead of Swale Density for Infiltration Calculations

Total area served by swales (acres): 0.000
Total area (acres): 2.850

Select Particle Size Distribution File Particle Size Distribution File Name

C:\WinSLAMM Files\NURP.CPZ

View Retardance Table

Select Swale Density by Land Use

- ☐ Low density residential - 240 ft/ac
- ☐ Medium density residential - 350 ft/ac
- ☐ High density residential - 375 ft/ac
- ☐ Strip commercial - 410 ft/ac
- ☐ Shopping center - 90 ft/ac
- ☐ Industrial - 260 ft/ac
- ☐ Freeways (shoulder only) - 480 ft/ac
- ☐ Freeways (center and shoulder) - 540 ft/ac

Copy Swale Data Paste Swale Data Delete Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Grass Swales

Grass Swales

First Source Area Control Practice **Grass Swale Number 1**

Land Use: Commercial 1

Source Area: Paved Parking 1 **Total Area: 2.850 acres**

Grass Swale Data	
Total Drainage Area (ac)	2.850
Fraction of Drainage Area Served by Swales (0-1)	0.00
Swale Density (ft/ac)	0.00
Total Swale Length (ft)	0
Average Swale Length to Outlet (ft)	0
Typical Bottom Width (ft)	0.0
Typical Swale Side Slope (H:1 V:1)	0.0
Typical Swale Depth (ft)	0.0
Typical Swale Depth (ft) for Cost Analysis (optional)	0.0

Select infiltration rate by soil type

- ☐ Sand - 4 in/hr
- ☐ Loamy sand - 1.25 in/hr
- ☐ Sandy loam - 0.5 in/hr
- ☐ Loam - 0.25 in/hr
- ☐ Silt loam - 0.15 in/hr
- ☐ Sandy clay loam - 0.1 in/hr
- ☐ Clay loam - 0.05 in/hr

☐ Use Total Swale Length Instead of Swale Density for Infiltration Calculations

Total area served by swales (acres): 0.000
Total area (acres): 2.850

Select Particle Size Distribution File **Particle Size Distribution File Name**

C:\WinSLAMM Files\NURP.CPZ

Select Swale Density by Land Use

- ☐ Low density residential - 240 ft/ac
- ☐ Medium density residential - 350 ft/ac
- ☐ High density residential - 375 ft/ac
- ☐ Strip commercial - 410 ft/ac
- ☐ Shopping center - 90 ft/ac
- ☐ Industrial - 260 ft/ac
- ☐ Freeways (shoulder only) - 480 ft/ac
- ☐ Freeways (center and shoulder) - 540 ft/ac

Copy Swale Data **Paste Swale Data** **Delete** **Cancel** **Continue**

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Check that the Particle Size File is referenced correctly.

Grass Swales

Grass Swales

First Source Area Control Practice Grass Swale Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1 Total Area: 2.850 acres

Grass Swale Data	
Total Drainage Area (ac)	2.850
Fraction of Drainage Area Served by Swales (0-1)	0.00
Swale Density (ft/ac)	0.00
Total Swale Length (ft)	0
Average Swale Length to Outlet (ft)	0
Typical Bottom Width (ft)	0.0
Typical Swale Side Slope (__ ft H : 1 ft V)	0.0
Typical Longitudinal Slope (ft/ft, V/H)	0.000
Swale Retardance Factor	
Typical Grass Height (in)	0.0
Swale Dynamic Infiltration Rate (in/hr)	0.000
Typical Swale Depth (ft) for Cost Analysis (Optional)	0.0

☐ Use Total Swale Length Instead of Swale Density for Infiltration Calculations

Select Particle Size Distribution File Particle Size Distribution File

C:\WinSLAMM Files\NURP.CPZ

Select Swale Density by Land Use

☐ Low density residential - 240 ft/ac
☐ Medium density residential - 350 ft/ac
☐ High density residential - 375 ft/ac
☐ Strip commercial - 410 ft/ac
☐ Freeways (center and shoulder) - 540 ft/ac

Select infiltration rate by soil type

☐ Sand - 4 in/hr
☐ Loamy sand - 1.25 in/hr
☐ Sandy loam - 0.5 in/hr
☐ Loam - 0.25 in/hr
☐ Silt loam - 0.15 in/hr
☐ Sandy clay loam - 0.1 in/hr
☐ Clay loam - 0.05 in/hr
☐ Silty clay loam - 0.025 in/hr
☐ Sandy clay - 0.025 in/hr
☐ Silty clay - 0.02 in/hr
☐ Clay - 0.01 in/hr

Total area served by swales (acres): 0.000
Total area (acres): 2.850

Copy Swale Data Paste Swale Data Delete Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

If the dynamic infiltration rate is unknown, select a dynamic infiltration rate based on soil type from the default values.

Grass Swale Control Device

Program Options

Detailed Output File Options | Default Model Options | Default Current File Data

Biofilters

- ☐ Detailed Biofilter Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Water Balance
- ☐ Evapotranspiration Detail

Catchbasins

- ☐ Performance by Event Output
- ☐ Performance By Step Output
- ☐ Stage-Inflow Data
- ☐ Stage-Outflow

Cisterns

- ☐ Detailed Output
- ☐ Outfall Discharge Hydrograph

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Freeway Data

- ☐ Freeway Washoff Detail

Grass Swales

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

Hydrodynamic Devices

- ☐ Detailed Output
- ☐ Performance By Event
- ☐ Stage-Inflow

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

Wet Detention Ponds

- ☐ Detailed Output
- ☐ Pond Stage-Area-Volume Data
- ☐ Stage-Outflow
- ☐ Stone Weeper Detailed Output
- ☐ Water Balance Summary of All Ponds

☐ Critical Particle Size Calculation Detailed Output File

☐ Check All Detailed Output File Options

File Update Options | **Cancel Changes** | **Save .INI File**

Detailed output for each grass swale can be obtained using the Detailed Output Files through Program Options.

Control Devices – Hydrodynamic Device

Hydrodynamic Device

Hydrodynamic Device

Land Use: Residential

Source Area: Roofs 1

Device Number 1

Hydrodynamic Control Device General Information - Enter for Both Single Chamber and Proprietary Devices

Total Source Area (ac)	2.06
Area Served by Device (ac)	2.06
Number of Devices	0
Device Density (units/ac)	0.000

Select

Critical Particle Size file name:

☐

Model Hydrodynamic Device with Lamella Plates or Settling Tubes

Fraction of device area with plates or tubes	
Average tube diameter or distance between plates (ft)	
Number of plates or tubes a vertical line will intersect	

For Device Cleaning, Select Either

Device Cleaning Dates

Device Cleaning No.	Device Cleaning Date (mm/dd/yy)
1	
2	
3	
4	
5	

OR

☐

Device Cleaning Frequency

Monthly

Three Times per Year

Semi-Annually

Annually

Every Two Years

Every Three Years

Every Four Years

Every Five Years

Never

Single Chamber Device Characteristics

1 - Average Sump Depth below Device	0.00
2 - Typical	
3 - Typical	
4 - Device	
5 - Minimum	
6 - Diameter	
7 - Inflow	
8 - Length	
9 - Elevation	

Or Use Proprietary Hydrodynamic Control

Continue

The Hydrodynamic Device allows the user to enter data for a 'generic' single chambered hydrodynamic device or select a proprietary device model.

Proprietary device data is currently not available for the model. It will become available as manufacturers test their devices and provide the peer- or regulatory agency-reviewed data to us to incorporate into the model.

Hydrodynamic Device

First enter data regarding the drainage area to the device and the number of devices or device density.

Then choose the appropriate critical particle size distribution file.

Note: For analyses in Wisconsin, select the NURP critical particle size file.

Hydrodynamic Device

Land Use: Residential

Source Area: Roofs 1

Device Number 1

Hydrodynamic Control Device General Information - Enter for Both Single Chamber and Proprietary Devices

Total Source Area (ac)	2.06
Area Served by Device (ac)	2.06
Number of Devices	1
Device Density (units/ac)	0.485

Select Critical Particle Size file name:

C:\Program Files\WinSLAMM\NURP.CPZ

Single Chamber Device Characteristics

1 - Average Sump Depth below Device Outlet Invert (ft)	0.00
Depth of Sediment in Device at Beginning of Study Period (ft)	0.00
2 - Typical Outlet Pipe Diameter (ft)	0.00
Typical Outlet Pipe Manning's n	0.000
3 - Typical Outlet Pipe Slope (ft/ft)	0.0000
Typical Device Sump Surface Area (sf)	0.0
4 - Device Depth from Sump Bottom to Street Level (ft)	0.00
Inflow Hydrograph Peak to Average Flow Ratio	3.8
5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)	1.0
Maximum Flow to In-Line Sump (cfs)	0.0
6 - Diameter of Orifice that Controls Flow to In-Line Sump (ft)	N/A - Click to Activate
7 - Inflow Orifice Invert Elevation (ft)	N/A
8 - Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir	N/A
9 - Elevation of Overflow Structure to Bypass In-Line Sump (ft above sump base)	N/A

☐ Hydrodynamic Control Device Information

Manufacturer - Model

1 - Average Sump Depth below Device Outlet Invert (ft)	
Depth of Sediment in Device at Beginning of Study Period (ft)	
2 - Typical Outlet Pipe Diameter (ft)	
Typical Outlet Pipe Manning's n	
3 - Typical Outlet Pipe Slope (ft/ft)	
Inflow Hydrograph Peak to Average Flow Ratio	
5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)	
Device Sump Surface Area (sf)	

Delete Control Cancel Continue

Hydrodynamic Device

Hydrodynamic Device

Land Use: Residential
Source Area: Roofs 1
Device Number 1

Hydrodynamic Control Device General Information - Enter for Both Single Chamber and Proprietary Devices

Total Source Area (ac)	2.06
Area Served by Device (ac)	2.06
Number of Devices	1
Device Density (units/ac)	0.485

Select Critical Particle Size file name:
C:\Program Files\WinSLAMM\NURP.CPZ

☐ Model Hydrodynamic Device with Lamella Plates or Settling Tubes

For Device Cleaning, Select Either
Device Cleaning

Fraction of device area with plates or tubes
Average tube diameter or distance between plates (ft)
Number of plates or tubes a vertical line will intersect

Single Chamber Device Characteristics

1 - Average Sump Depth below Device Outlet Invert (ft)	5.00
Depth of Sediment in Device at Beginning of Study Period (ft)	0.00
2 - Typical Outlet Pipe Diameter (ft)	1.00
Typical Outlet Pipe Manning's n	0.012
3 - Typical Outlet Pipe Slope (ft/ft)	0.0100
Typical Device Sump Surface Area (sf)	28.0
4 - Device Depth from Sump Bottom to Street Level (ft)	8.00
Inflow Hydrograph Peak to Average Flow Ratio	3.8
5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)	1.0
Maximum Flow to In-Line Sump (cfs)	0.0
6 - Diameter of Orifice that Controls Flow to In-Line Sump (ft)	N/A - Click to Activate
7 - Inflow Orifice Invert Elevation (ft)	N/A
8 - Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir	N/A
9 - Elevation of Overflow Structure to Bypass In-Line Sump (ft above sump base)	N/A

N/A

Bypass Flow

Device Flow

N/A

If using a single chambered hydrodynamic device, enter the data describing the device in the form to the left of the schematic.

As data is entered in the form, it will appear in the schematic.

Value 1 through 5 describe the geometry of the device.

The remainder of the table describes when flow will bypass.

Either enter a maximum flow, or enter the geometry of the bypass system.

Hydrodynamic Device

Land Use: Residential

Source Area: Roofs 1

Device Number 1

Hydrodynamic Control Device General Information - Enter for Both Single Chamber and Proprietary Devices

Total Source Area (ac)	2.06
Area Served by Device (ac)	2.06
Number of Devices	1
Device Density (units/ac)	0.485

Select

Critical Particle Size file name:

C:\Program Files\WinSLAMM\NURP.CPZ

☐ Model Hydrodynamic Device with Lamella Plates or Settling Tubes

Fraction of device area with plates or tubes	
Average tube diameter or distance between plates (ft)	
Number of plates or tubes a vertical line will intersect	

For Device Cleaning, Select Either

Device Cleaning Dates

Device Cleaning No.	Device Cleaning Date (mm/dd/yy)
1	
2	
3	
4	
5	

☐ Device Cleaning Frequency

☐ Monthly
 ☐ Three Times per Year
 ☐ Semi-Annually
 ☐ Annually
 ☐ Every Two Years
 ☐ Every Three Years
 ☐ Every Four Years
 ☐ Every Five Years
 ☐ Never

OR

Single Chamber Device Characteristics

1 - Average Sump Depth below Device Outlet Invert (ft)	5.00
Depth of Sediment in Device at Beginning of Study Period (ft)	0.00
2 - Typical Outlet Pipe Diameter (ft)	1.00
Typical Outlet Pipe Manning's n	0.012
3 - Typical Outlet Pipe Slope (ft/ft)	0.0100
Typical Device Sump Surface Area (sf)	28.0
4 - Device Depth from Sump Bottom to Street Level (ft)	8.00
Inflow Hydrograph Peak to Average Flow Ratio	3.8
5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)	1.0
Maximum Flow to In-Line Sump (cfs)	N/A - Click to Activate
6 - Diameter of Orifice that Controls Flow to In-Line Sump (ft)	0.75
7 - Inflow Orifice Invert Elevation (ft)	6.00
8 - Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir	5.00
9 - Elevation of Overflow Structure to Bypass In-Line Sump (ft above sump base)	7.00

Or Use Proprietary Hydrodynamic Control Device Information

Manufacturer - Model

1 - Average Sump Depth below Device Outlet Invert (ft)

The remainder of the table describes when flow will bypass.

Either enter a maximum flow, or enter the geometry of the bypass system.

Control

Cancel

Continue

Hydrodynamic Device

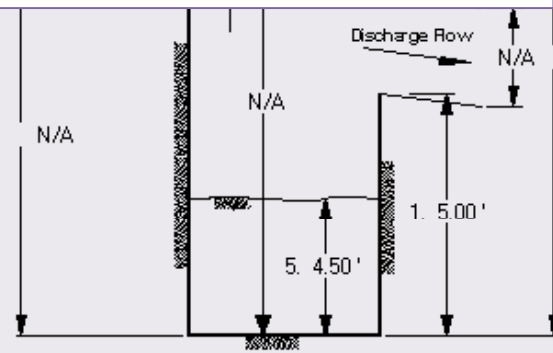
Proprietary Device data is not yet available.

Once it is, you may check the box next to “Or Use Proprietary Hydrodynamic Control Device Information”. You may then select the device from the drop down menu.

As you enter data in the form, it will appear in the schematic.

Note: Less data is required for a proprietary hydrodynamic device with research data available to the model, so “N/A” will appear in the schematic for data that is not required.

Inflow Hydrograph Peak to Average Flow Ratio	
5 - Max. Allowable Depth of Sediment Accumulation Below Outlet Invert (ft)	
Maximum Flow to In-Line Sump (cfs)	
6 - Diameter of Orifice that Controls Flow to In-Line Sump (ft)	
7 - Inflow Orifice Invert Elevation (ft)	
8 - Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir	
9 - Elevation of Overflow Structure to Bypass In-Line Sump (ft above sump base)	



g, Select Either

☐ Device Cleaning Frequency

- ☐ Monthly
- ☐ Three Times per Year
- ☐ Semi-Annually
- ☐ Annually
- ☐ Every Two Years
- ☐ Every Three Years
- ☐ Every Four Years
- ☐ Every Five Years
- ☐ Never

☒ Or Use Proprietary Hydrodynamic Control Device Information

Manufacturer - Model

Acme - Model 1A

1 - Average Sump Depth below Device Outlet Invert (ft)	5.00
Depth of Sediment in Device at Beginning of Study Period (ft)	0.00
2 - Typical Outlet Pipe Diameter (ft)	N/A
Typical Outlet Pipe Manning's n	N/A
3 - Typical Outlet Pipe Slope (ft/ft)	N/A
Inflow Hydrograph Peak to Average Flow Ratio	3.8
5 - Maximum Allowable Depth of Sediment Accumulation Below Outlet Invert (ft)	4.5
Device Sump Surface Area (sf)	20.0

Delete Control Cancel Continue

Hydrodynamic Device

Land Use: Residential

Source Area: Roofs 1

Device Number 1

Hydrodynamic Control Device General Information - Enter for Both Single Chamber and Proprietary Devices

Total Source Area (ac)	2.06
Area Served by Device (ac)	2.06
Number of Devices	1
Device Density (units/ac)	0.485

Select

Critical Particle Size file name:

C:\Program Files\WinSLAMM\NURP.CPZ

☐ Model Hydrodynamic Device with Lamella Plates or Settling Tubes

Fraction of device area with plates or tubes	
Average tube diameter or distance between plates (ft)	
Number of plates or tubes a vertical line will intersect	

For Device Cleaning, Select Either

Device Cleaning Dates

Device Cleaning No.	Device Cleaning Date (mm/dd/yy)
1	
2	
3	
4	
5	

OR

☒ Device Cleaning Frequency

☐ Monthly
 ☐ Three Times per Year
 ☐ Semi-Annually
 ☒ Annually
 ☐ Every Two Years
 ☐ Every Three Years
 ☐ Every Four Years
 ☐ Every Five Years
 ☐ Never

Single Chamber Dev

1 - Average Sump Depth below Outlet Invert (ft)

Depth of Sediment in Device Beginning of Study Period (ft)

2 - Typical Outlet Pipe Diameter (in)

Typical Outlet Pipe Manning's n

3 - Typical Outlet Pipe Slope (ft/ft)

Typical Device Sump Surface Area (sf)

4 - Device Depth from Sump Street Level (ft)

Inflow Hydrograph Peak to Ratio

5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)

Maximum Flow to In-Line Sump (cfs)

6 - Diameter of Orifice that Controls Flow to In-Line Sump (ft)	0.75
7 - Inflow Orifice Invert Elevation (ft)	6.00
8 - Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir	5.00
9 - Elevation of Overflow Structure to Bypass In-Line Sump (ft above sump base)	7.00

5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)	
Device Sump Surface Area (sf)	

Delete Control

Cancel

Continue

Finally, enter the cleaning frequency.

If using specific dates, enter the dates in the box on the left.

If using a frequency, check the box next to "Device Cleaning Frequency" and then select the frequency from the options on the right.

Hydrodynamic Device

Hydrodynamic Device

Land Use: Residential
Source Area: Roofs 1
Device Number 1

Hydrodynamic Control Device General Information - Enter for Both Single Chamber and Proprietary Devices

Total Source Area (ac)	2.06
Area Served by Device (ac)	2.06
Number of Devices	1
Device Density (units/ac)	0.500

Select Critical Particle Size file name:
C:\Program Files\WinSLAMM\NURP.CPZ

☒ Model Hydrodynamic Device with Lamella Plates or Settling Tubes

Fraction of device area with plates or tubes	0.80
Average tube diameter or distance between plates (ft)	1.00
Number of plates or tubes a vertical line will intersect	3

For Device Cleaning, Select Either

Device Cleaning Dates

Device Cleaning No.	Device Cleaning Date (mm/dd/yy)
1	
2	
3	
4	
5	

☒ Device Cleaning Frequency

☐ Monthly
☐ Three Times per Year
☐ Semi-Annually
☒ Annually
☐ Every Two Years
☐ Every Three Years
☐ Every Four Years
☐ Every Five Years
☐ Never

Inflow Hydrograph Peak to Average Flow Ratio3.8

5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)1.0

Maximum Flow to In-Line Sump (cfs)N/A - Click to Activate

6 - Diameter of Orifice that Controls Flow to In-Line Sump (ft)0.75

7 - Inflow Orifice Invert Elevation (ft)6.00

8 - Length (ft) of Overflow Structure Acting as a Sharp-Crested Weir5.00

9 - Elevation of Overflow Structure to Bypass In-Line Sump (ft above sump base)7.00

2 - Typical Outlet Pipe Diameter (ft)

Typical Outlet Pipe Manning's n

3 - Typical Outlet Pipe Slope (ft/ft)

Inflow Hydrograph Peak to Average Flow Ratio

5 - Minimum Allowable Scour Depth Below Outlet Invert (ft)

Device Sump Surface Area (sf)

Delete ControlCancelContinue

If using Lamella Plates, enter the data describing the plates.

A schematic is available in the Help File to illustrate each data value.

Hydrodynamic Device

Several detailed output files are available for the Hydrodynamic Device through the Program Options form.

Access the form through the Main Menu of the program. Select the desired file(s). Then select "Save .INI File".

*.csv file(s) will be created in the same directory that your .MDB file is stored in for the detailed output options selected.

For example, this *.csv output file illustrates the Hydrodynamic Device Performance By Event. The file was opened in Microsoft Excel.

Default Model Options

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Freeway Data

- ☐ Freeway Washoff Detail

Grass Swales

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

Hydrodynamic Devices

- ☐ Detailed Output
- ☐ Performance By Event
- ☐ Stage-Inflow
- ☐ Stage-Outflow

Porous Pavement

- ☐ Detailed Output

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

Wet Detention Ponds

- ☐ Detailed Output
- ☐ Pond Stage-Area-Volume Data
- ☐ Stage-Outflow
- ☐ Stone Weeper Detailed Output
- ☐ Water Balance Summary of All Ponds

Output File

	C	D	E	F	G	H	I	J	K	L
1										
2	Rain Depth (in)	Runoff Volume per HD (cf)	Maximum Inflow from Basin (cfs)	Time Increment (min)	Maximum Inflow through HD (cfs)	Volume In (cf)	Hydraulic Volume Out (cf)	Total Volume Out of HD (cf)	Bypass Volume (cf)	Cumulative Volume Out of HD (cf)
3	0.03	20.74545	6.08E-03	6	6.08E-03	21.1159	0	0	0	21.1159
4	0.06	97.81833	1.07E-02	15	1.07E-02	96.38525	0	0	0	117.5011
5	0.01	2.30505	2.03E-03	2	2.03E-03	2.346212	0	0	0	119.8474
6	0.01	2.30505	2.03E-03	2	2.03E-03	2.346212	0	0	0	122.1936
7	0.11	289.6043	4.25E-02	12	4.25E-02	294.7758	0	0	0	416.9694
8	0.05	63.9969	9.38E-03	12	9.38E-03	65.1397	0	0	0	482.1091
9	0.06	97.81833	1.07E-02	10	1.07E-02	96.38525	0	0	0	581.6741

Control Devices – Media Filters

Media Filters will be available in version 10.1

Control Devices - Other

Other Control Device

Other Control Device

First Source Area Control Practice

Land Use: Commercial 1
Source Area: Roof 1

1. Pollutant concentration reduction (fraction): 0.00

2. Water volume (flow) reduction (fraction): 0.00

3. Drainage Area Fraction served by Other Control (0-1): 1.000

Total Area: 0.680 acres

Copy Other Device Data Paste Other Device Data

Clear Cancel Delete Control Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 1

Enter the Percent Reduction in Pollutant Concentration and Runoff, and the Fraction of the Area served by the Control Device. The percent reduction will be applied uniformly to the Pollutant Load and Runoff Volume generated.

Note: The Other Control Device should only be used for runoff and pollutant reduction if review agency approved monitored data is available and applicable.

Until the storm sewer and overland flow options are available in the model, the Other Control Device can also be used as links to connect subbasins together in a larger watershed model. To use this, set the Pollutant Concentration reduction to 0.01, the Water Volume reduction to zero, and the Drainage Area Fraction served by Other Control to 0.001.

Control Devices – Porous Pavement

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

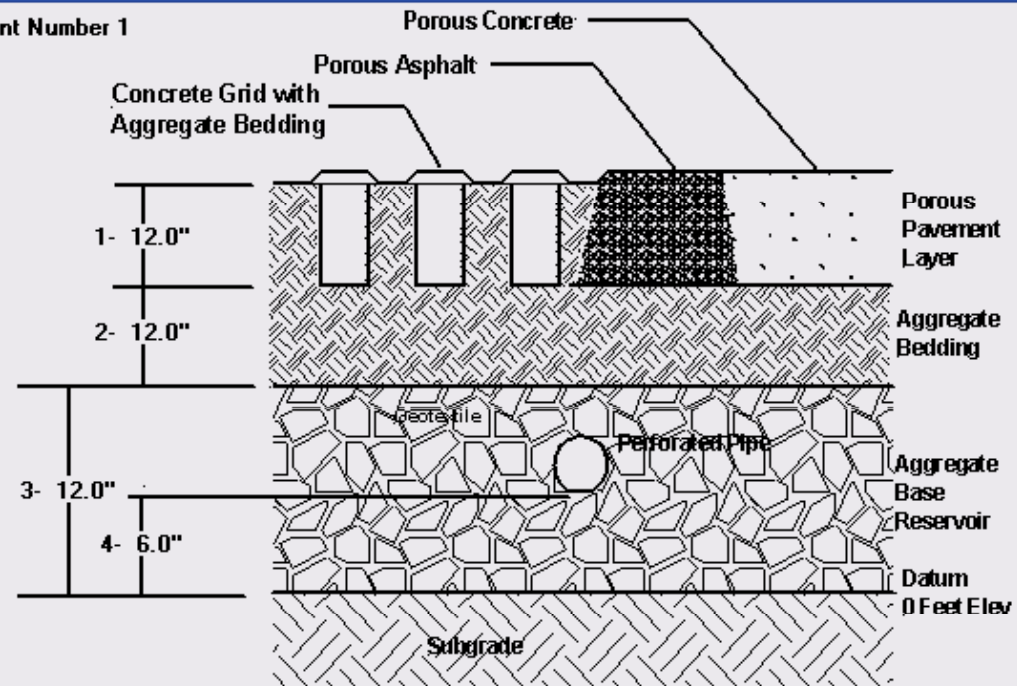
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30
2 - Aggregate Bedding Thickness (in)	12.0
Aggregate Bedding Porosity (>0 and <1)	0.25
3 - Aggregate Base Reservoir Thickness (in)	12.0
Aggregate Base Reservoir Porosity (>0 and <1)	0.30

Outlet/Discharge Options

Perforated Pipe Underdrain Diameter, if used (inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
☐ Loamy sand - 2.5 in/hr
☐ Sandy loam - 1.0 in/hr
☐ Loam - 0.5 in/hr
☐ Silt loam - 0.3 in/hr
☐ Sandy silt loam - 0.2 in/hr
☐ Clay loam - 0.1 in/hr
☐ Silty clay loam - 0.05 in/hr
☒ Sandy clay - 0.05 in/hr
☐ Silty clay - 0.04 in/hr
☐ Clay - 0.02 in/hr



Surface Pavement Layer Infiltration Rate Data

Initial Infiltration Rate (in/hr)	10.00
Percent of Infiltration Rate After 3 Years (0-100)	
Percent of Infiltration Rate After 5 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate Upon Cleaning (0-100)	85.0
Surface Clogging Load (lb/sf)	10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

Restorative Cleaning Frequency

- ☐ Never Cleaned
☐ Three Times per Year
☐ Semi-Annually
☐ Annually
☐ Every Two Years
☐ Every Three Years
☐ Every Four Years
☐ Every Five Years
☐ Every Seven Years
☐ Every Ten Years

Copy Porous Pavement Data

Paste Porous Pavement Data

Delete Control

Cancel

Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30
2 - Aggregate Bedding Thickness (in)	12.0
Aggregate Bedding Porosity (>0 and <1)	0.25
3 - Aggregate Base Reservoir Thickness (in)	12.0
Aggregate Base Reservoir Porosity (>0 and <1)	0.30

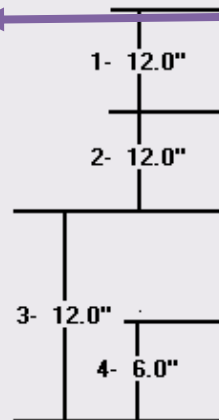
Outlet/Discharge Options

Perforated Pipe Underdrain Diameter, if used (inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
☐ Loamy sand - 2.5 in/hr
☐ Sandy loam - 1.0 in/hr
☐ Loam - 0.5 in/hr
☐ Silt loam - 0.3 in/hr
☐ Sandy silt loam - 0.2 in/hr
- ☐ Clay loam - 0.1 in/hr
☐ Silty clay loam - 0.05 in/hr
☒ Sandy clay - 0.05 in/hr
☐ Silty clay - 0.04 in/hr
☐ Clay - 0.02 in/hr

Concrete
Aggregate



Enter the area of the Porous Pavement.

Note: the Porous Pavement Control Device only treats runoff that falls directly on the source area. It does not treat any run-on from other source areas in the model file.



Surface Pavement Layer Infiltration Rate Data

Initial Infiltration Rate (in/hr)	10.00
Percent of Infiltration Rate After 3 Years (0-100)	
Percent of Infiltration Rate After 5 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate Upon Cleaning (0-100)	85.0
Surface Clogging Load (lb/sf)	10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

Restorative Cleaning Frequency

- ☐ Never Cleaned
☐ Three Times per Year
☐ Semi-Annually
☐ Annually
☐ Every Two Years
☐ Every Three Years
☐ Every Four Years
☐ Every Five Years
☐ Every Seven Years
☐ Every Ten Years

Copy Porous
Pavement
Data

Paste Porous
Pavement
Data

Delete Control

Cancel

Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

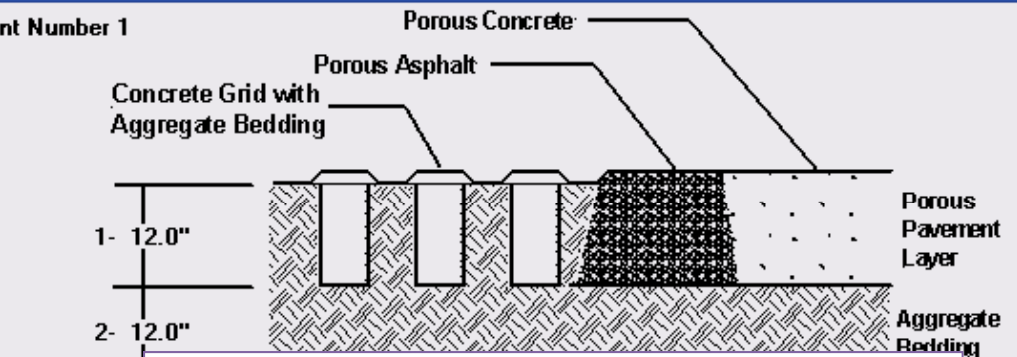
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30
2 - Aggregate Bedding Thickness (in)	12.0
Aggregate Bedding Porosity (>0 and <1)	0.25
3 - Aggregate Base Reservoir Thickness (in)	12.0
Aggregate Base Reservoir Porosity (>0 and <1)	0.30

Outlet/Discharge Options

Perforated Pipe Underdrain Diameter, if used (inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
☐ Loamy sand - 2.5 in/hr
☐ Sandy loam - 1.0 in/hr
☐ Loam - 0.5 in/hr
☐ Silt loam - 0.3 in/hr
☐ Sandy silt loam - 0.2 in/hr
- ☐ Clay loam - 0.1 in/hr
☐ Silty clay loam - 0.05 in/hr
☒ Sandy clay - 0.05 in/hr
☐ Silty clay - 0.04 in/hr
☐ Clay - 0.02 in/hr



Enter data for the Geometry and Properties of the Pavement.

Each layer requires a depth and porosity. The Help File contains some default information, however the porous pavement manufacturer should also be able to provide the information.

Initial Infiltration
Percent of I
Percent of I
Time Period
Percent of I
(0-100)

Surface Clogging Load (lb/sf) 10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

- ☐ Every Four Years
☐ Every Five Years
☐ Every Seven Years
☐ Every Ten Years

Copy Porous
Pavement
Data

Paste Porous
Pavement
Data

Delete Control

Cancel

Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

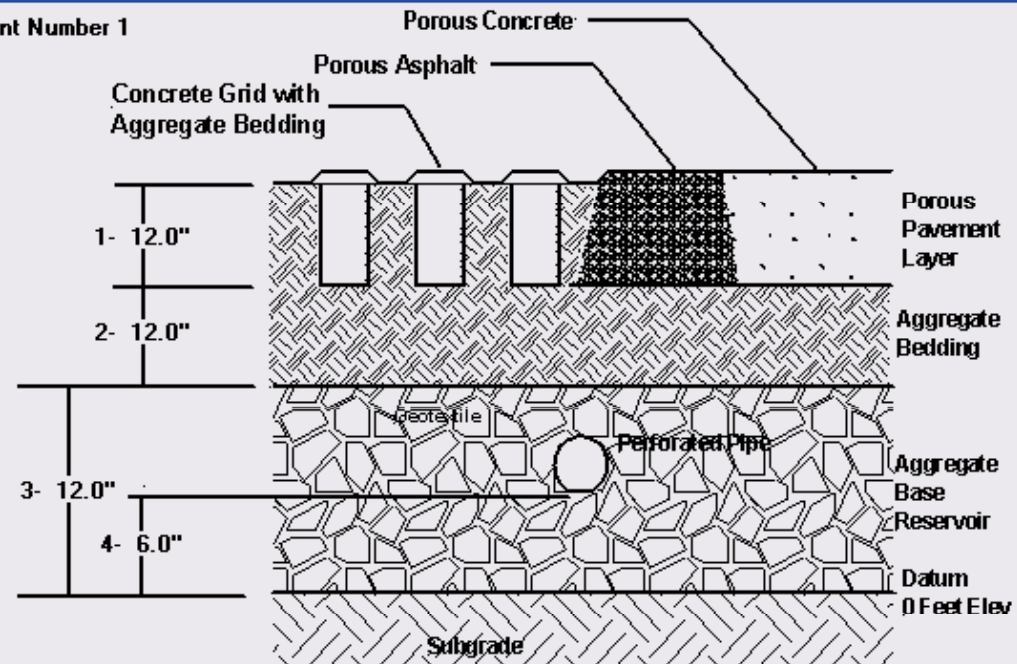
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30
2 - Aggregate Bedding Thickness (in)	12.0
Aggregate Bedding Porosity (>0 and <1)	0.25
3 - Aggregate Base Reservoir Thickness (in)	12.0
Aggregate Base Reservoir Porosity (>0 and <1)	0.30

Outlet/Discharge Options

Perforated Pipe Underdrain Diameter, if used (inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
- ☐ Loamy sand - 2.5 in/hr
- ☐ Sandy loam - 1.0 in/hr
- ☐ Loam - 0.5 in/hr
- ☐ Silt loam - 0.3 in/hr
- ☐ Sandy silt loam - 0.2 in/hr
- ☐ Clay loam - 0.1 in/hr
- ☐ Silty clay loam - 0.05 in/hr
- ☒ Sandy clay - 0.05 in/hr
- ☐ Silty clay - 0.04 in/hr
- ☐ Clay - 0.02 in/hr



Enter the Outlet data for the Pavement.

Initial Infiltration Rate (in/hr)	
Percent of Infiltration Rate After 5 Years (0-100)	
Percent of Infiltration Rate After 10 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate Upon Cleaning (0-100)	85.0
Surface Clogging Load (lb/sf)	10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

Copy Porous
Pavement
Data

Paste Porous
Pavement
Data

Delete Control

Cancel

Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

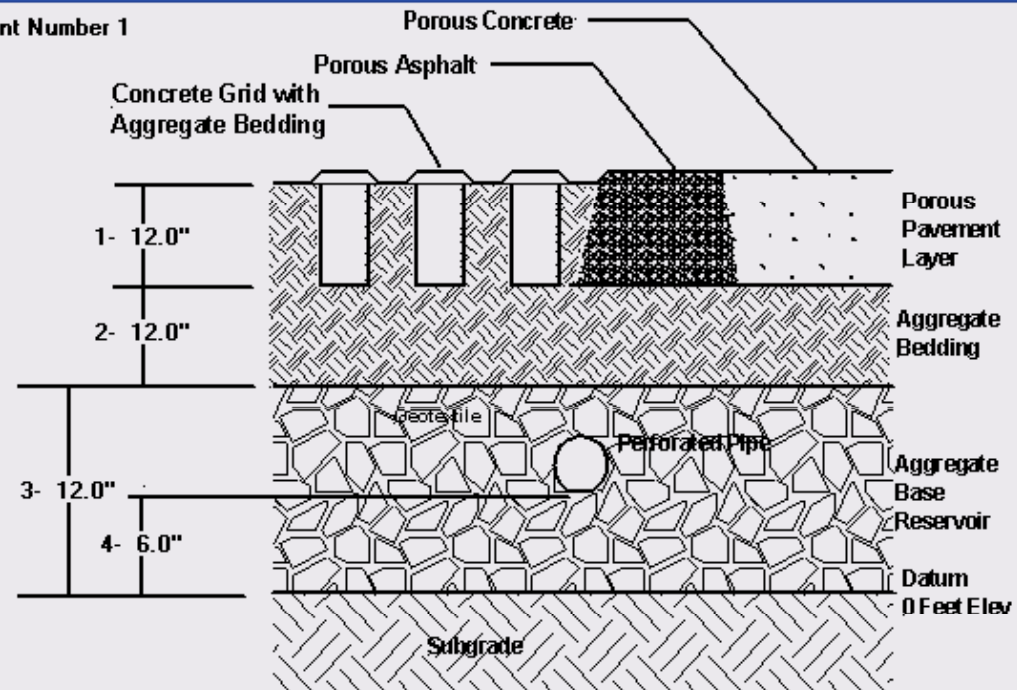
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30

Select the Seepage Rate of the Subgrade from the list of default values or enter the value if known.

Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
- ☐ Loamy sand - 2.5 in/hr
- ☐ Sandy loam - 1.0 in/hr
- ☐ Loam - 0.5 in/hr
- ☐ Silt loam - 0.3 in/hr
- ☐ Sandy silt loam - 0.2 in/hr
- ☐ Clay loam - 0.1 in/hr
- ☐ Silty clay loam - 0.05 in/hr
- ☒ Sandy clay - 0.05 in/hr
- ☐ Silty clay - 0.04 in/hr
- ☐ Clay - 0.02 in/hr



Surface Pavement Layer Infiltration Rate Data

Initial Infiltration Rate (in/hr)	10.00
Percent of Infiltration Rate After 3 Years (0-100)	
Percent of Infiltration Rate After 5 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate Upon Cleaning (0-100)	85.0
Surface Clogging Load (lb/sf)	10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

Copy Porous Pavement Data

Paste Porous Pavement Data

Restorative Cleaning Frequency

- ☐ Never Cleaned
- ☐ Three Times per Year
- ☐ Semi-Annually
- ☐ Annually
- ☐ Every Two Years
- ☐ Every Three Years
- ☐ Every Four Years
- ☐ Every Five Years
- ☐ Every Seven Years
- ☐ Every Ten Years

Delete Control

Cancel

Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

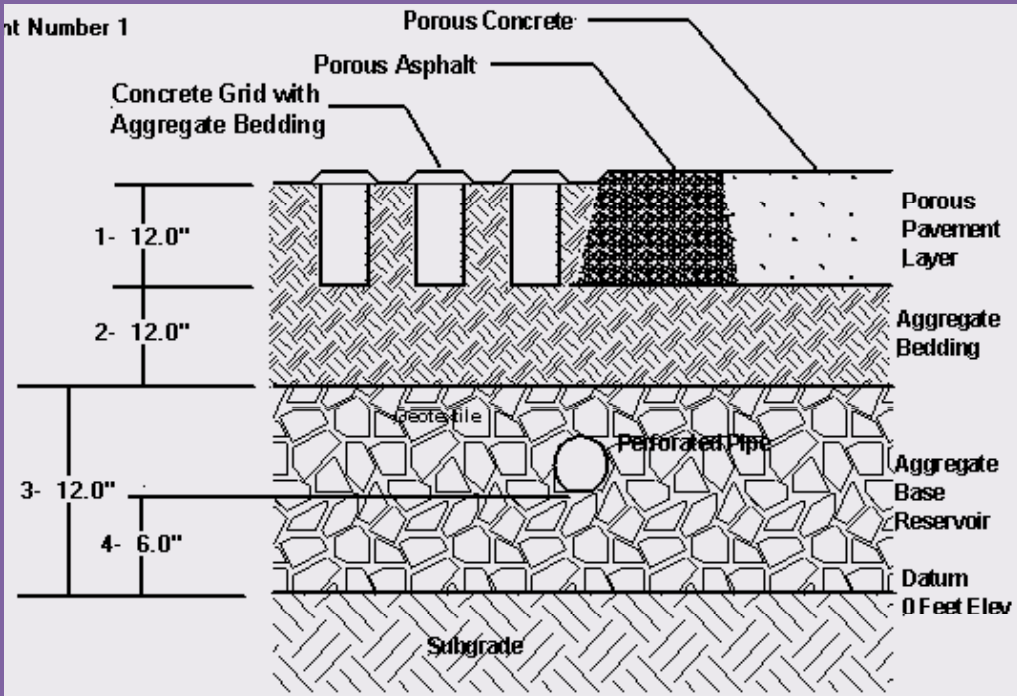
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30
2 - Aggregate Bedding Thickness (in)	12.0
Aggregate Bedding Porosity (>0 and <1)	0.25
3 - Aggregate Base Reservoir Thickness (in)	12.0
Aggregate Base Reservoir Porosity (>0 and <1)	0.30

Outlet/Discharge Options

Perforated Pipe Underdrain Diameter, if used (inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
☐ Loamy sand - 2.5 in/hr
☐ Sandy loam - 1.0 in/hr
☐ Loam - 0.5 in/hr
☐ Silt loam - 0.3 in/hr
☐ Sandy silt loam - 0.2 in/hr
- ☐ Clay loam - 0.1 in/hr
☐ Silty clay loam - 0.05 in/hr
☒ Sandy clay - 0.05 in/hr
☐ Silty clay - 0.04 in/hr
☐ Clay - 0.02 in/hr



Surface Pavement Layer Infiltration Rate Data

Initial Infiltration Rate (in/hr)	10.00
Percent of Infiltration Rate After 3 Years (0-100)	
Percent of Infiltration Rate After 5 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate (0-100)	
Surface Clogging Load (lb/sf)	

Enter values in either row
cannot enter values in

Copy Porous
Pavement
Data

Paste Porous
Pavement
Data

Restorative Cleaning Frequency

- ☐ Never Cleaned
☐ Three Times per Year
☐ Semi-Annually
☐ Annually
☐ Every Two Years

Values are filled in in the schematic above as values are entered.

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres): 2.850

Inflow Hydrograph Peak to Average Flow Ratio 3.8

Pavement Geometry and Properties

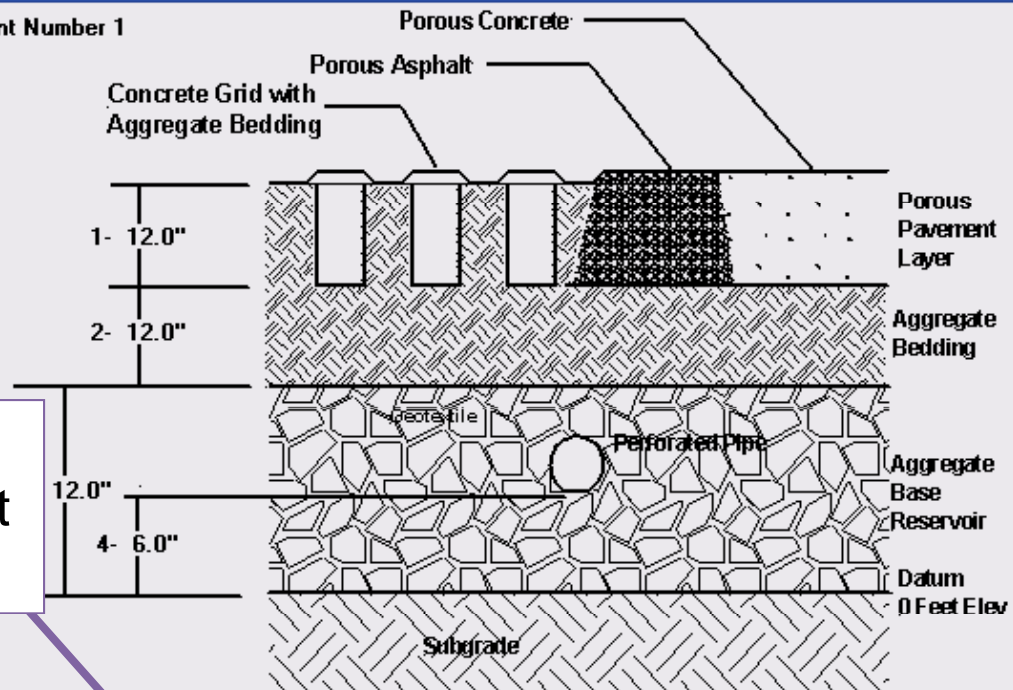
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30

Enter the remaining data for the Surface Pavement Layer.

(inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
- ☐ Loamy sand - 2.5 in/hr
- ☐ Sandy loam - 1.0 in/hr
- ☐ Loam - 0.5 in/hr
- ☐ Silt loam - 0.3 in/hr
- ☐ Sandy silt loam - 0.2 in/hr
- ☐ Clay loam - 0.1 in/hr
- ☐ Silty clay loam - 0.05 in/hr
- ☒ Sandy clay - 0.05 in/hr
- ☐ Silty clay - 0.04 in/hr
- ☐ Clay - 0.02 in/hr



Surface Pavement Layer Infiltration Rate Data

Initial Infiltration Rate (in/hr)	10.00
Percent of Infiltration Rate After 3 Years (0-100)	
Percent of Infiltration Rate After 5 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate Upon Cleaning (0-100)	85.0
Surface Clogging Load (lb/sf)	10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

Copy Porous Pavement Data

Paste Porous Pavement Data

Restorative Cleaning Frequency

- ☐ Never Cleaned
- ☐ Three Times per Year
- ☐ Semi-Annually
- ☐ Annually
- ☐ Every Two Years
- ☐ Every Three Years
- ☐ Every Four Years
- ☐ Every Five Years
- ☐ Every Seven Years
- ☐ Every Ten Years

Delete Control

Cancel

Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 13

Porous Pavement Control Device

Porous Pavement Control Device

First Source Area Control Practice

Porous Pavement Number 1

Land Use: Commercial 1

Source Area: Paved Parking 1

Total Area: 2.850

Porous pavement area (acres):

Inflow Hydrograph Peak to Average Flow Ratio

Pavement Geometry and Properties

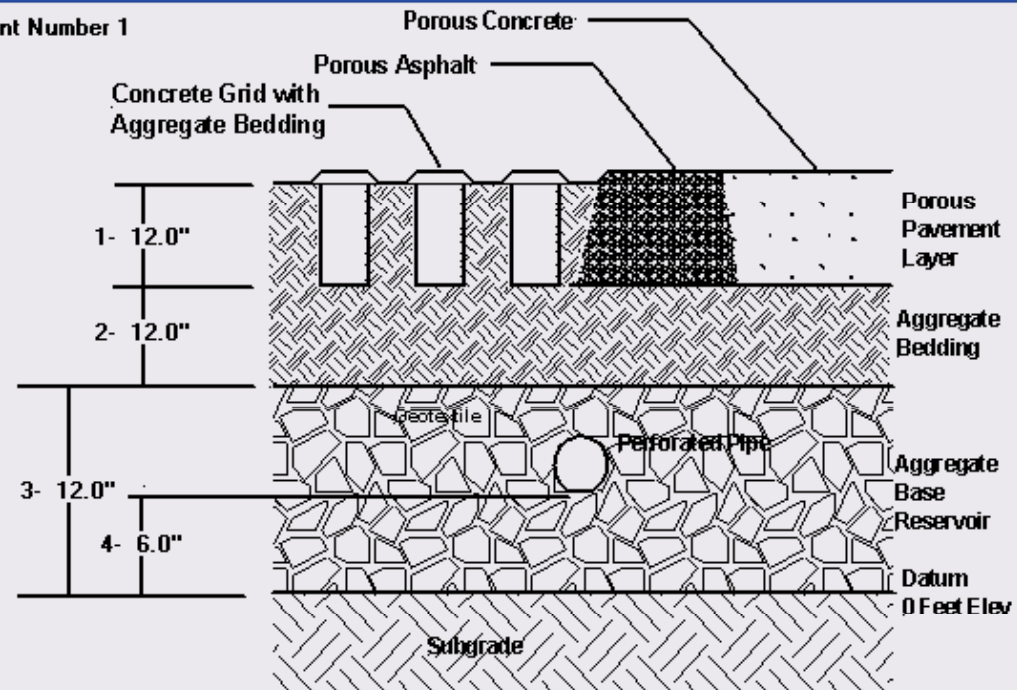
1 - Pavement Thickness (in)	12.0
Pavement Porosity (>0 and <1)	0.30
2 - Aggregate Bedding Thickness (in)	12.0
Aggregate Bedding Porosity (>0 and <1)	0.25
3 - Aggregate Base Reservoir Thickness (in)	12.0
Aggregate Base Reservoir Porosity (>0 and <1)	0.30

Outlet/Discharge Options

Perforated Pipe Underdrain Diameter, if used (inches)	4.00
4 - Perforated Pipe Underdrain Outlet Invert Elevation (inches above Datum)	6.0
Number of Perforated Pipe Underdrains (<250)	2
Subgrade Seepage Rate (in/hr) - select below or enter	0.05
Use Random Number Generation to Account for Uncertainty in Seepage Rate	<input type="checkbox"/>
Subgrade Seepage Rate COV	1.60

Select Subgrade Seepage Rate

- ☐ Sand - 8 in/hr
☐ Loamy sand - 2.5 in/hr
☐ Sandy loam - 1.0 in/hr
☐ Loam - 0.5 in/hr
☐ Silt loam - 0.3 in/hr
☐ Sandy silt loam - 0.2 in/hr
☐ Clay loam - 0.1 in/hr
☐ Silty clay loam - 0.05 in/hr
☒ Sandy clay - 0.05 in/hr
☐ Silty clay - 0.04 in/hr
☐ Clay - 0.02 in/hr



Surface Pavement Layer Infiltration Rate Data

Initial Infiltration Rate (in/hr)	10.00
Percent of Infiltration Rate After 3 Years (0-100)	
Percent of Infiltration Rate After 5 Years (0-100)	
Time Period Until Complete Clogging Occurs (yrs)	
Percent of Original Infiltration Rate Upon Cleaning (0-100)	85.0
Surface Clogging Load (lb/sf)	10

Enter values in either rows 2-4 or row 6. You cannot enter values in both sets of rows.

Copy Porous

Paste Porous

Restorative Cleaning Frequency

- ☐ Never Cleaned
☐ Three Times per Year
☐ Semi-Annually
☐ Annually
☐ Every Two Years
☐ Every Three Years
☐ Every Four Years
☐ Every Five Years
☐ Every Seven Years
☐ Every Ten Years

Finally, enter the Restorative Cleaning Frequency.

Control Practice #: 2

Land Use #: 1

Source Area #: 13

Porous Pavement Control Device

Program Options

Detailed Output File Options

Biofilters

- ☐ Detailed Biofilter Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Water Balance
- ☐ Evapotranspiration Detail

Catchbasins

- ☐ Performance by Event Output
- ☐ Performance By Step Output
- ☐ Stage-Inflow Data
- ☐ Stage-Outflow

Cisterns

- ☐ Detailed Output
- ☐ Outfall Discharge Hydrograph
- ☐ Water Balance

Filter Strips

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

☐ Critical Particle Size Calculation Detailed Output File

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Freeway Data

- ☐ Freeway Washoff Detail

Grass

- ☐ Hy
- ☐ Hy
- ☐ In
- ☐ Im
- ☐ Pa

Hydro

- ☐ Detailed Output
- ☐ Performance By Event
- ☐ Stage-Inflow
- ☐ Stage-Outflow

Porous Pavement

- ☐ Detailed Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Surface Seepage Rate
- ☐ Water Balance

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

☐ Uncheck All Detailed Output File Options

☐ Check All Detailed Output File Options

File Update Options

Cancel Changes **Save .INI File**

Detailed output for the porous pavement can be obtained using the Detailed Output Files through Program Options.

Control Devices – Street Cleaning

Street Cleaning Control Device

Street Cleaning Control Device

Land Use: Commercial 1

Total Area: 1.000 acres

Source Area: Streets 1

First Source Area Control Practice

Select ☐ Street Cleaning Dates OR ☒ Street Cleaning Frequency

Line Number	Street Cleaning Date	Street Cleaning Frequency
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

- ☐ 7 Passes per Week
- ☐ 5 Passes per Week
- ☐ 4 Passes per Week
- ☐ 3 Passes per Week
- ☐ 2 Passes per Week
- ☒ One Pass per Week
- ☐ One Pass Every Two Weeks
- ☐ One Pass Every Four Weeks
- ☐ One Pass Every Eight Weeks
- ☐ One Pass Every Twelve Weeks
- ☐ Two Passes per Year (Spring and Fall)
- ☐ One Pass Each Spring

Model Run Start Date: 01/02/75

Model Run End Date: 12/29/75

Final cleaning period ending date (MM/DD/YY):

Select Particle Size Distribution file name:

C:\WinSLAMM Files\NURP.CPZ

Type of Street Cleaner

- ☐ Mechanical Broom Cleaner
- ☒ Vacuum Assisted Cleaner

Street Cleaner Productivity

- ☒ 1. Coefficients based on street texture, parking density and parking controls
- ☐ 2. Other (specify equation coefficients)

Equation coefficient M (slope, $M < 1$)

0.60

Equation coefficient B (intercept, $B > 1$)

55

Parking Densities

- ☐ 1. None
- ☒ 2. Light
- ☐ 3. Medium
- ☐ 4. Extensive (short term)
- ☐ 5. Extensive (long term)

Are Parking Controls Imposed?

- ☒ Yes
- ☐ No

Copy Cleaning Data

Paste Cleaning Data

Delete Control

Cancel Edits

Clear

Continue

Control Practice #: 2

Land Use #: 1

Source Area #: 37

Street Cleaning Control Device

Street Cleaning Control Device

Land Use: Commercial 1

Total Area:

Source Area: Streets 1

First Source Area Control Practice

Select ☐ Street Cleaning Dates OR

Line Number	Street Cleaning Date	Street Cleaning Frequency
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Enter the Street Cleaning Start Date, Frequency, and Street Cleaning End Date if known.

Select ☒ Street Cleaning Frequency

- ☐ 7 Passes per Week
- ☐ 5 Passes per Week
- ☐ 4 Passes per Week
- ☐ 3 Passes per Week
- ☐ 2 Passes per Week
- ☒ One Pass per Week
- ☐ One Pass Every Two Weeks
- ☐ One Pass Every Four Weeks
- ☐ One Pass Every Eight Weeks
- ☐ One Pass Every Twelve Weeks
- ☐ Two Passes per Year (Spring and Fall)
- ☐ One Pass Each Spring

☒ Vacuum Assisted Cleaner

Street Cleaner Productivity

- ☒ 1. Coefficients based on street texture, parking density and parking controls
- ☐ 2. Other (specify equation coefficients)

Equation coefficient M (slope, $M < 1$)

0.60

Equation coefficient B (intercept, $B > 1$)

55

Parking Densities

- ☐ 1. None
- ☒ 2. Light
- ☐ 3. Medium
- ☐ 4. Extensive (short term)
- ☐ 5. Extensive (long term)

Are Parking Controls Imposed?

☒ Yes ☐ No

Model Run Start Date: 01/02/75

Model Run End Date: 12/29/75

Final cleaning period ending date (MM/DD/YY):

Select Particle Size Distribution file name:

C:\WinSLAMM Files\NURP.CPZ

Copy Cleaning Data

Paste Cleaning Data

Or, Enter the Street Cleaning Frequency.

Control Practice #: 2

Land Use #: 1

Source Area #: 37

Street Cleaning Control Device

Street Cleaning Control Device

Land Use:
 Source Area:
 First Source:
 Select

Enter the Type of Street Cleaner

Line Number	Street Cleaning Date	Street Cleaning Frequency
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

☐ 7 Passes per Week
☐ 5 Passes per Week
☐ 4 Passes per Week
☐ 3 Passes per Week
☐ 2 Passes per Week
☒ One Pass per Week
☐ One Pass Every Two Weeks
☐ One Pass Every Four Weeks
☐ One Pass Every Eight Weeks
☐ One Pass Every Twelve Weeks
☐ Two Passes per Year (Spring and Fall)
☐ One Pass Each Spring

Model Run Start Date: 01/02/75 Model Run End Date: 12/29/75

Final cleaning period ending date (MM/DD/YY):

Select Particle Size Distribution file name:

Type of Street Cleaner

☐ Mechanical Broom Cleaner
☒ Vacuum Assisted Cleaner

Street Cleaner Productivity

☒ 1. Coefficients based on street texture, parking density and parking controls
☐ 2. Other (specify equation coefficients)
 Equation coefficient M (slope, M<1)
 Equation coefficient B (intercept, B>1)

Parking Densities

☐ 1. None
☒ 2. Light
☐ 3. Medium
☐ 4. Extensive (short term)
☐ 5. Extensive (long term)

Are Parking Controls Imposed?

☒ Yes ☐ No

Control Practice #: 2 Land Use #: 1 Source Area #: 37

Street Cleaning Control Device

Street Cleaning Control Device

Land Use: Commercial 1 Total Area: 1.000 acres
Source Area: Streets 1
First Source Area Control Practice

Select ☐ Street Cleaning Dates OR ☒ Street Cleaning Frequency

☐ 7 Passes per Week

☐ One Pass Every Four Weeks
☐ One Pass Every Eight Weeks
☐ One Pass Every Twelve Weeks
☐ Two Passes per Year (Spring and Fall)
☐ One Pass Each Spring

Model Run Start Date: 01/02/75 Model Run End Date: 12/29/75

Final cleaning period ending date (MM/DD/YY):

Select Particle Size Distribution file name:

Copy Cleaning Data Paste Cleaning Data Delete Control Cancel Edits Clear Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 37

Type of Street Cleaner
☐ Mechanical Broom Cleaner
☒ Vacuum Assisted Cleaner

Street Cleaner Productivity
☒ 1. Coefficients based on street texture, parking density and parking controls
☐ 2. Other (specify equation coefficients)
Equation coefficient M (slope, $M < 1$)
Equation coefficient B (intercept, $B > 1$)

Parking Densities
☐ 1. None
☒ 2. Light
☐ 3. Medium
☐ 4. Extensive (short term)
☐ 5. Extensive (long term)

Are Parking Controls Imposed?
☒ Yes ☐ No

Enter the Street Cleaner Productivity coefficients if known,
Or use the defaults based on research data.

Street Cleaning Control Device

Street Cleaning Control Device

Land Use: Commercial 1 Total Area: 1.000 acres
Source Area: Streets 1
First Source Area Control Practice

Select ☐ Street Cleaning Dates OR ☒ Street Cleaning Frequency

Line Number	Street Cleaning Date	Street Cleaning Frequency
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

☐ 7 Passes per Week
☐ 5 Passes per Week
☐ 4 Passes per Week
☐ 3 Passes per Week
☐ 2 Passes per Week

Type of Street Cleaner
☐ Mechanical Broom Cleaner
☒ Vacuum Assisted Cleaner

Street Cleaner Productivity
☒ 1. Coefficients based on street texture, parking density and parking controls
☐ 2. Other (specify equation coefficients)
Equation coefficient M (slope, $M < 1$)
Equation coefficient B (intercept, $B > 1$)

Parking Densities
☐ 1. None
☒ 2. Light
☐ 3. Medium
☐ 4. Extensive (short term)
☐ 5. Extensive (long term)

Are Parking Controls Imposed?
☒ Yes ☐ No

Cancel Edits Clear Continue

Finally, Enter the Parking Density and if Parking Controls are Imposed. Note: Parking Controls should be set to "Yes" if the street cleaner can always get to the curb when street cleaning operations are conducted.

Note, Parking Density and Parking Controls are not required for the Ultra Urban Source Area; the Ultra Urban Source Area assumes there is never parking on the street.

Street Cleaning Control Device

Program Options

Detailed Output File Options

Biofilters

- ☐ Detailed Biofilter Output
- ☐ Irreducible Concentration Detailed Output

Flow Duration Curve Data

- ☐ Detailed Data
- ☐ Plotting Calculations

Street Cleaning

- ☐ Street Dirt/Accumulation Plots
- ☐ Street Dirt Removal
- ☐ Washoff or Street Cleaning Detail

Wet Detention Ponds

- ☐ Detailed Output
- ☐ Pond Stage-Area-Volume Data
- ☐ Stage-Outflow
- ☐ Stone Weeper Detailed Output
- ☐ Water Balance Summary of All Ponds

Cisterns

- ☐ Detailed Output
- ☐ Outfall Discharge Hydrograph
- ☐ Water Balance

Filter Strips

- ☐ Hydraulics and Concentration by Event
- ☐ Hydraulics Detailed Output
- ☐ Incremental Performance Output
- ☐ Irreducible Concentration Detailed Output
- ☐ Particulate Reduction Output

Hydrodynamic Devices

- ☐ Detailed Output
- ☐ Performance By Event
- ☐ Stage-Inflow
- ☐ Stage-Outflow

Porous Pavement

- ☐ Detailed Output
- ☐ Stage-Outflow
- ☐ Stochastic Seepage Rate Detail
- ☐ Surface Seepage Rate
- ☐ Water Balance

☐ Critical Particle Size Calculation Detailed Output File

☐ Uncheck All Detailed Output File Options

☐ Check All Detailed Output File Options

File Update Options

Cancel Changes **Save .INI File**

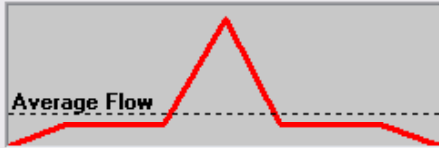
Control Devices – Wet Detention

Wet Detention Control Device

Wet Detention Control Device

Pond Number 1
First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1
Total Area: 0.680 acres

C:\WinSLAMM Files\NURP.CPZ
Initial Stage Elevation (ft):
Peak to Average Flow Ratio:
Enter fraction (greater than 0) that you want to modify all pond areas by and then select 'Modify Pond Areas' button:



Flow
Average Flow
Time (1.2 * Rainfall Duration)

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.000	0.000
1	0.01	0.2000	0.001
2	2.50	0.3000	0.624
3	5.00	0.4000	1.499
4	7.50	0.5000	2.624
5	9.00	0.6000	3.449
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Sharp Crested Weir
Weir Length (ft)
Height from datum to bottom of weir opening (ft)
 V-Notch Weir
Weir Angle (<180 degrees)
Height from datum to bottom of weir opening (ft)
Number of V-Notch weirs
 Orifice Set 1
Orifice Diameter (ft)
Invert elevation above datum (ft)
Number of orifices in set
 Orifice Set 2
Orifice Diameter (ft)
Invert elevation above datum (ft)
Number of orifices in set
 Orifice Set 3
Orifice Diameter (ft)
Invert elevation above datum (ft)
Number of orifices in set
 Stone Weeper
Width at bottom of weeper (ft)
Weeper side slope [H:1V]
Upstream side slope [H:1V]
Downstream side slope [H:1V]
Horizontal flow path length at top of weeper (ft)
Average rock diameter (ft)
Distance from bottom to top of weeper (ft)
Height from datum to bottom of weeper (ft)
 Vertical Stand Pipe
Pipe diameter (ft)
Height above datum (ft)

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Stage (ft)	Natural Seepage Rate (in/hr)	Other Outflow Rate (cfs)
0.00		
0.01		
2.50		
5.00		
7.50		
9.00		

Broad Crested Weir
Weir crest length (ft)
Weir crest width (ft)
Height of weir opening (ft)
Height from datum to bottom of weir opening (ft)
 Seepage Basin
Infiltration rate (in/hr)
Width of device (ft)
Length of device (ft)
Invert elevation of seepage basin inlet above datum (ft)

Control Practice #: 2 Land Use #: 1 Source Area #: 1

Wet Detention Control Device

Wet Detention Control Device

Pond Number 1
First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1
Total Area: 0.680 acres

Select Particle Size Distribution File
 C:\WinSLAMM Files\NURP.CPZ

Initial Stage Elevation (ft):
 Peak to Average Flow Ratio:

Enter fraction (greater than 0) that you want to modify all pond areas by and then select 'Modify Pond Areas' button

Modify Pond Areas

Recalculate Cumulative Volume

Flow

Average Flow

Time (1.2 * Rainfall Duration)

Save this Pond as a WinDETPOND File

Delete Pond **Cancel** **Continue**

Control Practice #: 2 Land Use #: 1 Source Area #: 1

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.000	0.000
1	0.01	0.2000	0.001
2	2.50	0.2000	0.624
3	5.00		
4	7.50		
5	9.00		
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Add Sharp Crested Weir

Weir Length (ft)
 Height from datum to bottom of weir opening (ft)

Add V-Notch Weir

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Add Orifice Set 2

Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Orifice Set 3

Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Stone Weeper

Width at bottom of weeper (ft)
 Weeper side slope (H:1V)
 Upstream side slope (H:1V)
 Downstream side slope (H:1V)
 Horizontal flow path length at top of weeper (ft)
 Average rock diameter (ft)
 Distance from bottom to top of weeper (ft)
 Height from datum to bottom of weeper (ft)

Add Vertical Stand Pipe

Pipe diameter (ft)
 Height above datum (ft)

Add Broad Crested Weir

Weir crest length (ft)
 Weir crest width (ft)
 Height of weir opening (ft)
 Height from datum to bottom of weir opening (ft)

Add Seepage Basin

Infiltration rate (in/hr)
 Width of device (ft)
 Length of device (ft)
 Invert elevation of seepage basin inlet above datum (ft)

Remove Broad Crested Weir

Stage (ft) **Natural Seepage Rate (in/hr)** **Other Outflow Rate (cfs)**

0.00		
0.01		
2.50		
5.00		
7.50		
9.00		

Wet Detention Control Device

Wet Detention Control Device

Pond Number 1
First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1
Total Area: 0.680 acres

Select Particle Size Distribution File
 C:\WinSLAMM Files\NURP.CPZ

Initial Stage Elevation (ft):
 Peak to Average Flow Ratio:

Enter fraction (greater than 0) that you want to modify all pond areas by and then select 'Modify Pond Areas' button

Flow
 Average Flow
 Time (1.2 * Rainfall Duration)

Stage Area Table

Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.000
1	0.01	
2	2.50	
3	5.00	
4	7.50	
5	9.00	
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		

Sharp Crested Weir

Weir Length (ft)
 Height from datum to bottom of weir opening (ft)

Evaporation and Water Withdrawal Table

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000
	0.00	0.000

Load Crested Weir

Weir crest length (ft)
 Weir crest width (ft)
 Height of weir opening (ft)
 Height from datum to bottom of weir opening (ft)

Seepage Basin

Infiltration rate (in/hr)
 Width of device (ft)
 Length of device (ft)
 Invert elevation of seepage basin inlet above datum (ft)

Vertical Stand Pipe

Pipe diameter (ft)
 Height above datum (ft)

Save this Pond as a WinDETPOND File

Delete Pond Cancel Continue

Control Practice #: 2 Land Use #: 1 Source Area #: 1

Wet Detention Control Device

Wet Detention Control Device

Pond Number 1
First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1
Total Area: 0.680 acres

Select Particle Size Distribution File
 C:\WinSLAMM Files\NURP.CPZ

Initial Stage Elevation (ft):
 Peak to Average Flow Ratio:

Enter fraction (greater than 0) that you want to modify all pond areas by and then select 'Modify Pond Areas' button

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.000	0.000
1	0.01	0.2000	0.001
2	2.50	0.3000	0.624
3	5.00	0.4000	1.499
4	7.50	0.5000	2.624
5	9.00	0.6000	3.449
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Add Sharp Crested Weir
 Weir Length (ft)
 Height from datum to bottom of weir opening (ft)

Add V-Notch Weir
 Weir Angle (<180 degrees)
 Height from datum to bottom of weir opening (ft)
 Number of V-Notch weirs

Remove Orifice Set 1
 Orifice Diameter (ft) 0.50
 Invert elevation above datum (ft) 5.00
 Number of orifices in set 1

Add Orifice Set 2
 Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Orifice Set 3
 Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Stone Weeper
 Width at bottom of weeper (ft)

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Stage (ft)	Natural Seepage Rate (in/hr)	Other Outflow Rate (cfs)
0.00		
0.01		
2.50		
5.00		
7.50		
9.00		

Recalculate Cumulative Volume

Control Practice #: 2 | Land Use #: 1 | Source Area #: 1

Enter the Stage Area Data for the pond. At least five stage increments must be entered. The area of the pond at the datum must be zero. Enter the first stage of the bottom of the pond as 0.01.

The 'Cumulative Volume' is calculated for informational purposes only. The program divides the pond volume into much finer slices when routing runoff through the pond.

Wet Detention Control Device

Wet Detention Control Device

Pond Number 1
First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1
Total Area: 0.680 acres

Select Particle Size Distribution File
 C:\WinSLAMM Files\NURP.CPZ

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.000	0.000
1	0.01	0.2000	0.001
2	2.50	0.3000	0.624
3	5.00	0.4000	1.499
4	7.50	0.5000	2.624
5	9.00	0.6000	3.449
6			
7			

Add Sharp Crested Weir

Weir Length (ft)
 Height from datum to bottom of weir opening (ft)

Add V-Notch Weir

Weir Angle (<180 degrees)
 Height from datum to bottom of weir opening (ft)
 Number of V-Notch weirs

Remove Orifice Set 1

Orifice Diameter (ft) 0.50
 Invert elevation above datum (ft) 5.00
 Number of orifices in set 1

Add Orifice Set 2

Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Orifice Set 3

Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Stone Weeper

Width at bottom of weeper (ft)
 Weeper side slope [H:1V]
 Upstream side slope [H:1V]
 Downstream side slope [H:1V]
 Horizontal flow path length at top of weeper (ft)
 Average rock diameter (ft)
 Distance from bottom to top of weeper (ft)
 Height from datum to bottom of weeper (ft)

Add Vertical Stand Pipe

Pipe diameter (ft)
 Height above datum (ft)

Add Broad Crested Weir

Weir crest length (ft) 1.00
 Weir crest width (ft) 1.00
 Height of weir opening (ft) 4.00
 Height from datum to bottom of weir opening (ft) 5.00

Add Seepage Basin

Infiltration rate (in/hr)
 Width of device (ft)
 Length of device (ft)
 Invert elevation of seepage basin inlet above datum (ft)

Month **Evaporation (in/day)** **Water Withdraw Rate (ac-ft/day)**

Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Stage (ft) **Natural Seepage Rate (in/hr)** **Other Outflow Rate (cfs)**

0.00		
0.01		
2.50		
5.00		
7.50		
9.00		

Save this Pond as a WinDETPOND File

Delete Pond **Cancel** **Continue**

Control Practice #: 2 Land Use #: 1 Source Area #: 1

Enter the outlet structure data. Information regarding each outlet structure can be found in the Help File. You must have a Broad Crested Weir as an emergency overflow.

Select "Add" to add the outlet or "Remove" to delete the outlet.

Wet Detention Control Device

Wet Detention Control Device

Pond Number 1
First Source Area Control Practice
Land Use: Commercial 1
Source Area: Roof 1
Total Area: 0.680 acres

Select Particle Size Distribution File
 C:\WinSLAMM Files\NURP.CPZ

Initial Stage Elevation (ft):
 Peak to Average Flow Ratio:

	Stage (ft)	Area (acres)	Cumulative Volume (ac-ft)
0	0.00	0.000	0.000
1	0.01	0.2000	0.001
2	2.50	0.3000	0.624
3	5.00	0.4000	1.499
4	7.50	0.5000	2.624
5	9.00	0.6000	3.449
6			
7			
8			
9			
10			

Add Sharp Crested Weir
 Weir Length (ft)
 Height from datum to bottom of weir opening (ft)

Add V-Notch Weir
 Weir Angle (<180 degrees)
 Height from datum to bottom of weir opening (ft)
 Number of V-Notch weirs

Remove Orifice Set 1
 Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Orifice Set 2
 Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Orifice Set 3
 Orifice Diameter (ft)
 Invert elevation above datum (ft)
 Number of orifices in set

Add Stone Weeper
 Width at bottom of weeper (ft)
 Weeper side slope [H:1V]
 Stream side slope [H:1V]
 Downstream side slope [H:1V]
 Horizontal flow path length at top of weeper (ft)
 Average rock diameter (ft)
 Distance from bottom to top of weeper (ft)
 Height from datum to bottom of weeper (ft)

Add Vertical Stand Pipe
 Pipe diameter (ft)
 Height above datum (ft)

Month	Evaporation (in/day)	Water Withdraw Rate (ac-ft/day)
Jan	0.00	0.000
Feb	0.00	0.000
Mar	0.00	0.000
Apr	0.00	0.000
May	0.00	0.000
Jun	0.00	0.000
Jul	0.00	0.000
Aug	0.00	0.000
Sep	0.00	0.000
Oct	0.00	0.000
Nov	0.00	0.000
Dec	0.00	0.000

Stage (ft)	Natural Seepage Rate (in/hr)	Other Outflow Rate (cfs)
0.00		
0.01		
2.50		
5.00		
7.50		
9.00		

Remove Broad Crested Weir
 Weir crest length (ft)
 Weir crest width (ft)
 Height of weir opening (ft)
 Height from datum to bottom of weir opening (ft)

Add Seepage Basin
 Infiltration rate (in/hr)
 Width of device (ft)
 Length of device (ft)
 Invert elevation of seepage basin inlet above datum (ft)

Flow

Time (1.2 * Rainfall Duration)

Save this Pond as a WinDETPOND File

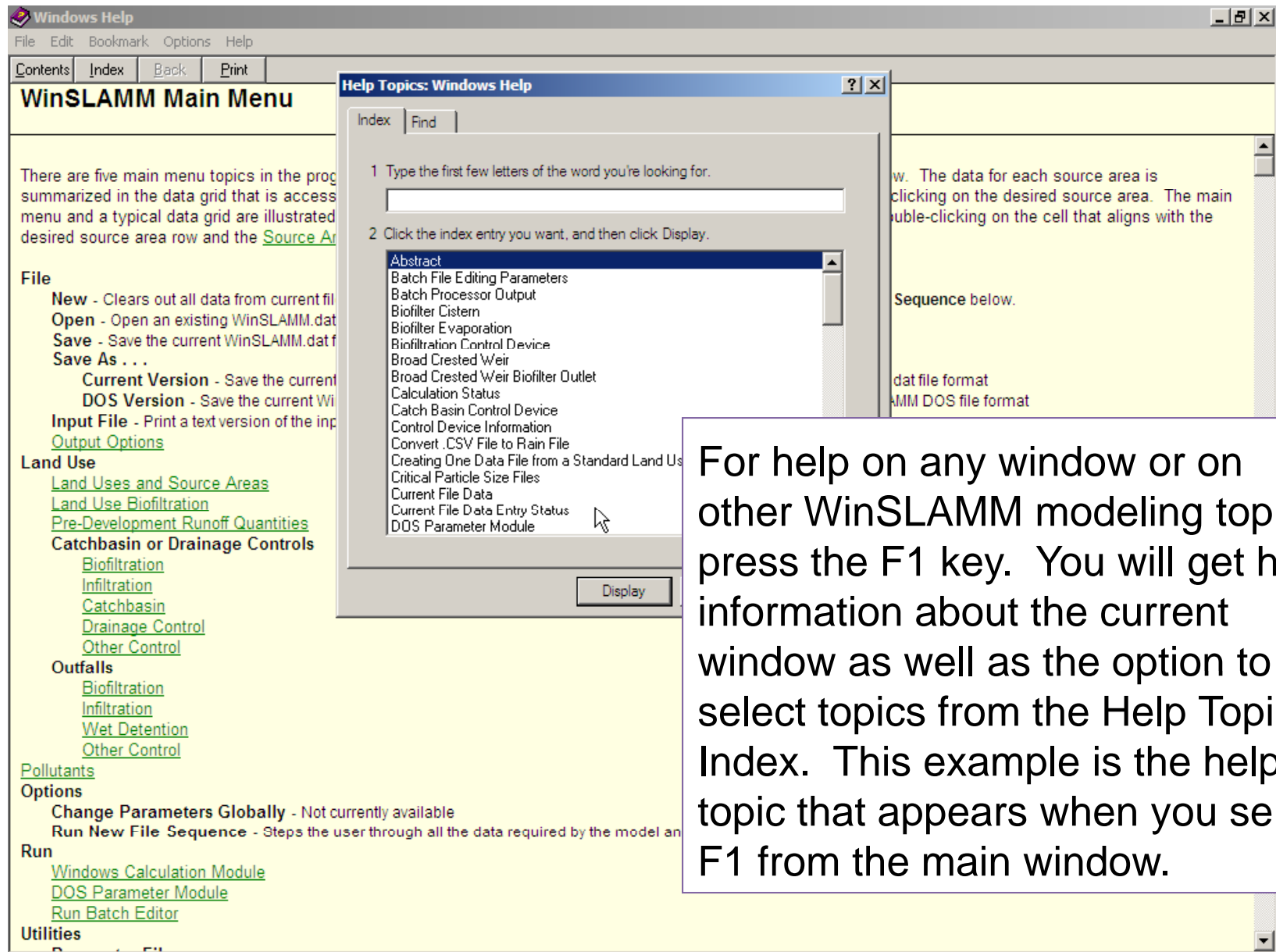
Delete Pond **Cancel** **Continue**

Control Practice #: 2 Land Use #: 1 Source Area #: 1

The pond geometry can be saved so that it can be directly read into WinDETPOND. Check the "Wet Detention Control Device" Help File Topic for more information.

For Additional Information
See . . .

The Context-Sensitive Help in the Program



For help on any window or on other WinSLAMM modeling topics, press the F1 key. You will get help information about the current window as well as the option to select topics from the Help Topics Index. This example is the help topic that appears when you select F1 from the main window.



Questions?

For model information, go to www.winslamm.com
Remember to Press the "F1" to access the Help File