Contech Engineered Solutions
Stormwater Solutions

Fox-Wolf Watershed Alliance

19th Annual Watershed Conference

The Contech Wisconsin Team

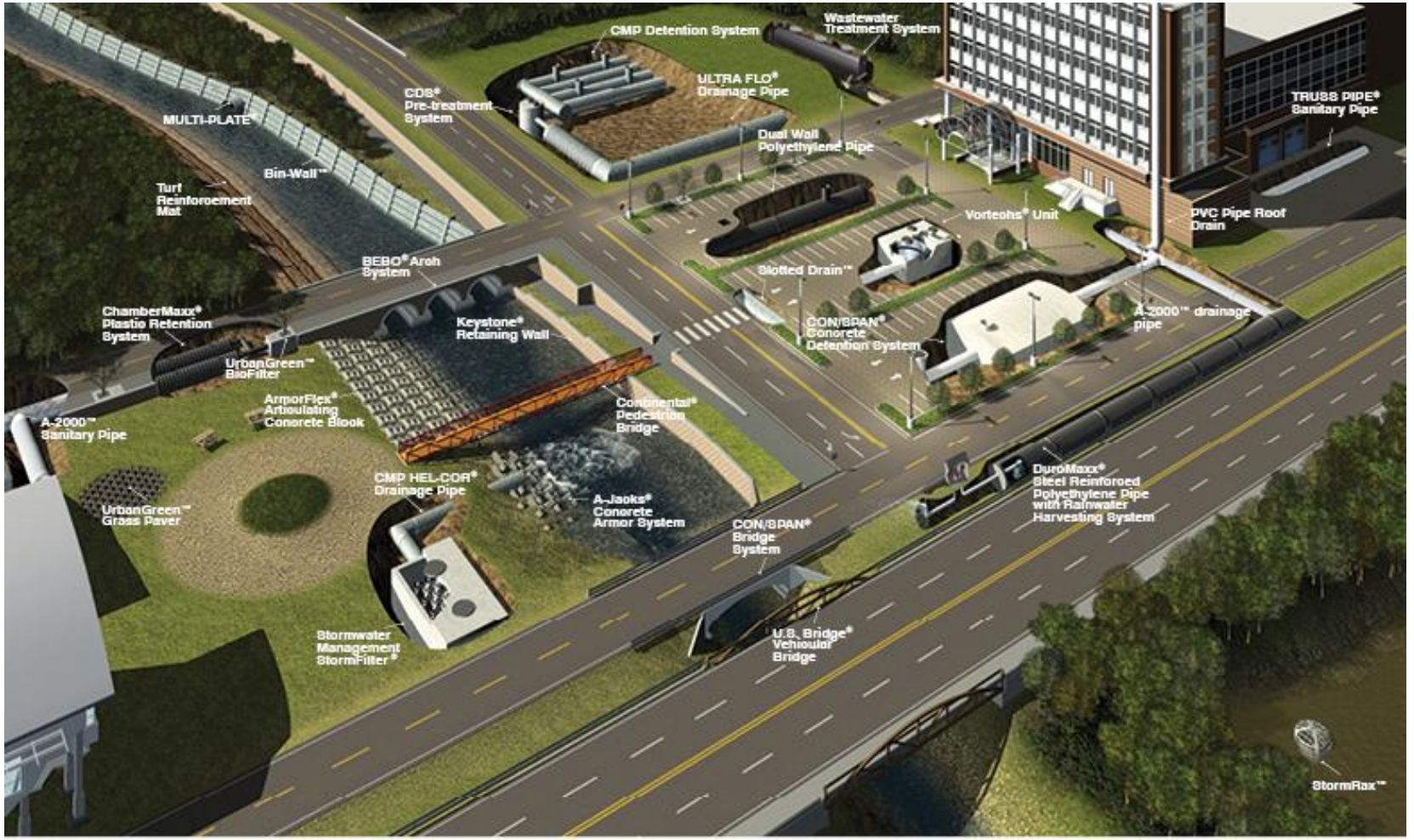
Todd Riebau, P.E. & Keith Johnson, P.E.
Regional Sales Engineers

Eric Sturm
Bridge Consultant

Kevin Klein, P.E.
Stormwater Consultant

Contech Engineered Site Solutions

- Bridge
- Drainage
- Erosion Control
- Retaining Walls
- Sanitary Sewer
- Soil Stabilization
- Stormwater



Jefferson County – 24-5 x 8-11 Aluminum Box Culvert CTH P - 2017

City of Oak Creek – 52’ x 11’ ConSpan O-Series – Weatherly Drive - 2015

Park & Ride Lot – 80’ x 10’ Weathering Steel Truss Bridge
Village of Pleasant Prairie - 2014

Wisconsin River – 50s Open Cell ArmorFlex vs Rip Rap
City of Portage – 1999 (upper) & 2015 (lower)

CONTECH® ENGINEERED SOLUTIONS

Wisconsin Regulations

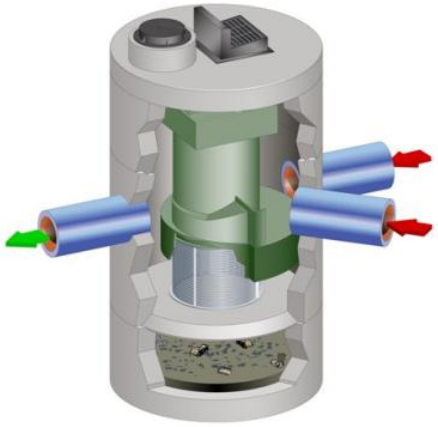
Wisconsin DNR NR 151.12 TSS Requirements:

- New Developments must reduce TSS by 80%
- Redevelopments must reduce TSS by 40%

Contech's Solutions

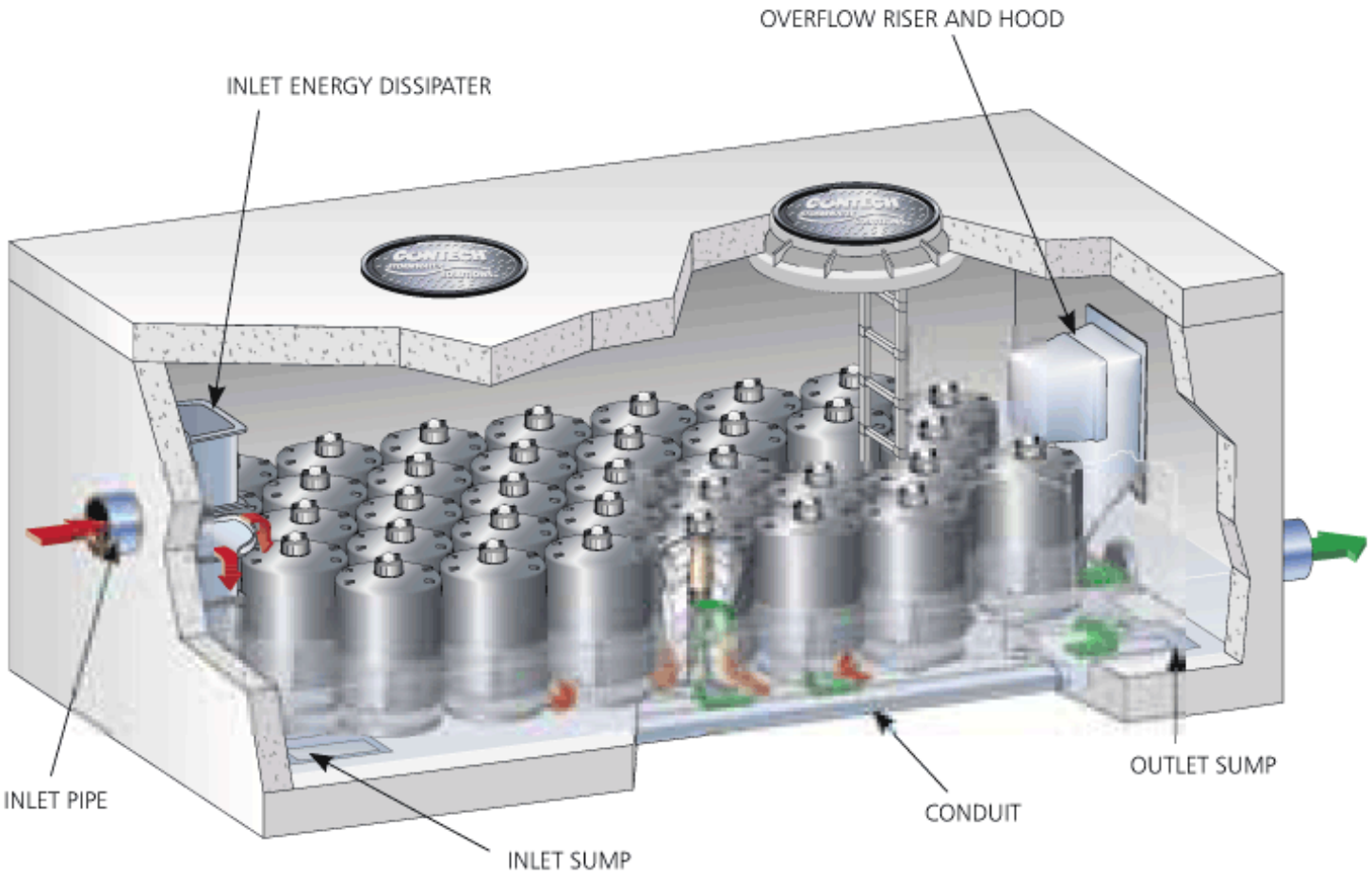
1. Stormwater Management StormFilter Media Filtration Systems
2. Underground Wet Pond with Aluminized CMP

Two Levels of Manufactured Treatment Devices



	Hydrodynamic Separation	Filtration
Pollutants of Concern	TSS	TSS, Nutrients, Metals
Targeted Particle Size Distribution	> 50 micron	< 50 micron
Placement Relative to Detention	• Upstream for effective performance	• Upstream or downstream

Stormwater Management StormFilter



StormFilter Vault

Media Filtration

	PhosphoSorb™	Perlite	CSF® Leaf Media	ZPG
Sediments	■	■	■	■
Phosphorous	■			■
Oil and Grease	■	■	■	■
Soluble Metals	■		■	■
Organics			■	■
Nutrients	■	■	■	■

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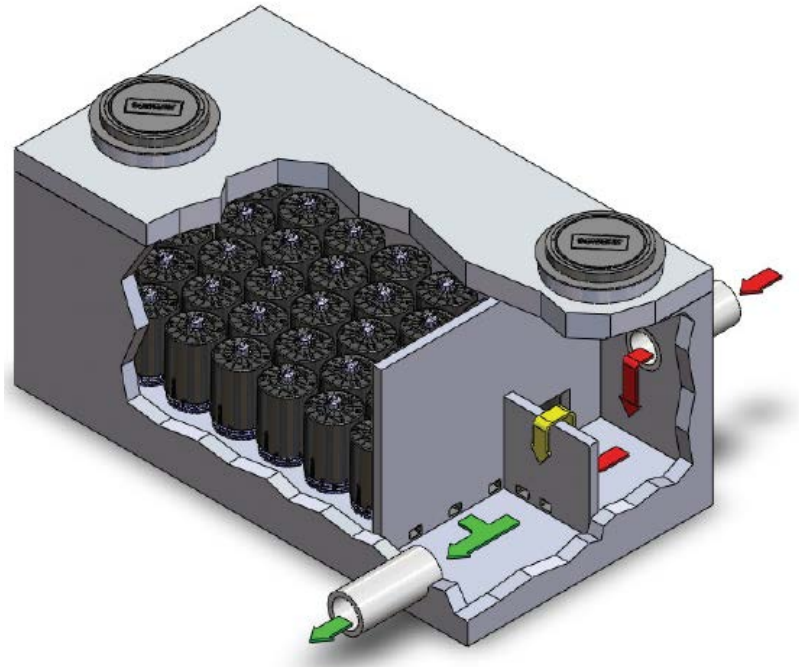
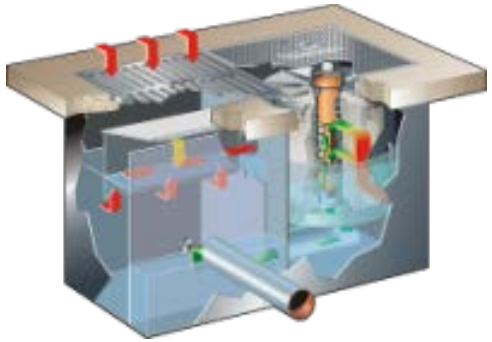
StormFilter Configurations

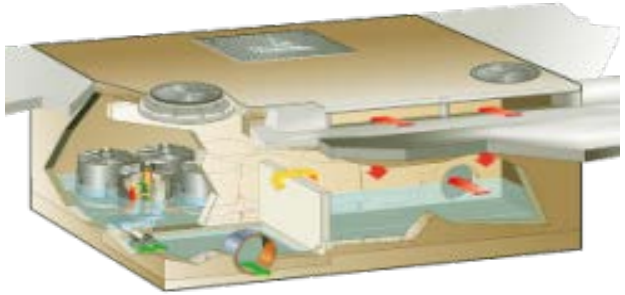
Peak Diversion



Catch Basin



Curb Inlet



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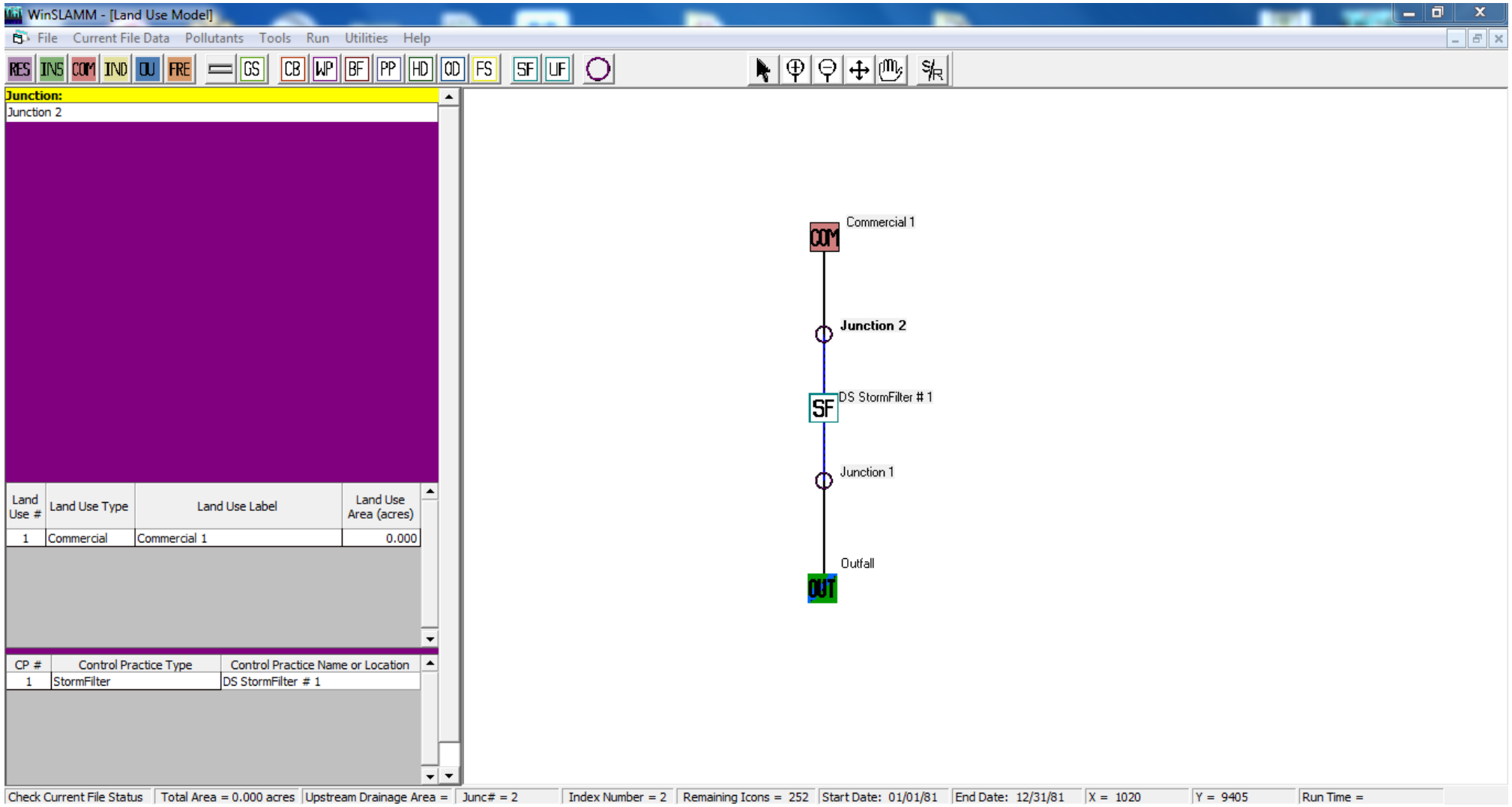
StormFilter Maintenance

Modeling in WinSLAMM



StormFilter Input – Online Configuration

Stormwater Management StormFilter(R) (by Contech)

Drainage System Control Practice

Media Type: ZPG

Cartridge Height: 12 inches | 18 inches | 27 inches

Cartridge Specific Flow Rate: 1 gpm/sf | 2 gpm/sf

Head Difference (ft) Between Inlet and Outlet Inverts (Minimum Difference = 3.05): 3.05

Bypass Structure Location:
- Online - Within cartridge chamber
- Offline - Upstream of cartridge chamber

Activate Upstream Storage Gallery

Volume Based Chamber Size
- Runoff Depth (in)
- Storage Chamber Depth (ft)

Pipe Storage
- Storage Pipe Diameter (ft)
- Storage Pipe Length (ft)
- Chamber Sump Depth (ft)

Box Storage
- Chamber Footprint Area (sf)
- Chamber Depth (ft)
- Chamber Sump Depth (ft)

Solve for Given Conditions
Number of Cartridges: 5 Chamber Dimension = 5' dia

OR

Solve Iteratively for Desired Percent Reduction or Effluent Concentration
- Treatment Goal - Percent TSS (0.45-75 um) Removed
- Treatment Goal - Percent SSC (>0.45 um) Removed
- Treatment Goal - Effluent TSS Concentration (mg/L)
- Treatment Goal - Effluent SSC Concentration (mg/L)

Select Particle Size Distribution File

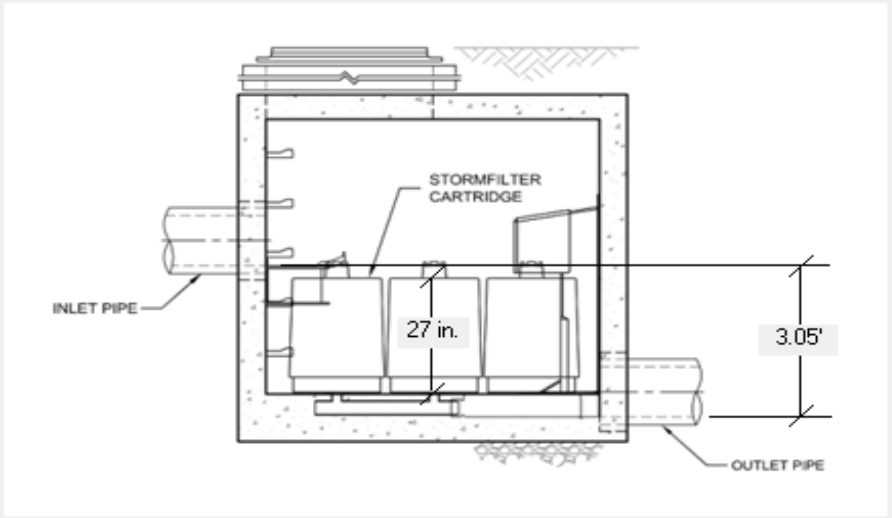
Not needed - calculated by program

Have Model Determine Cleaning/Replacement Frequency

Copy Media Filter Data | Paste Media Filter Data | Delete Control | Cancel | Continue | Contact Contech Web Site

Cartridge Flow Rate = 22.50 gpm | Internal Overflow Weir Height = 5.25 ft. | Tank Height = 5.5 ft.

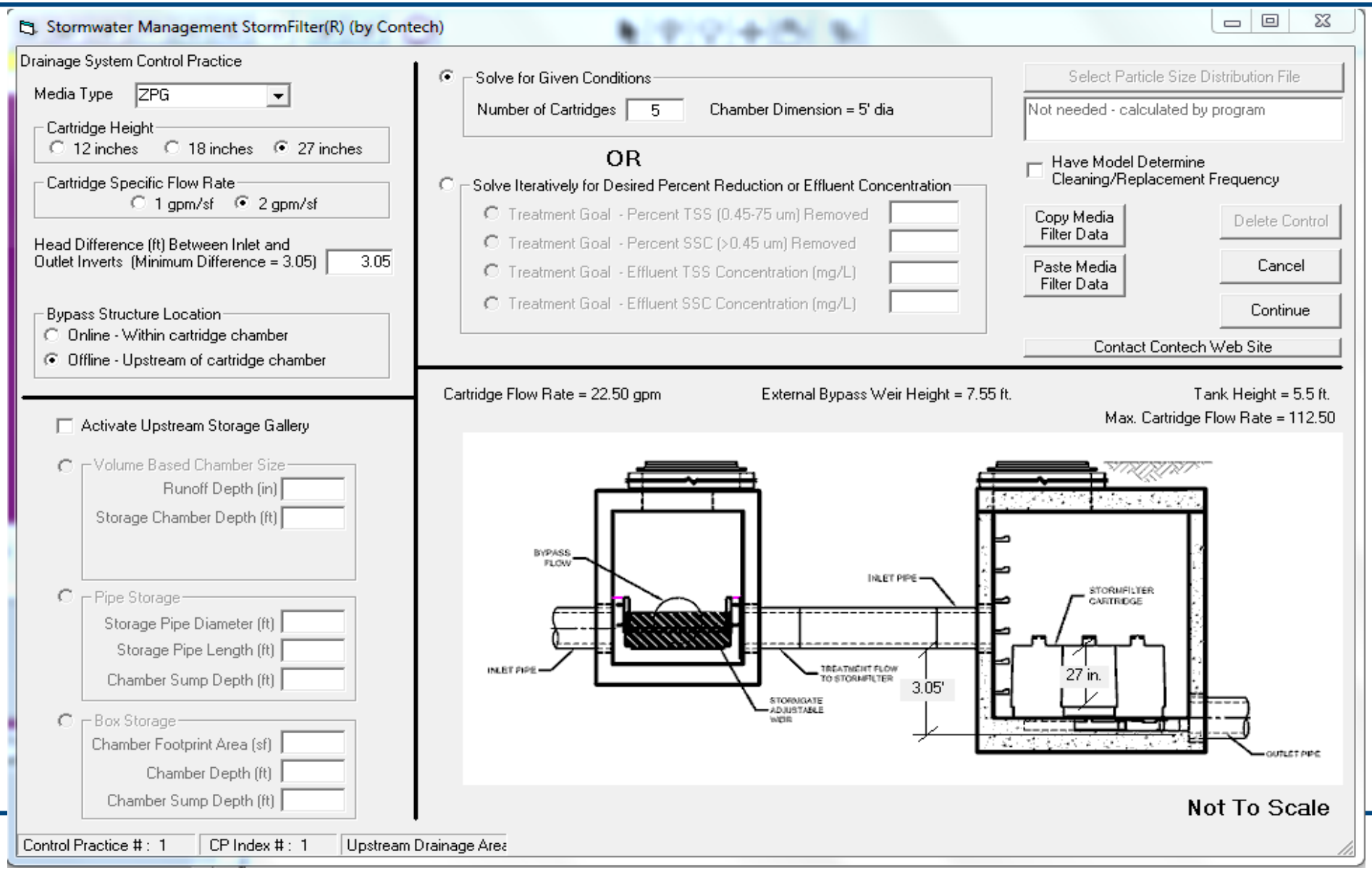
Max. Cartridge Flow Rate = 112.50



Not To Scale

Control Practice # : 1 | CP Index # : 1 | Upstream Drainage Area

StormFilter Input – Offline Configuration



StormFilter Input – Activate Upstream Storage Gallery

Stormwater Management StormFilter(R) (by Contech)

Drainage System Control Practice

Media Type: ZPG

Cartridge Height: 12 inches | 18 inches | 27 inches

Cartridge Specific Flow Rate: 1 gpm/sf | 2 gpm/sf

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Bypass Structure Location:
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Solve for Given Conditions
Number of Cartridges: 5 — Chamber Dimension = 5' dia

OR

Solve Iteratively for Desired Percent Reduction or Effluent Concentration
- Treatment Goal - Percent TSS (0.45-75 um) Removed
- Treatment Goal - Percent SSC (>0.45 um) Removed
- Treatment Goal - Effluent TSS Concentration (mg/L)
- Treatment Goal - Effluent SSC Concentration (mg/L)

Select Particle Size Distribution File

Not needed - calculated by program

Have Model Determine Cleaning/Replacement Frequency

Copy Media Filter Data | Paste Media Filter Data | Delete Control | Cancel | Continue | Contact Contech Web Site

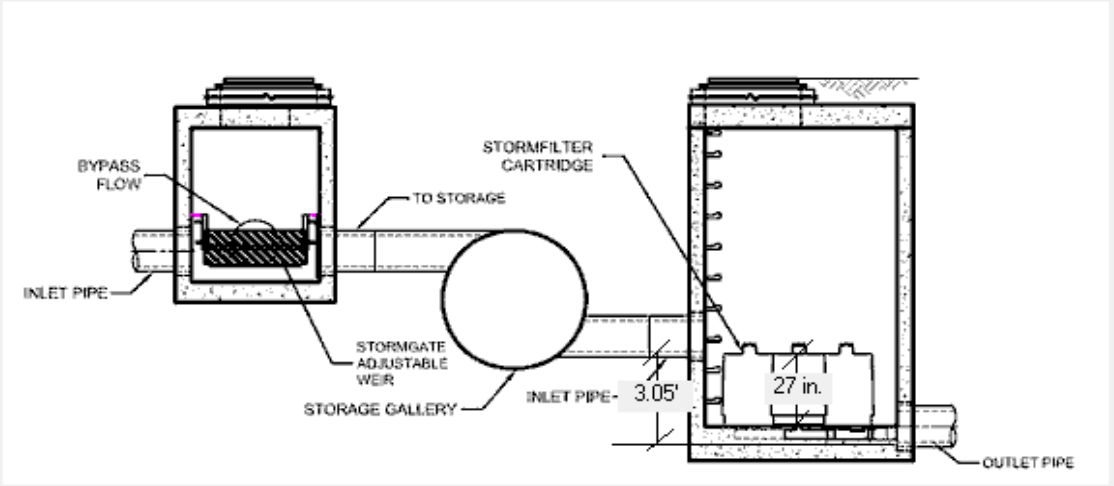
Activate Upstream Storage Gallery

Volume Based Chamber Size
- Runoff Depth (in)
- Storage Chamber Depth (ft)

Pipe Storage
- Storage Pipe Diameter (ft): 8.00
- Storage Pipe Length (ft): 10.00
- Chamber Sump Depth (ft): 3.5

Box Storage
- Chamber Footprint Area (sf)
- Chamber Depth (ft)
- Chamber Sump Depth (ft)

Cartridge Flow Rate = 22.50 gpm | External Bypass Weir Height = 7.55 ft. | Tank Height = 5.5 ft. | Max. Cartridge Flow Rate = 112.50



Not To Scale

Control Practice # : 1 | CP Index # : 1 | Upstream Drainage Area

Installation – Example: TDS Telecom, Verona (November, 2017)

Peak Diversion StormFilter – 8’ x 6’ with 7 Cartridges (27” tall with ZPG Media)

Drainage Area = 0.66 acres (Commercial)

WinSLAMM Results = 69.20% TSS Reduction

CONTECH® ENGINEERED SOLUTIONS

Detention & Infiltration

METAL

Corrugated Metal Pipe

CONCRETE

Terre Arch™

CON/SPAN®

PLASTIC

DuroMaxx®

ChamberMaxx®

Wisconsin Regulations

Underground Wet Ponds:

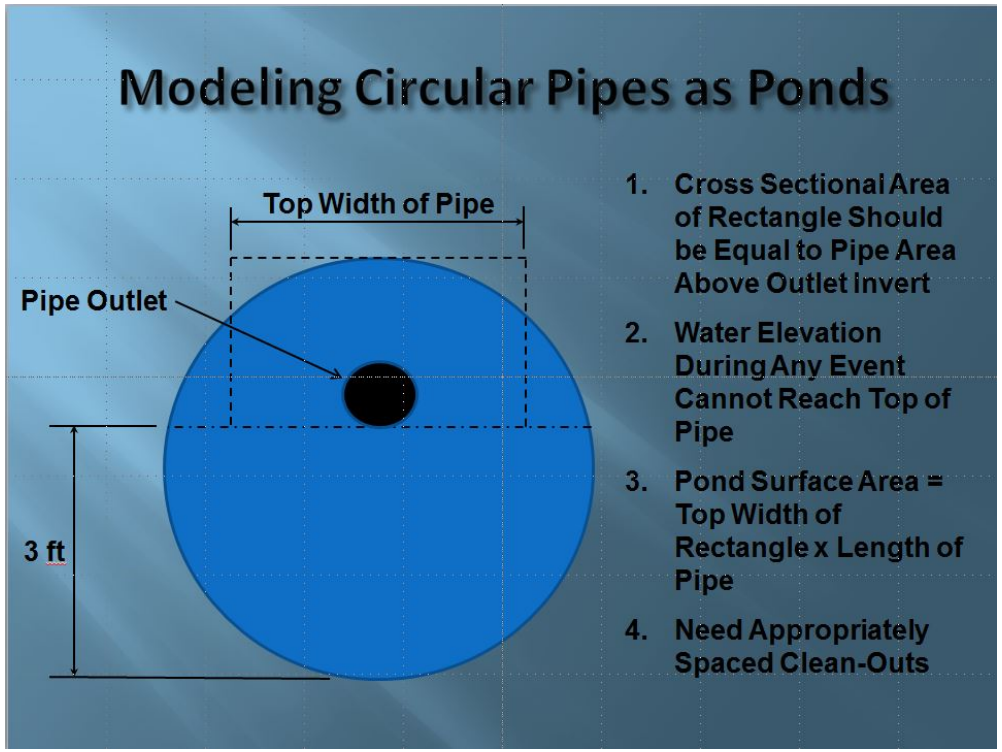
- Lower portion of the pipe contains a permanent water pool to remove TSS via Stoke's Law (particles "falling" in water)
- Upper portion of the pipe is used for conveyance and/or active storage/detention

How to handle in WinSLAMM:

- Wet Pond (WP) – model the system as a pond with a permanent pool of water
- Typically, a 3.5' or 4' deep permanent water pool is required
  - 3' of permanent pool for water to settle out
  - 0.5' to 1' sediment collection area

Example Calculation for Surface Area:

- 96" diameter pipe with 3' deep sump. Top 5' of pipe = 33.05 SF
- 33.05 SF / 5' = 6.61' per LF of pipe
- If you need 100 SF of pond area, you would need 16 LF of pipe



CMP Underground Stormwater Detention & Retention Systems

Configuration

CMP is the most versatile product available.
If it can be drawn, CONTECH can fabricate it.

Customizable

Case History – Structural Integrity

CSX Intermodal Facility,
Bedford Park, Ill.
Installed - 1997

Nearly 13,000’ 96” Aluminized

Converted an existing 14 ac-ft detention pond to underground storage to gain additional parking and storage area.

Pipe Materials & Coatings

- Galvanized Steel Pipe
- ALUMINIZED STEEL™ Type 2
- Polymer-Coated Corrugated Steel Pipe

Local Installation: Waupun Hospital – Waupun, WI

Local Installation: Cabela's – Ashwaubenon, WI

Local Installation: Oaklawn Elementary School – Oshkosh, WI

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Local Installation: CVS – DePere, WI

Local Installation: Titletown – Ashwaubenon, WI

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Local Installation: Lodge Kohler – Ashwaubenon, WI

Local Installation: McDonald's – New London, Marshfield, & Ashwaubenon

Questions?