



Minnesota  
Pollution  
Control  
Agency

# SSTS Technical Advisory Panel

## Sand Filters

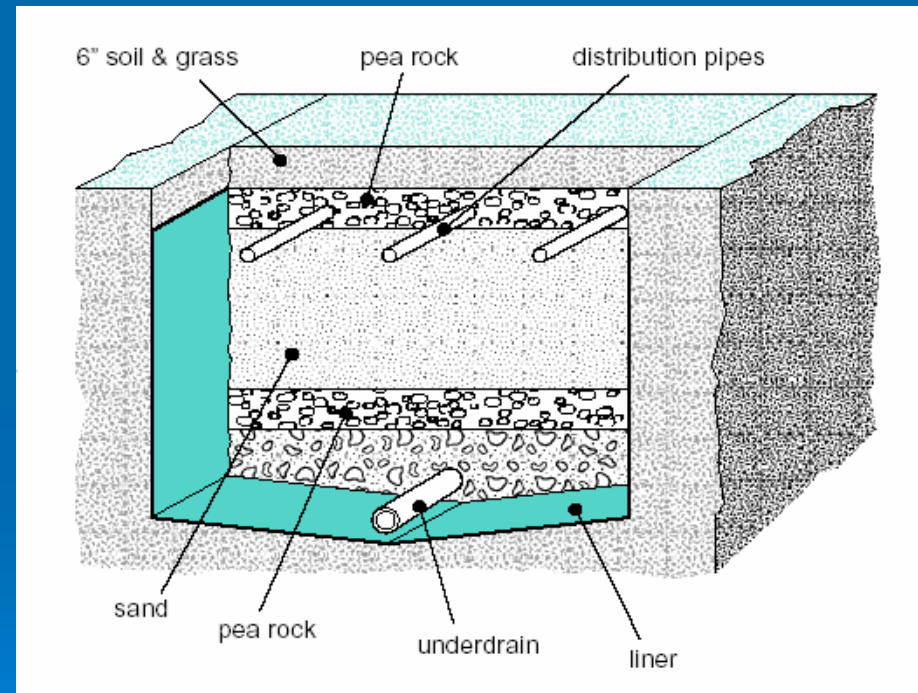
Dave Sahli, MPCA  
April 16, 2009



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# Brief Summary

- History of Guidance
- Category of Treatment
- Design Guidance
- O & M





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# History / Background

- MPCA contract with MSA Professional Services, Inc.
- Benchmarking
- Minnesota specific
- Peer reviewed





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# Treatment Performance

## ➤ Level A

- CBOD = 15 mg/l
- TSS = 15 mg/l
- FC = 1,000/100ml
- Single Pass;  
Recirc?

## ➤ Level B

- CBOD = 25 mg/l
- TSS = 30 mg/l
- FC = 10,000/100ml
- Single Pass;  
Recirc





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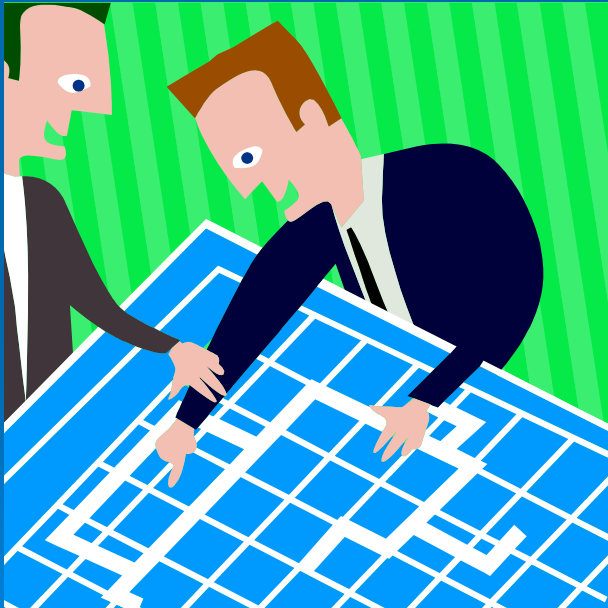
# Prevent This!





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# Design



- Organic loading
- Hydraulic loading
- Pressure distribution
- Dosing
- Construction
- O & M



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# Construction Inspection

- A good design can still fail
- Jar test all media
- Liner protection
- Slope
- “Squirt height”







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# Operation & Maintenance

➤ **“Out of Sight, Out of Mind”**



- **Not passive systems**
- **O & M – part of design**
- **Need to monitor**







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# The Goal!





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# Questions?

# Discussion...



# BORD NA MÓNA

ENVIRONMENTAL PRODUCTS U.S. INC.

## Green By Nature



Wastewater  
Treatment



Water Reuse and  
Rainwater Harvesting



Clean Air  
Solutions





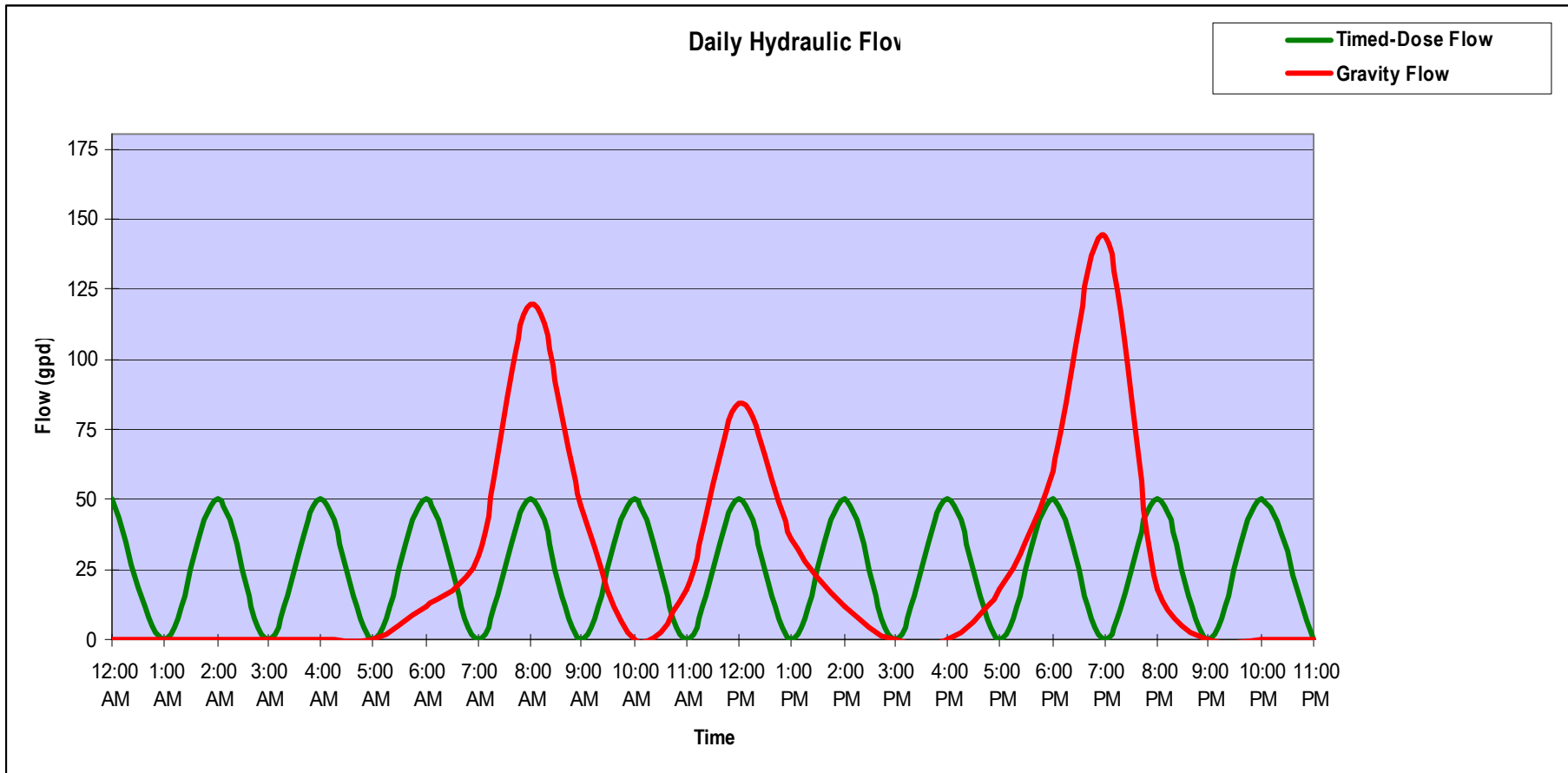
# Puraflo® Dispersal Options

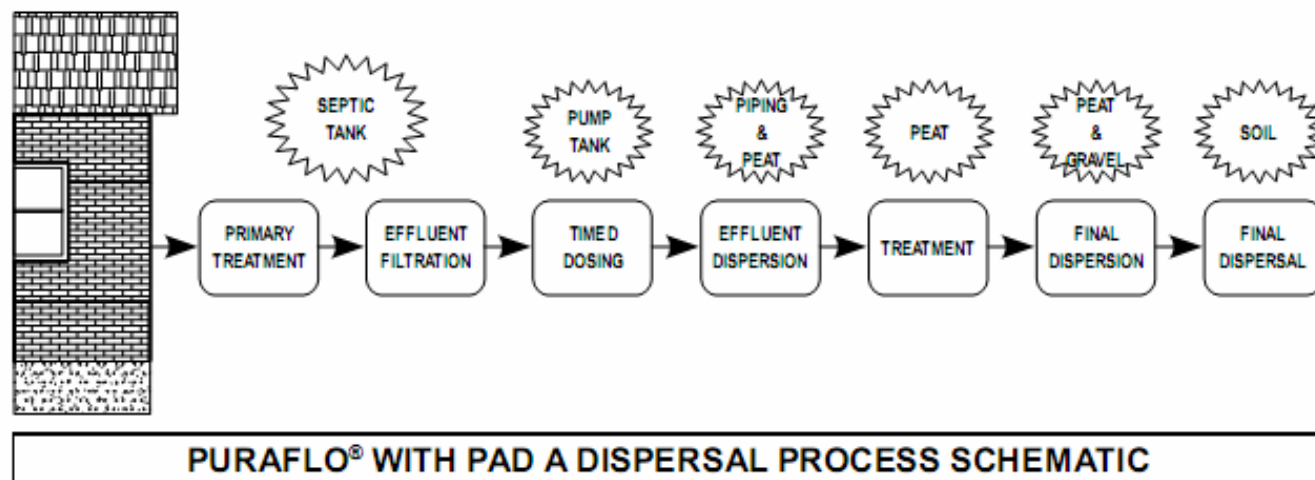
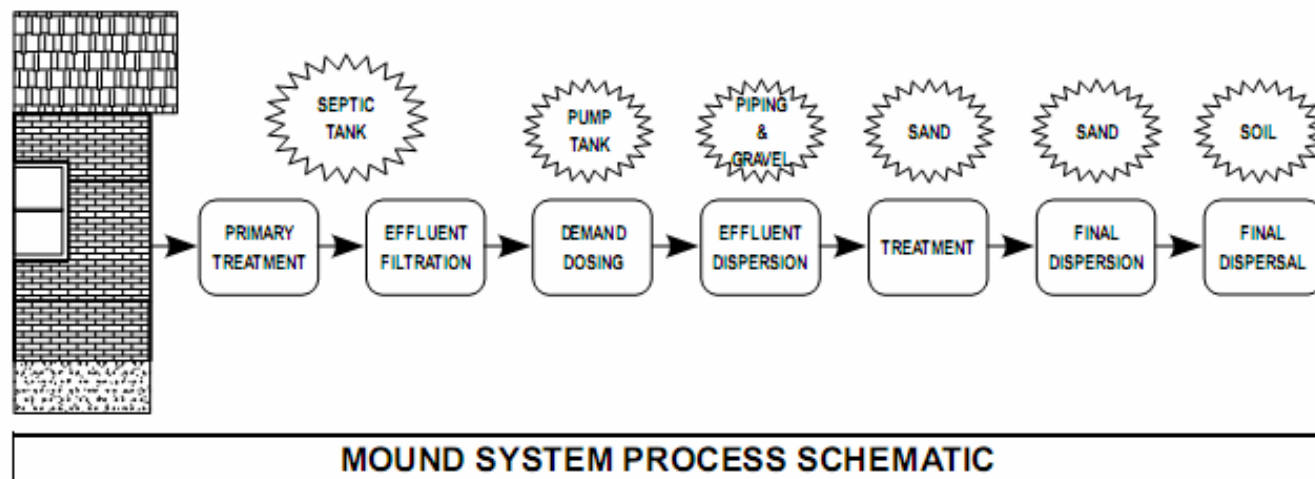
- Modules with separate dispersal
  - Piped Outlet – Type B
- Modules combined with dispersal
  - Gravel pad – Type A



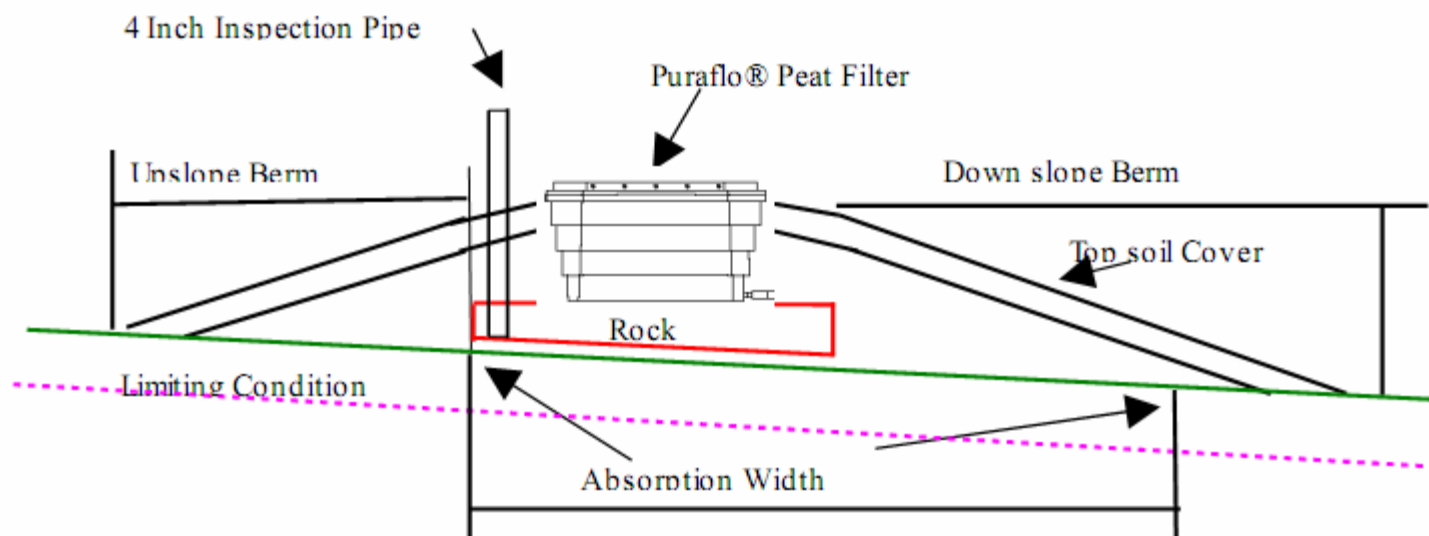
# Puraflo® Dispersal Options, cont'd

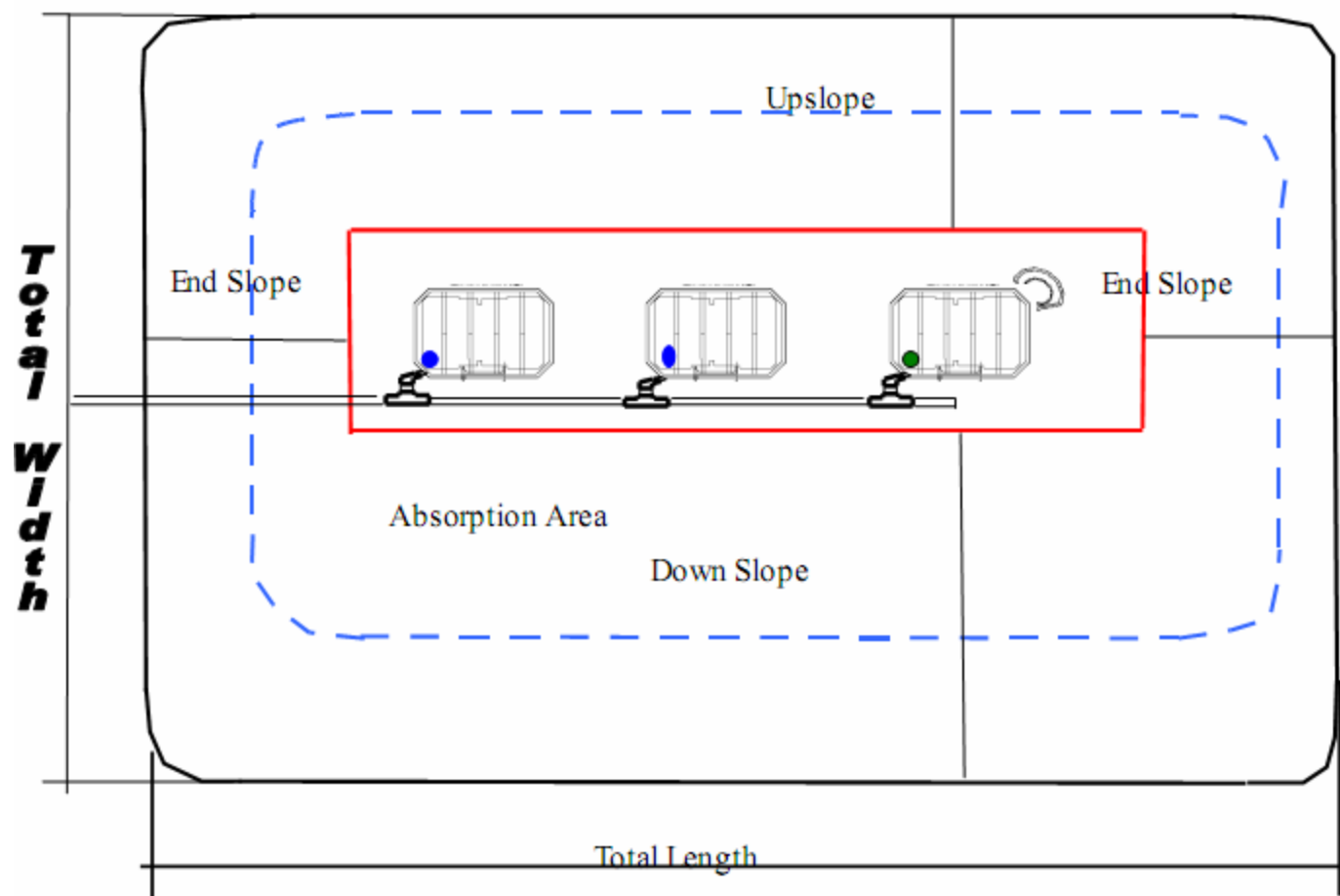
- **Type A Pad Dispersal**
  - **Approval substantiation**
    - Historically accepted system in MN with proven track record
    - Controlled and in-field performance testing
    - Comparability to a mound system
      - Treatment characteristics of peat vs. sand
    - Timed dosing (Puraflo®) vs. demand dosing (mound or at-grade)











SEPARATION DISTANCE TO RESTRICTIVE LAYER	SYSTEM TYPE	7080. REFERENCE	SOIL ABSORPTION TABLE
>18" from surface	Seepage Bed	7080.2200 Subpart 1-3 (except Subpart 3 sect. A & B)	7080.2350 Subpart 3 table XII and XIIA
18" from surface	At-grade	7080.2230 Subpart 1-3 (except Subpart 3 section B)	7080.2350 Subpart 3 table XII and XIIA
<18" from surface	Mound	7080.2220 Subpart 1-3 (except Subpart 2 section C soil sizing factor)	7080.2350 Subpart 3 table XII and XIIA





**Bord na Móna Environmental Products U.S., Inc.**

**[www.bnm-us.com](http://www.bnm-us.com)**

**(800) 787-2356**

Green By Nature

