

# Understanding the SWPPP

## Construction Activity Requirements

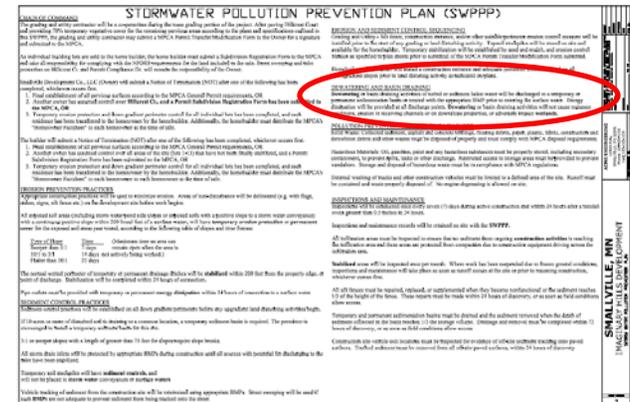
Erosion Prevention Practices Part IV B

Sediment Control Practices Part IV C

Dewatering and  
Basin Draining Practices Part IV D

Pollution Prevention Management Part IV F

Inspections and Maintenance Part IV E



# Structure Dewatering & Basin Draining Practices

## SWPPP:

Dewatering or basin draining activities of turbid or sediment laden water will be discharged to a **temporary or permanent sedimentation basin** or **treated** with the appropriate BMP prior to entering the surface water.

**Energy dissipation** will be provided at all discharge points.

Dewatering or basin draining activities **will not cause nuisance conditions**, erosion in receiving channels or on downslope properties, or adversely impact **wetlands**.



# Structure Dewatering & Basin Draining Practices

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- 1. Structure Dewatering (footings, trenches, basements, coffer, etc.)
  - Mechanical systems – pumps
    - Inlet filtration
    - Sediment recovery
    - Discharge scour protection
- 2. Basin Draining (sediment traps, basins, ponds)
  - Mechanical systems, or
  - Gravity systems – weirs, slotted risers, floating skimmers, filter rock, geotextiles, etc.

# Goals and Maintenance

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- Dewater program goal within 48 to 72 hours to prepare for next rain (basins) or,
  - Keep structure dewatered for successful staging of work
- Water Conservation Practices (reuse of water): dust control, turf establishment, equipment wash-off systems
- Sediment basin/trap cleanout program (typically when  $\frac{1}{2}$  full)

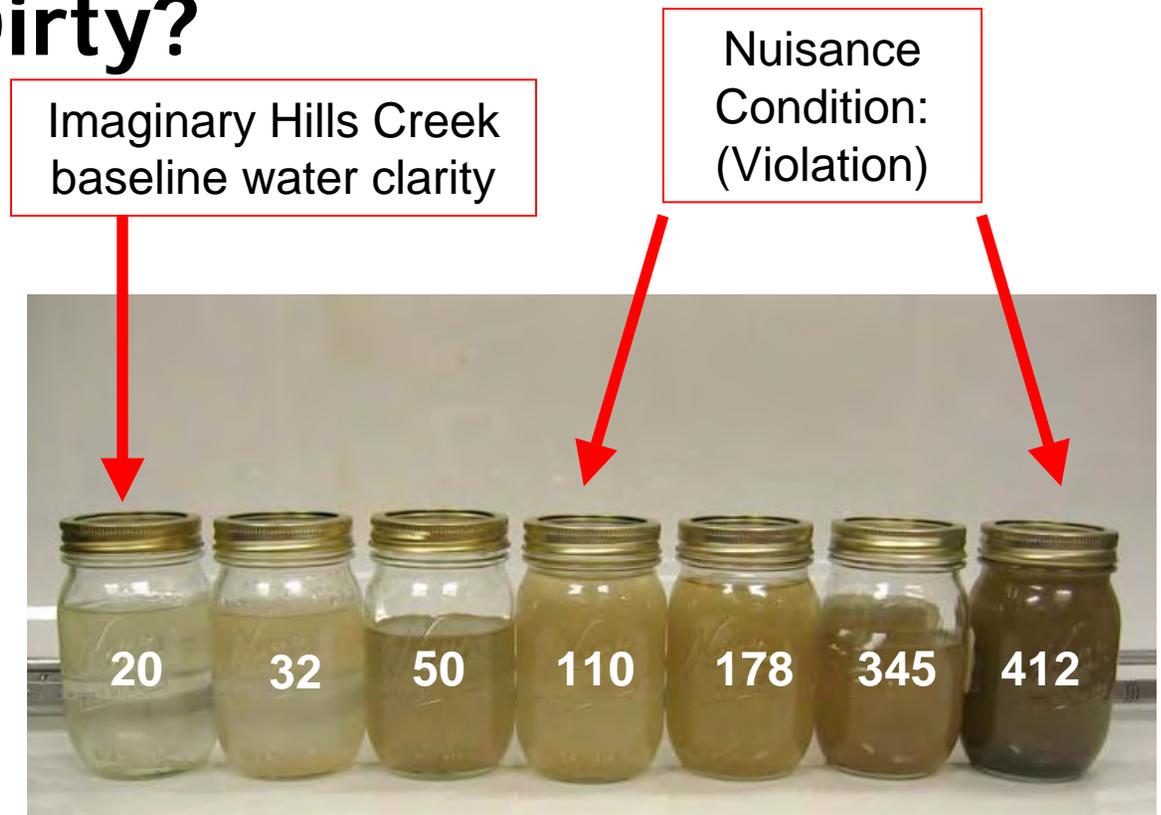
# Monitoring Protocols

## How Dirty is Dirty?

- Any discharge causing a “nuisance condition.”

### Rule of thumb\*:

- A discharge within 50 NTUs of the receiving water will not cause a nuisance condition



\*Not a regulatory standard. Local regulations may have stricter definition.

# Structure Dewatering Methods

Jesse Carlson, Bonestroo Rosene Anderlik/Dwayne Stenlund, Mn/DOT

- Method 1
  - Pumping directed into a temporary sedimentation basin, overflow protection by rock or superduty silt fence system
- Method 2
  - Chitosan sock installed in a pump hose section, which shall be directed into a temporary sedimentation basin with outflow protection
- Method 3
  - Pump head placed into a barrel with holes and with filter rock
- Method 4
  - Pump head or gravity inlet installed on a floating head skimmer
- Method 5
  - Pump into a plastic lined dumpster, chitosan treated, floating head discharge
- Method 6
  - Sand media particulate filter with inline chitosan sock
- Method 7
  - Alternative method designed by an engineer

# Structure Dewatering Practices

## Method 1: Permanent or Temporary Sediment Basin

- Pumping directed into a temporary sedimentation basin, overflow protection by rock or superduty silt fence system
- Hose shall be placed to prevent bottom scour



# Structure Dewatering Practices

- Safety should be job 1.



# Structure Dewatering Practices

## Method 2: Inline chitosan sock

- Sediment laden (dirty) water passes over chitosan in the pump line
- Discharged to a temporary sedimentation area
- Repeat until required water clarity is achieved



# Structure Dewatering Practices

## Dewatering Bag



# Structure Dewatering Practices Temporary Geotextile Sediment Trap



# Structure Dewatering Practices



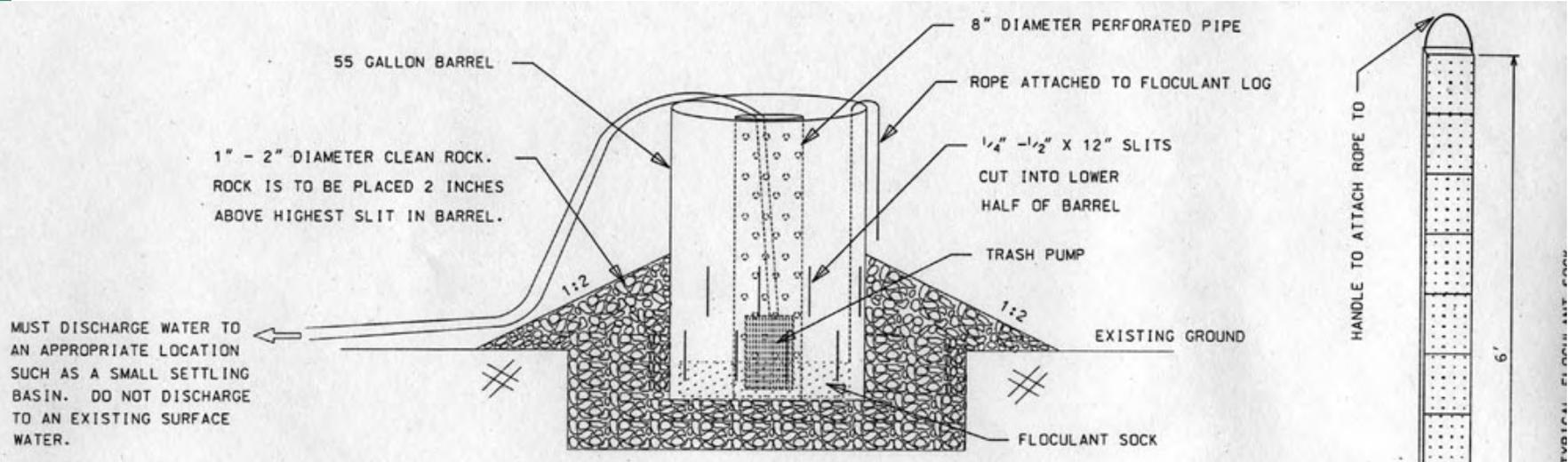
# Structure Dewatering Practices

## Method 3: Filter Rock Dewatering

- Pump head placed into a barrel with holes and filter rock
- If water is still too dirty; use in-line chitosan sock or discharge to other dewatering BMP

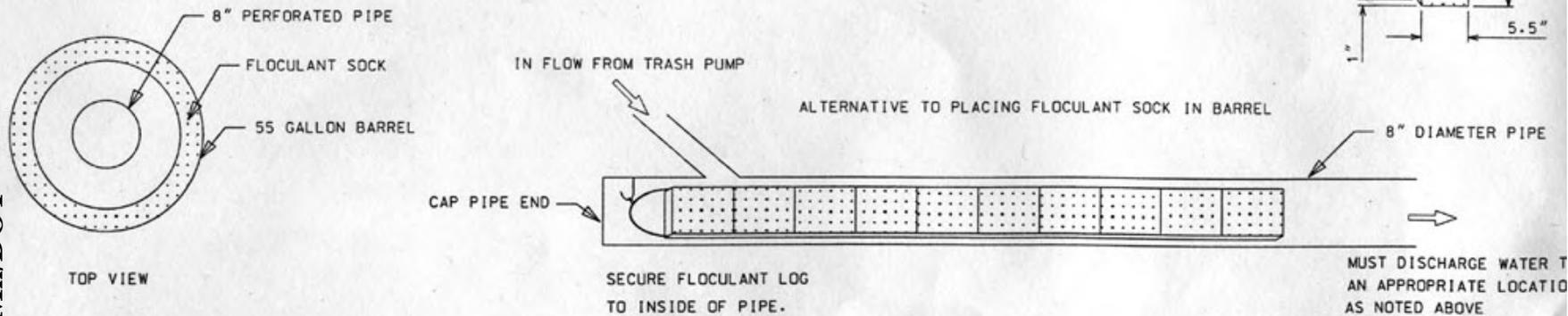


# Structure Dewatering Practices



DEWATERING DEVICE SHOULD BE PLACED AT THE LOW POINT OF THE AREA TO DRAIN

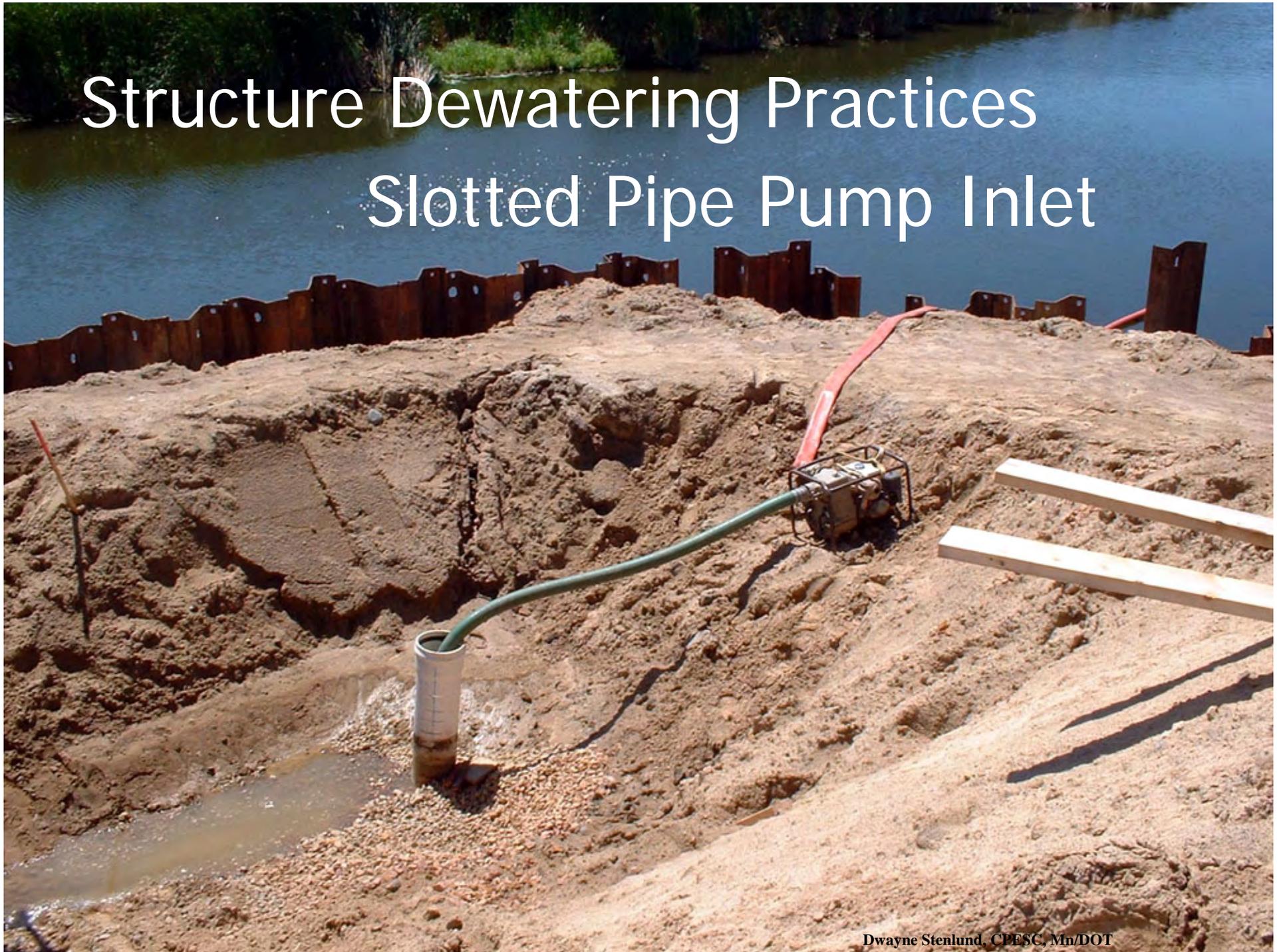
## Filter Rock Inlet Detail



Mn/DOT

# Structure Dewatering Practices

## Slotted Pipe Pump Inlet



# Structure Dewatering Practices

## Method 4: Floating Skimmer

- Better water quality on the surface of dewatering areas
- May require additional BMPs if desired water quality is not met



**PUMP FLOAT**

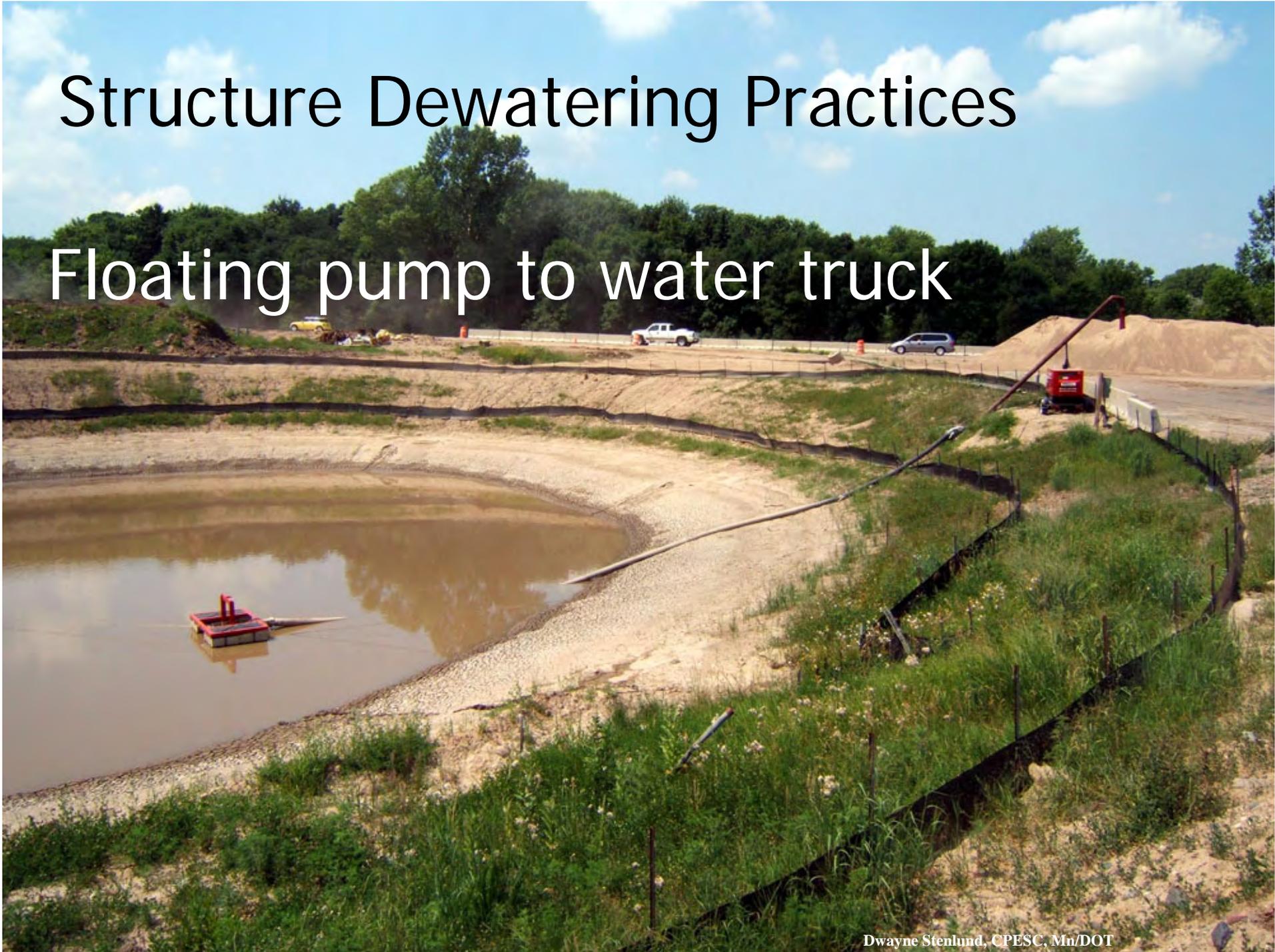


# Structure Dewatering Practices



# Structure Dewatering Practices

## Floating pump to water truck



# Structure Dewatering Practices

## Pumping Stormwater Excess



# Structure Dewatering Practices

## Dust control



# Structure Dewatering Practices

## Method 5: Plastic Lined Dumpster

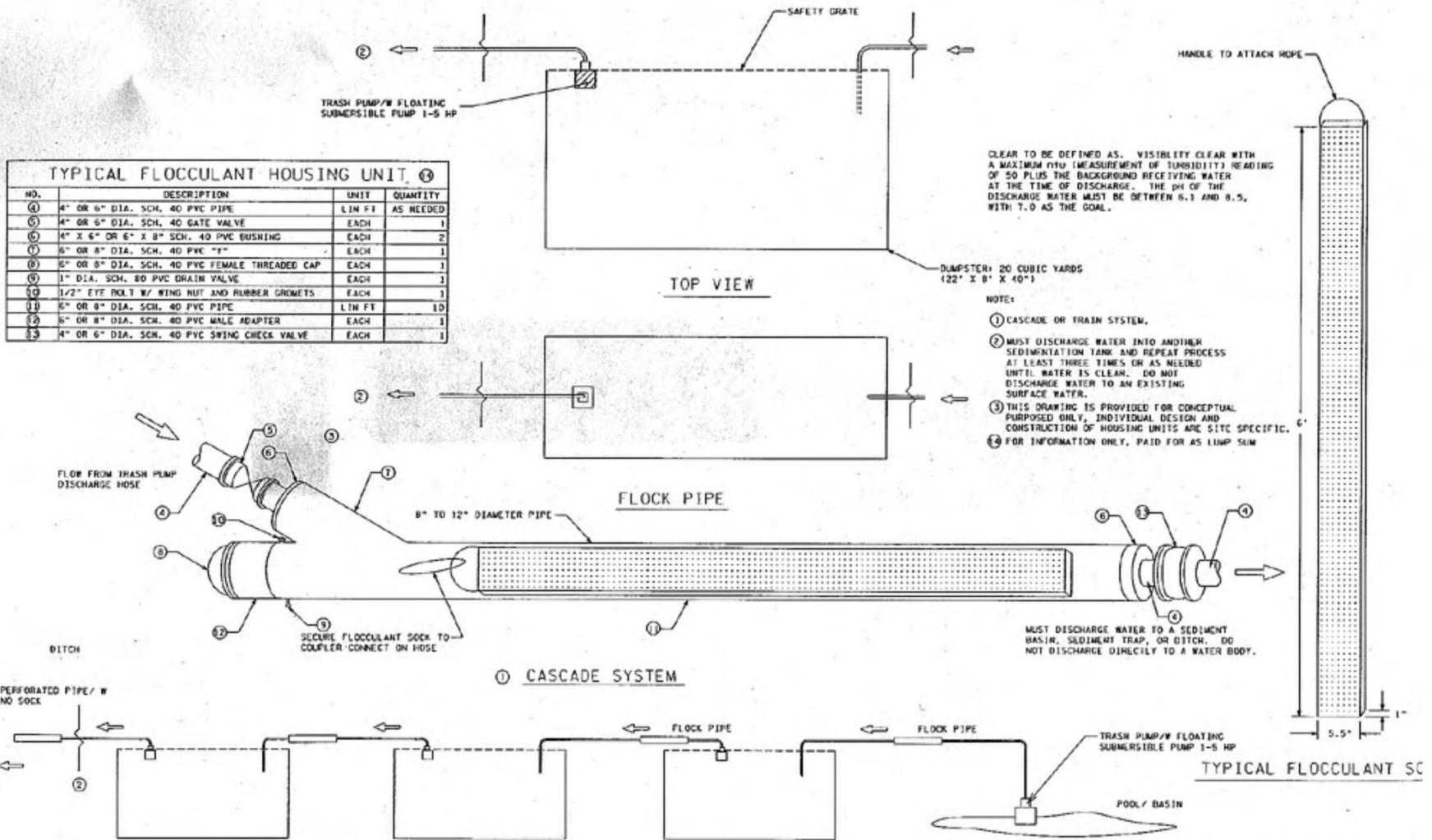
- Pumped into dumpster, flocculated with chitosan, and pumped out with floating head
- Settle until desired water quality is achieved



Chitosan sock in pipe

# Dewatering Dumpster Treatment Train

## DEWATERING DEVICE



**TYPICAL FLOCCULANT HOUSING UNIT (3)**

NO.	DESCRIPTION	UNIT	QUANTITY
4	4" OR 6" DIA. SCH. 40 PVC PIPE	LIN FT	AS NEEDED
5	4" OR 6" DIA. SCH. 40 GATE VALVE	EACH	1
6	4" X 6" OR 6" X 8" SCH. 40 PVC BUSHING	EACH	2
7	6" OR 8" DIA. SCH. 40 PVC "F"	EACH	1
8	6" OR 8" DIA. SCH. 40 PVC FEMALE THREADED CAP	EACH	1
9	1" DIA. SCH. 80 PVC DRAIN VALVE	EACH	1
10	1/2" EYE BOLT W/ WING NUT AND RUBBER GROMETS	EACH	1
11	6" OR 8" DIA. SCH. 40 PVC PIPE	LIN FT	10
12	6" OR 8" DIA. SCH. 40 PVC MALE ADAPTER	EACH	1
13	4" OR 6" DIA. SCH. 40 PVC SWING CHECK VALVE	EACH	1

CLEAR TO BE DEFINED AS: VISIBILITY CLEAR WITH A MAXIMUM PPH MEASUREMENT OF TURBIDITY READING OF 50 PLUS THE BACKGROUND RECEIVING WATER AT THE TIME OF DISCHARGE. THE PH OF THE DISCHARGE WATER MUST BE BETWEEN 6.1 AND 8.5, WITH 7.0 AS THE GOAL.

**NOTE:**

- 1 CASCADE OR TRAIN SYSTEM.
- 2 MUST DISCHARGE WATER INTO ANOTHER SEDIMENTATION TANK AND REPEAT PROCESS AT LEAST THREE TIMES OR AS NEEDED UNTIL WATER IS CLEAR. DO NOT DISCHARGE WATER TO AN EXISTING SURFACE WATER.
- 3 THIS DRAWING IS PROVIDED FOR CONCEPTUAL PURPOSED ONLY, INDIVIDUAL DESIGN AND CONSTRUCTION OF HOUSING UNITS ARE SITE SPECIFIC.
- 4 FOR INFORMATION ONLY, PAID FOR AS LUMP SUM

### 1 CASCADE SYSTEM

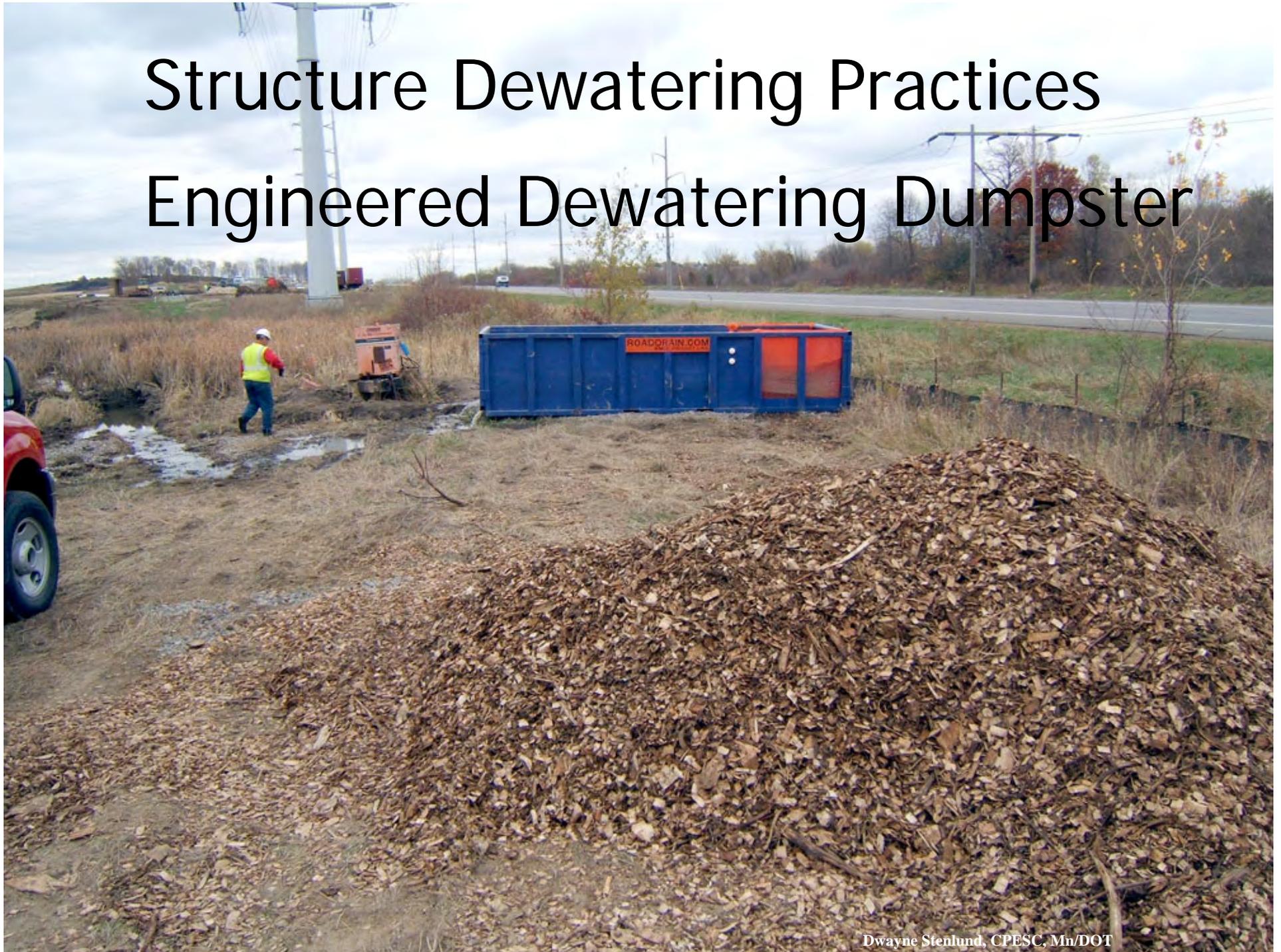
MUST DISCHARGE WATER TO A SEDIMENT BASIN, SLOIMENT TRAP, OR DITCH. DO NOT DISCHARGE DIRECTLY TO A WATER BODY.

TYPICAL FLOCCULANT SOCK

INFORMATIONAL DEWATERING DATA:  
MISCELLANEOUS DETAILS

# Structure Dewatering Practices

## Engineered Dewatering Dumpster



# Structure Dewatering Practices

## Hose inlet with flocculent sock



# Slash mulch outlet filter media



# Clean discharge



# Structure Dewatering Practices

## Method 6: Sand Media Particulate Filter with Inline Chitosan Sock

Pictured unit 70-90 GPM

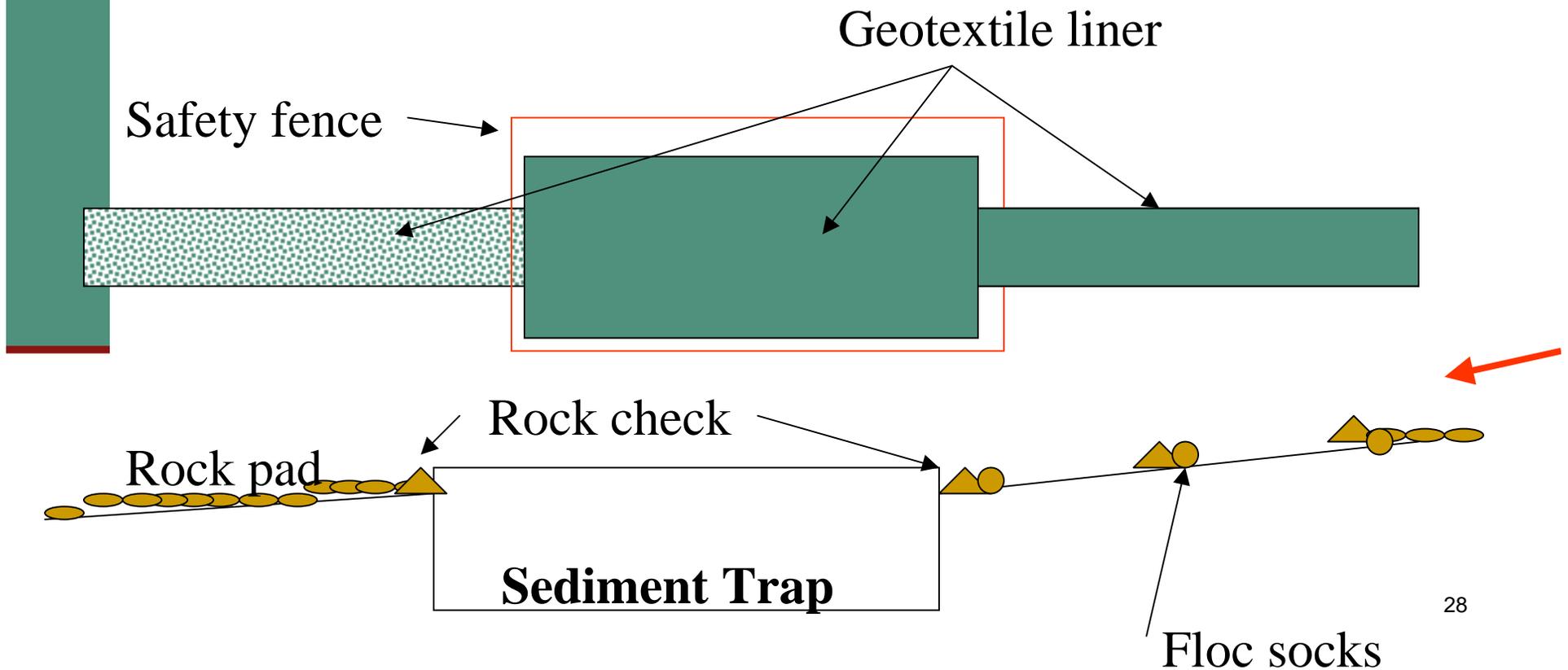
From 1000+ NTUs to 10 NTUs



Mike Isensee, Dakota County SWCD

# Structure Dewatering Practices

## ■ Method 7. Alternative (Engineer Approved) Methods



# Structure Dewatering Practices

## Linear Sediment Trap System

# Structure Dewatering Practices

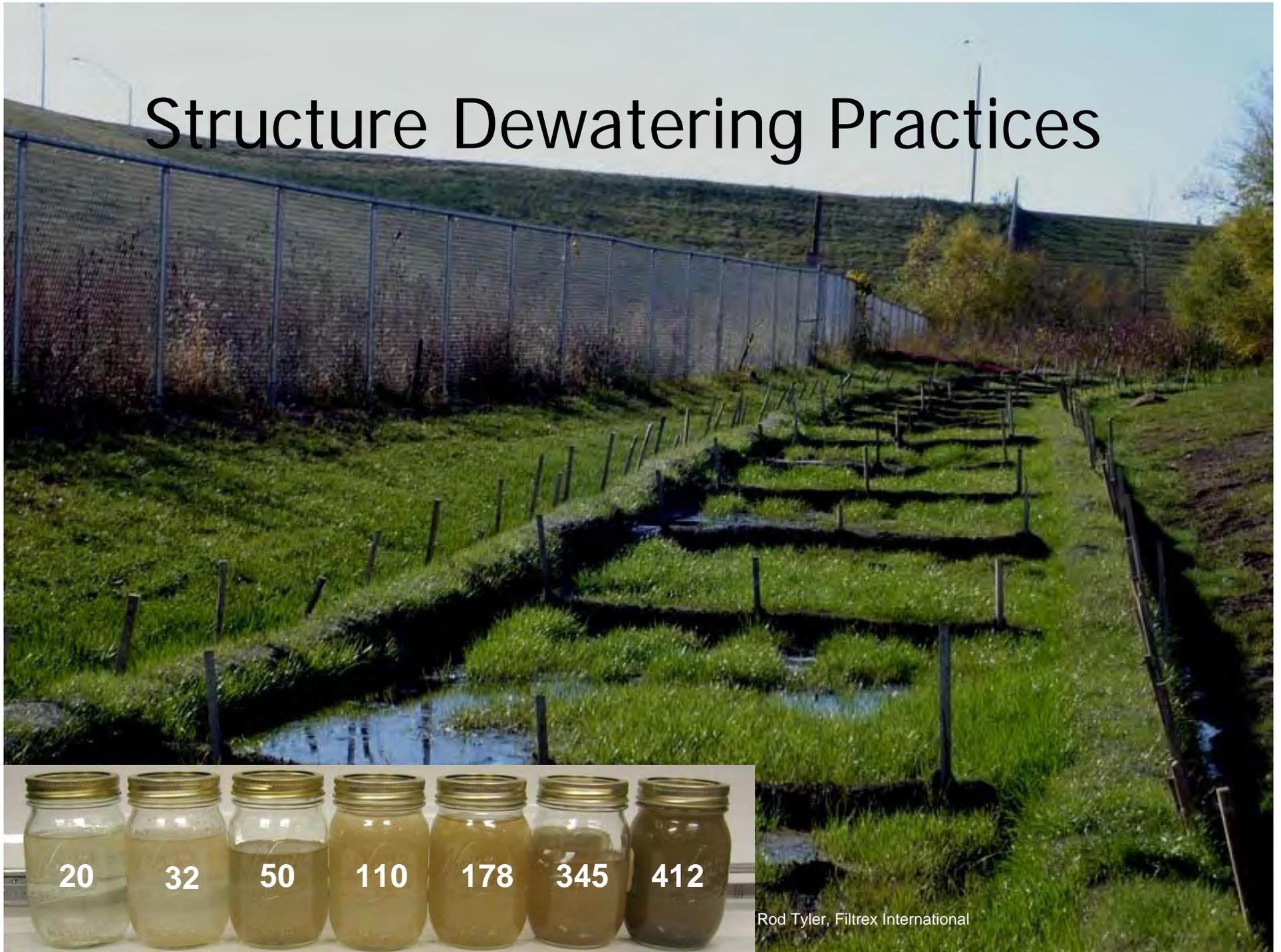


Exhausted Linear Sediment Trap

# Structure Dewatering Practices Temporary Compost Filter Trap



# Structure Dewatering Practices



Rod Tyler, Filtrex International

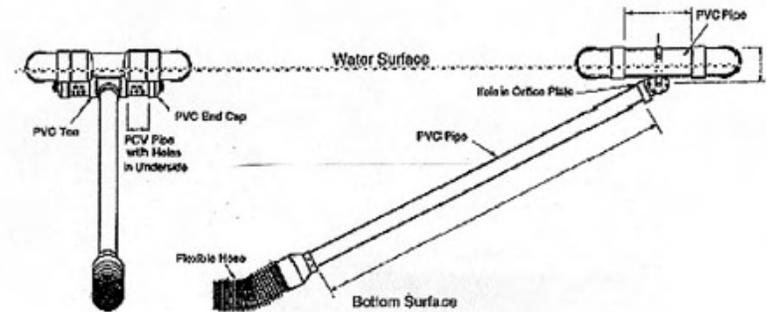
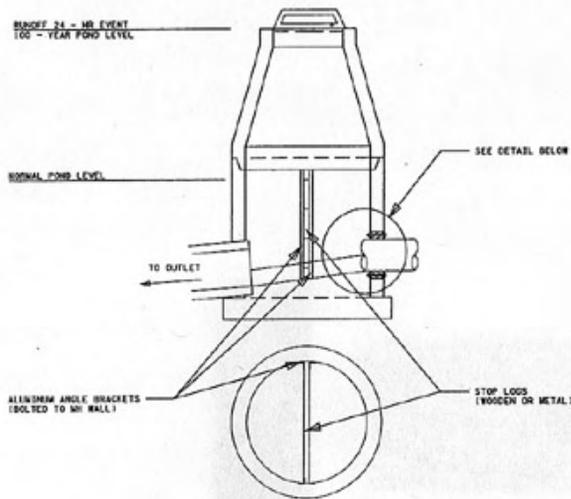
# Basin Draining Practices

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- Gravity Dewatering
  - Floating skimmers
  - Slotted risers
  - Filter Weirs
- Treatment Train Approach
  - Multiple BMP's integrated to clean stormwater discharge

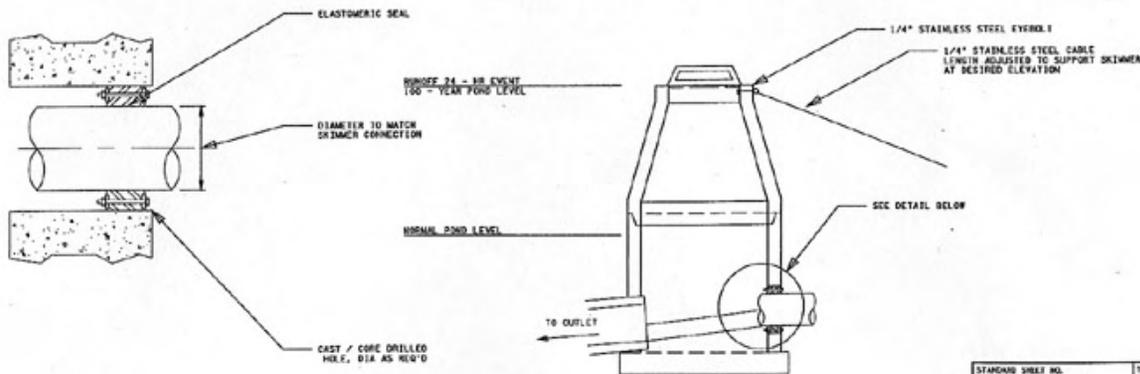
# Floating Skimmer Detail

## METHOD 1



SKIMMER \*U. S. Patent # 5,820,751

## METHOD 2

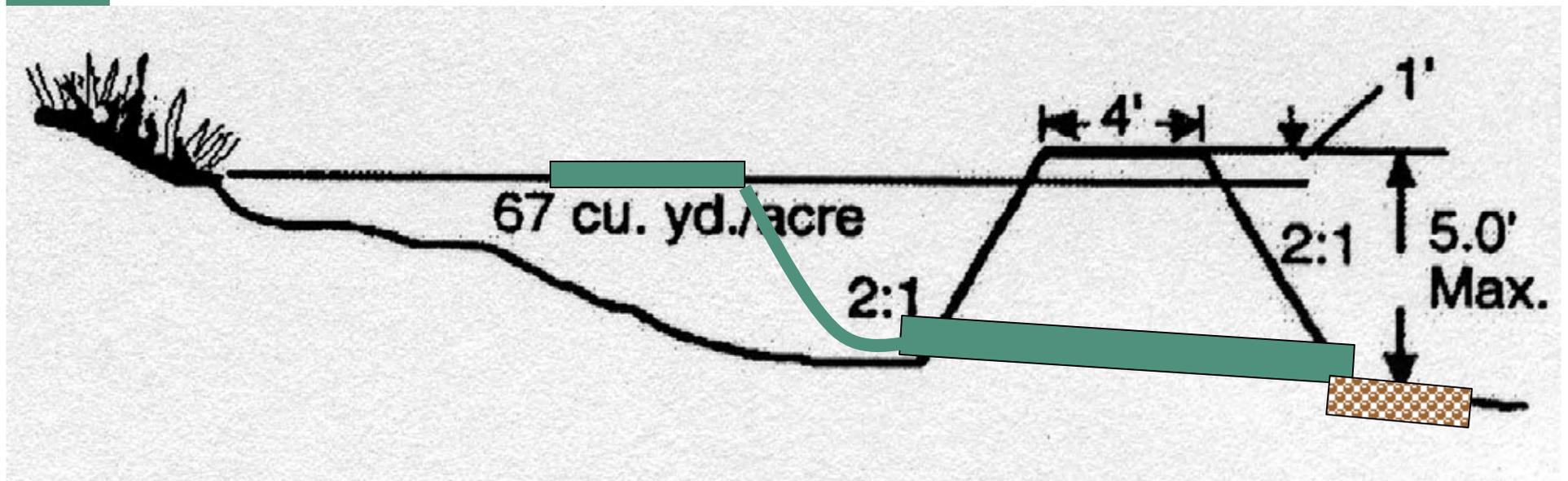


NOTES:

SIZE INCHES	MAX CAPACITY	
	CF/S	CF/D
2	0.04	3,283
2.5	0.06	5,500
3	0.10	8,500
4	0.21	18,267
5	0.38	32,832
6	0.60	51,840

STANDARD SHEET NO. X-XXX.XXX	TITLE TEMPORARY EROSION CONTROL FAIRCLOTH SKIMMER ATTACHMENT
STANDARD APPROVED XXXXXXXX X, 2005	
STATE PROJ. NO. 0302-64 (T.H. 10) SHEET NO. OF SHEETS	

# Drainage Skimmer



# Treatment Train Treatment

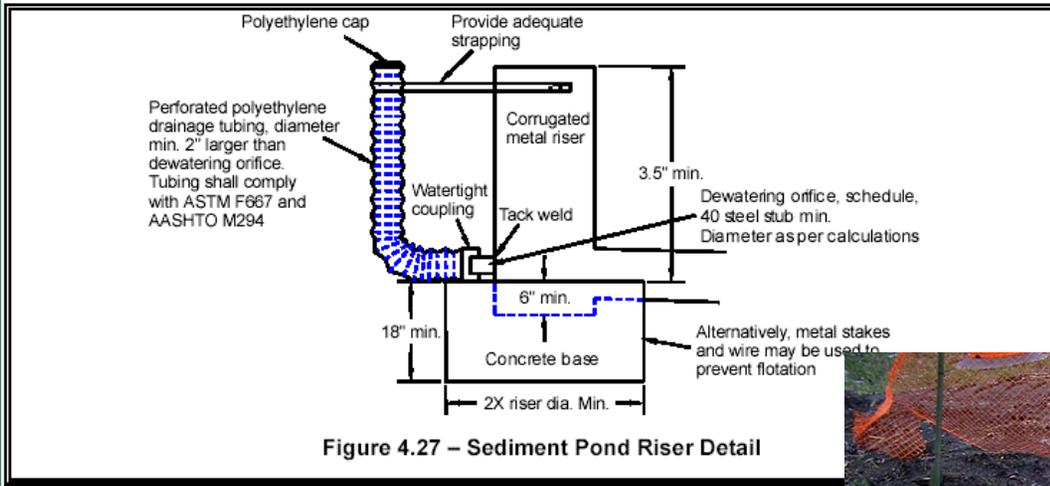


Clinton, D., et al 2004. NC State University



Clinton, D., et al 2004. NC State University

# Slotted riser



# Structure Dewatering & Basin Draining Practices

- Energy dissipation/preventing scour
  - Plastic



Dwayne Stenlund, CPESC, MNDOT

Plywood



# Geotextile/rock



# Existing vegetation



# Riprap



# Water



Mn/DOT

# Exercise

## Dewatering BMPs

Permanent or temporary sediment basin

Inline chitosan sock

Rock barrel method

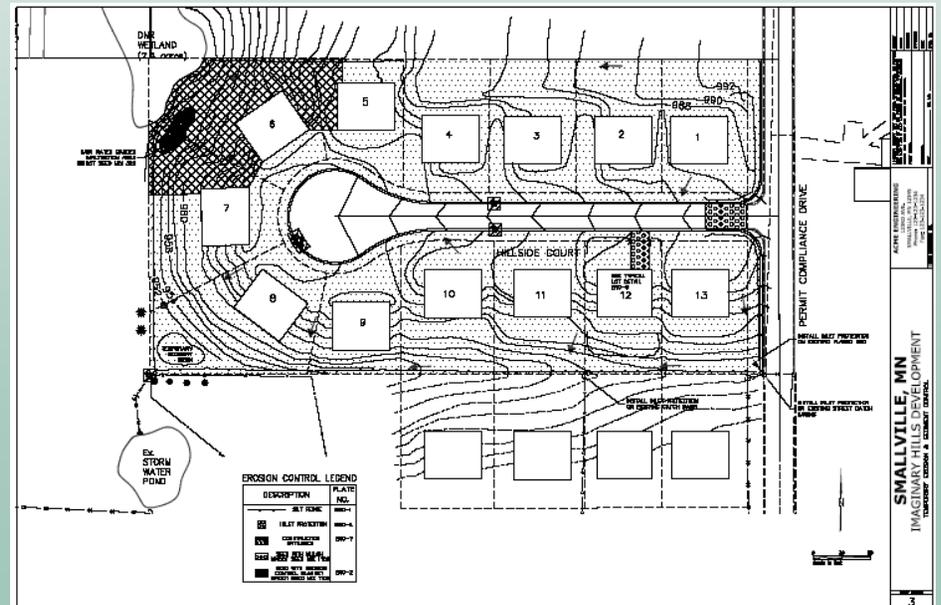
Floating skimmer

Plastic lined dumpster

Geotextile dewatering bag

What dewatering or basin draining activities typically occurs on site?

What BMPs could be used and where could the treated water be discharged?



# Exercise

## Dewatering BMPs

Permanent or temporary sediment basin

Inline chitosan sock

Rock barrel method

Floating skimmer

Plastic lined dumpster

Geotextile dewatering bag

Who should be contacted about changing the erosion control, sediment control or dewatering practices plan?

