

# PLANT DESIGN ISSUES: SHORT AND LONG TERM

Scott Ramsdell

J.C. Ramsdell Enviro Services, Inc.

Flandreau, South Dakota

- ▣ Ramsdell F&M, LTD
  - 1952 – Mick Ramsdell
  - 1975 – Full time SOB
    - ▣ retail locations
  
- ▣ J.C. Ramsdell Enviro Services, Inc.
  - Formed in 1992
  - Design solution for sister company

- ▣ Design Considerations
- ▣ Common-Sense Design
- ▣ Synthetic Liners
- ▣ Secondary Containment
  - Enviro-Guard Steel
  - Rail Containment
  - Wooden
  - Earthen Dike
  - Concrete

- ▣ *Evaluate available land/space limitations*
- ▣ *NFPA 30 Requirements*
- ▣ *OSHA considerations*
- ▣ *Containment Calculations*
  - *Displacement volumes of smaller tanks*
- ▣ *Facility Operations*

THIS CONTAINMENT SYSTEM IS  
DESIGNED FOR A MAXIMUM FLUID  
DENSITY OF 85 POUNDS PER CU. FT.





Before

After





Water Management



Ladder Install



Concrete Tank Pads  
Filter Barrier  
Pooling Basin



SubSurface  
Drainage



## TYPES – APPLICATIONS - THICKNESS

### MATERIALS

- ▣ HDPE
  - Textured/Smooth
- ▣ Polypropylene
  - Reinforced
  - Non-Reinforced
- ▣ PVC

### THICKNESS

- ▣ 30 Mil
- ▣ 40 Mil/45 Mil
- ▣ 60 Mil
- ▣ 80 Mil
- ▣ 100 Mil

## Pros

- Economical – Small Scale
- Ease of Installation
- Durability
- Space Efficient

## Cons

- Not approved for all applications
- Larger Application
  - Feasibility
  - Water Management





Containment  
Excavation



Installation Begins



Near  
Completion



- ▣ Pros
  - Strength/Availability
- ▣ Cons
  - Porous/Cracks



- Quickly Installed
- Adequate Use of Land Space
- Longevity
  - Won't Crack
- Expandable
- Moveable







Water Management – Liner Protection – Corrugated Tank Ring



# THANK YOU

Questions?