REINHOLD ENVIRONMENTAL Ltd.

2019 REINHOLD Round Table Presentation

June 24 & 25, 2019, in Birmingham, Alabama / Hosted by Southern Company

Geo-Synthetics Systems, LLC

Geomembranes and Geotextile tubes: Case studies in CCR applications

Randy Pit
Director of Fabrication and Distribution

GEO-SYNTHETICS SYSTEMS LLC

Geo-Synthetics Systems LLC (GSI) is a distributor, fabricator, and installer of geosynthetic materials for a broad range of erosion control and containment applications for landfill sites, construction sites, road construction projects and contaminated waterways. For over 40 years, GSI has been providing geosynthetic materials, project field support, and experienced geomembrane installation for applications such as landfills and industrial lagoons.

GSI installs impermeable membranes and manages similar projects in many parts of the country. With its GEOSTRUX™ geotextile tubes, GSI has supported sediment dewatering projects throughout the United States and beyond. GSI is a distributor for a wide variety of products used in industries such as earth work and road building. With the broad spectrum of geosynthetic products, GSI provides effective and responsive product distribution to landscape, general contractors and for environmental applications from its distribution facility in Waukesha, Wisconsin.

Construction Products

Construction Services

Geostrux Geotextile Tubes

Construction Services & Liner Installation Operations

- GSI is one of the country's largest installers of geotextile liners. Over 37 million square feet installed on coal ash projects in the last 2 years
- Containment applications include Solid Waste Landfills, Sewage Lagoons, Mine Tailing Ponds, Vapor Barriers, Ash Landfills, Decorative Ponds
- Installation services have been provided to a wide range of industries, including the landfill, power and energy, civil construction, EPA and corp. of engineers' projects, pulp and paper, oil and gas, aquaculture, agriculture, and mining.
- Customers include general contractors, engineering companies, private owners and government agencies

Agenda

- Installation of geomembrane for CCR
- Capping of existing coal ash ponds
- The use of geotextile tubes for coal ash dewatering

Coal Ash Landfill

- Project entailed adding to an existing coal ash landfill
- A double layer system was specified
- Area to be covered was approximately 40 acres

Coal Ash Landfill

- Phase III
- 18 Acres
- Double Layer System

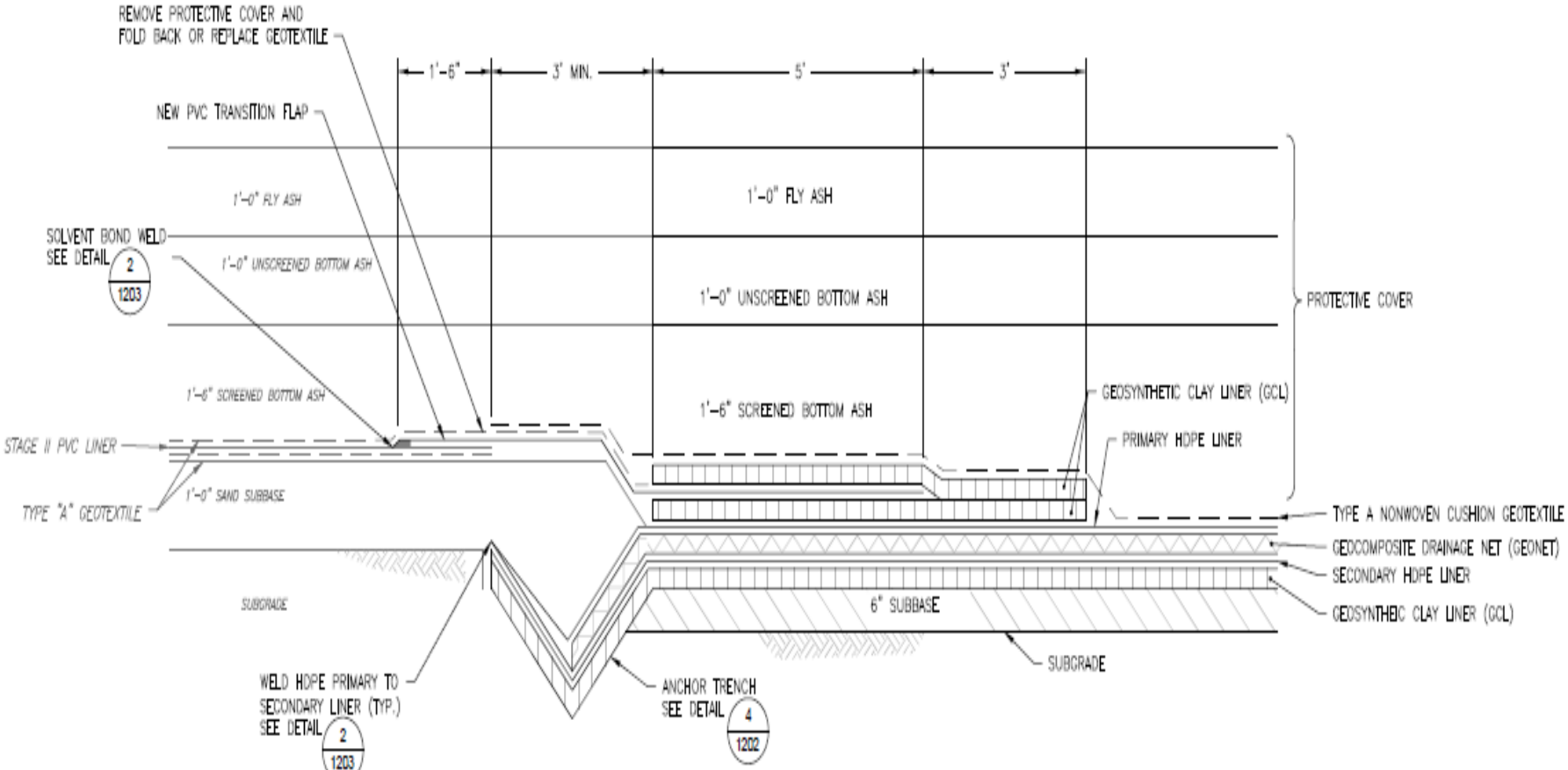
Coal Ash Installation

- Challenges
  - Tie in to existing leachate drain
  - Volume of materials
  - Weather
  - Crews

Liner Installation

- Materials Used
  - 60 mil microspike HDPE geomembrane
  - GCL (Geosynthetic Clay Liner)
  - 10 oz. Non-Woven Fabric
  - Pre Built HDPE drainage system
  - NO PIPE BOOTS
  - Miles of welding rod

Double Layer System



STAGE II TO STAGE IIIA LINER CONNECTION DETAIL

(EXISTING PVC TO PROPOSED HDPE) 4

N.T.S.

1196,11971198,1199,1200,1204

Installation

Installation

Installation

Quality Control

Existing Leachate Pipe

Existing Leachate Pipe

Installation

Perforated Pipe

HDPE Boot Structure

Capping

Fly Ash Closure

- 12 acres
- Previous year an 8 acre bottom ash pond was closed
- Used an artificial capping system vs. traditional methods

Capping

- Materials Used
  - 50 mil microspike HDPE geomembrane
    - 2,808,000 SF
  - Engineered Synthetic Turf
    - 2.668,500 SF
  - Sand Infill
    - 2,391,300 SF

Capping

- Challenges
  - Grading
  - Weather
  - Rocks

Capping

Capping

Earthwork Issues

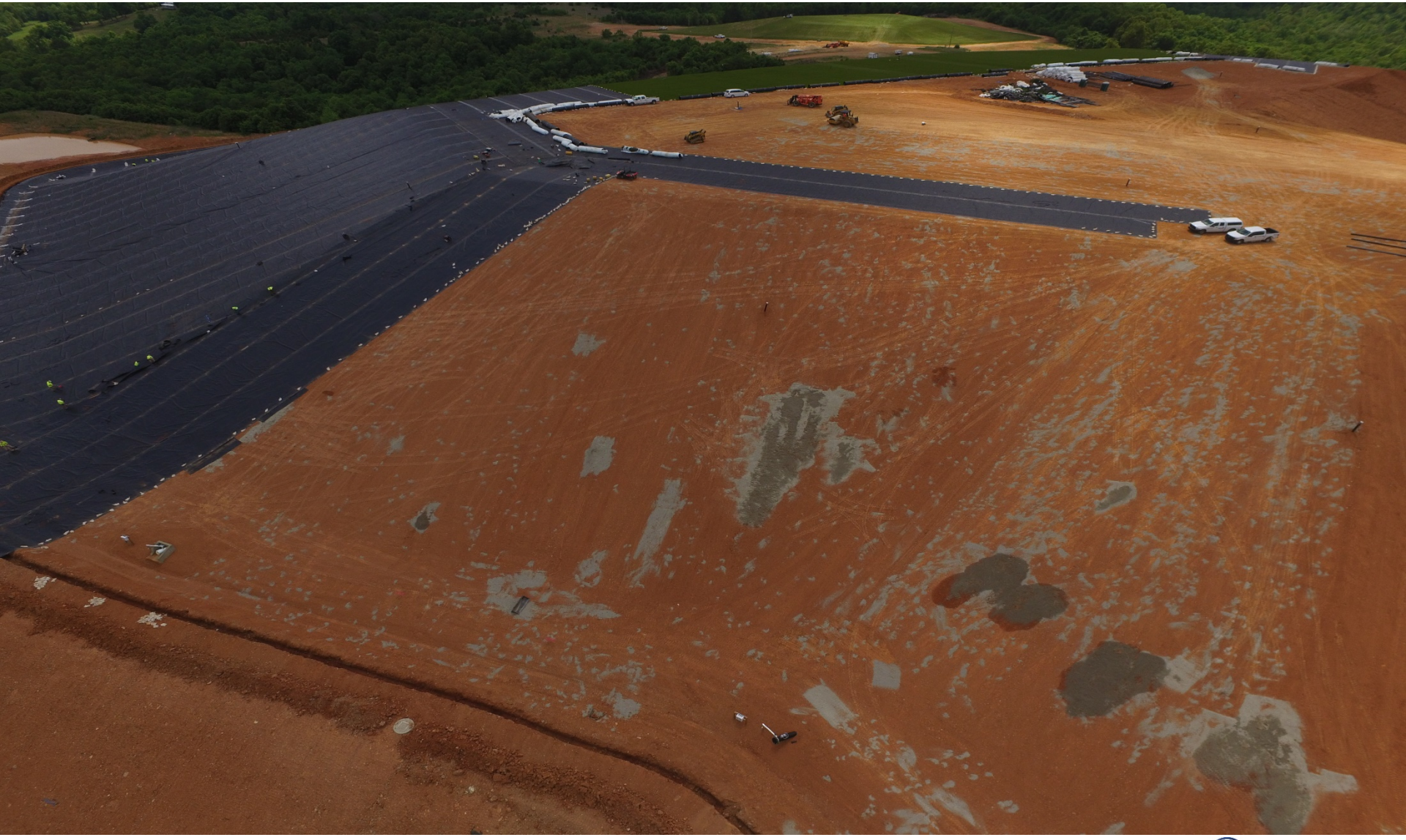
Earthwork Issues

Earthwork Issues

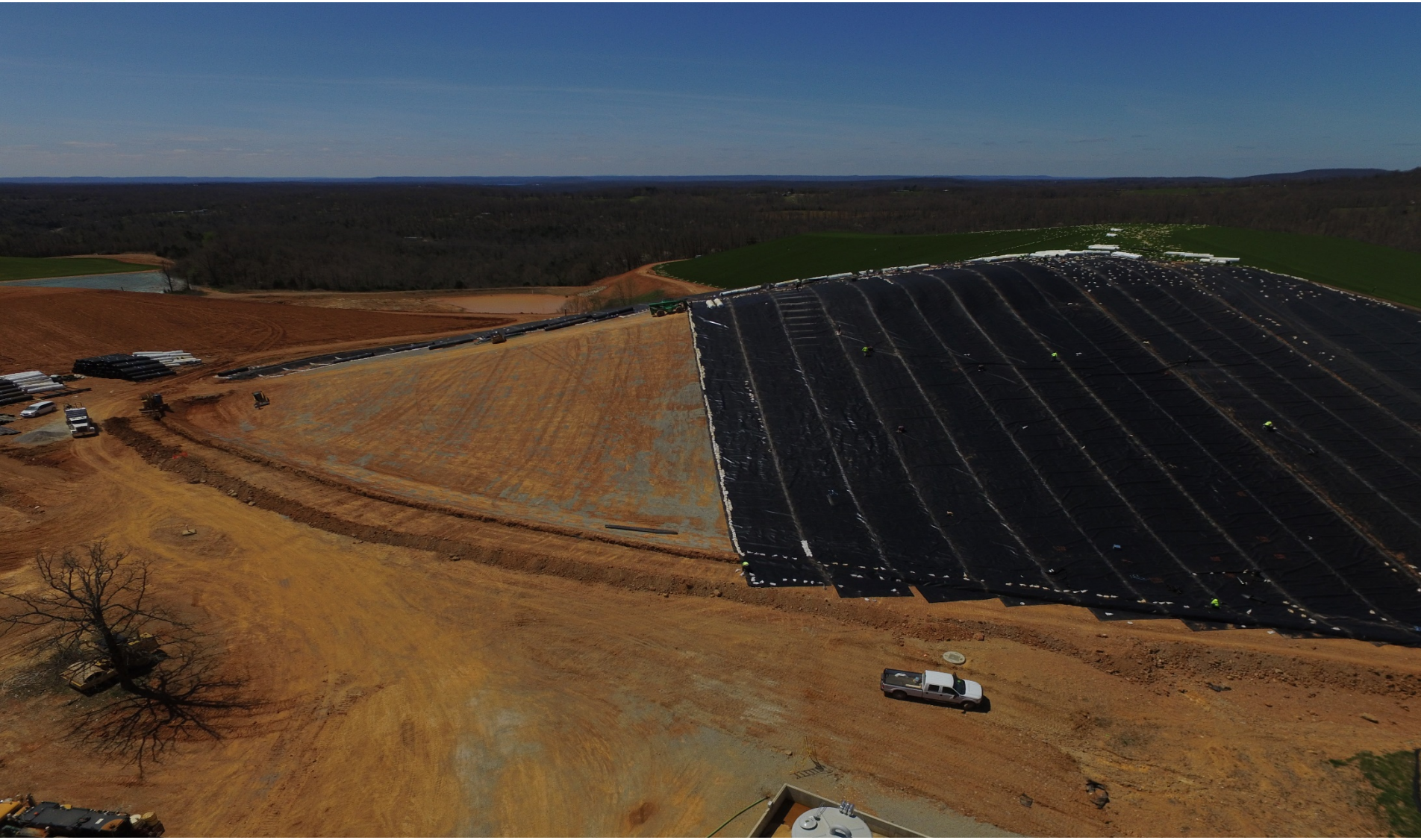
Eathwork Issues

Materials

Capping



Capping



Capping

Capping

Capping

Capping

Capping

Capping

Finished Product

High Slope Installation

High Slope Installation

Geotextile Tube Fabrication & Support

- GSI supports environmental and dredging contractors, as well as “superfund” contaminated sites where clean-up is managed by the EPA.
- The effectiveness of the geotextile tube dewatering is underscored by the fact that often the effluent is clean enough to be returned to the source.
- Currently engaged in the largest coal ash project to date with 700,000+ cubic yards of coal ash being dredged and dewatered.

Geostrux Geotextile Tube

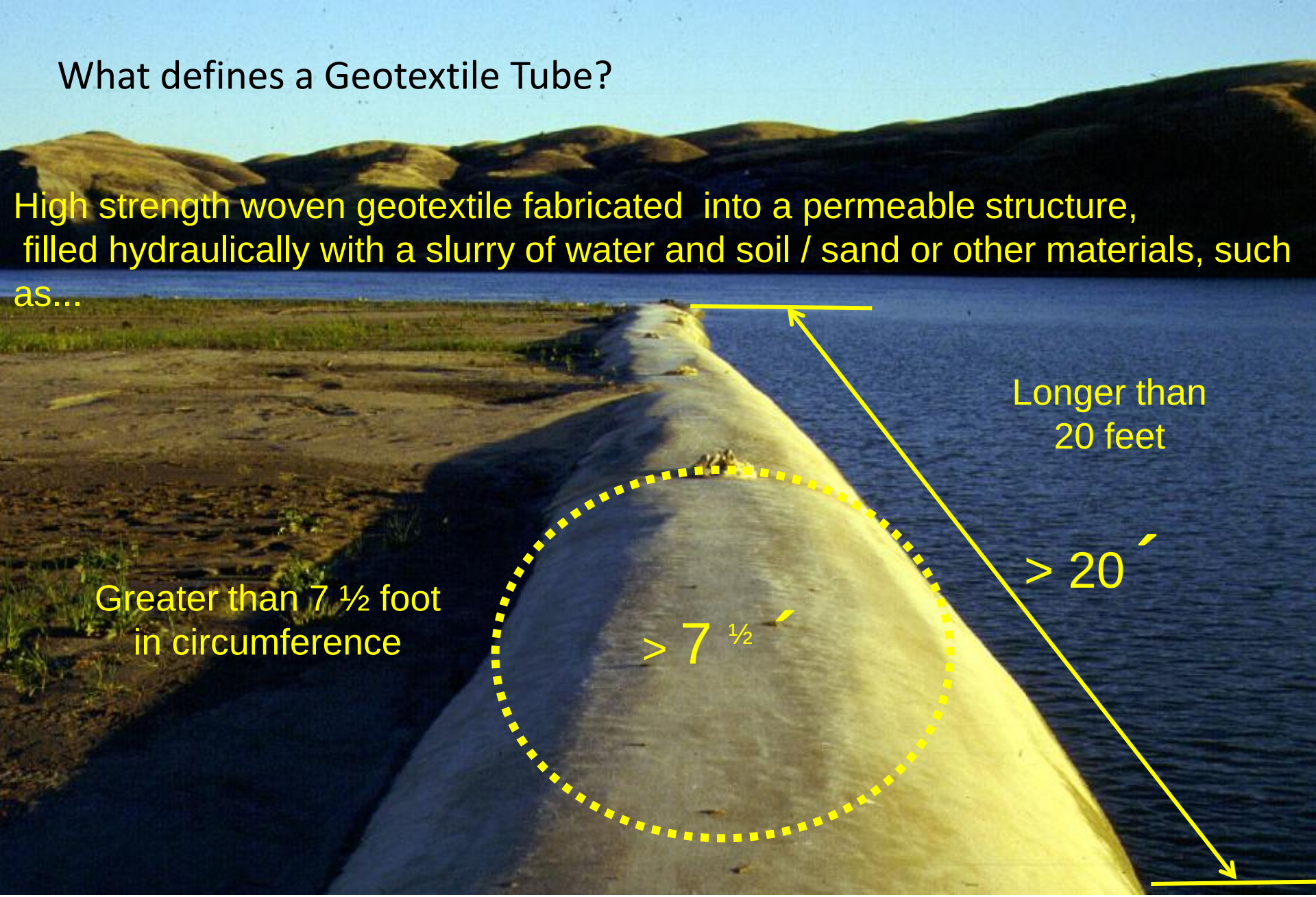
GSI GEOSTRUX™ Geotextile Tubes

- Fabricated by GSI are used in a wide variety of projects where dewatering of sediments and industrial wastes is required
- Made to custom sizes per engineered specifications
- Are cost effective and ecologically-friendly compared to other dewatering methods.
- Applicable for dewatering of contaminated sediments, coal ash, mine tailings, WWTP sludge, organic and inorganic materials, silts and sands
- Other applications of this versatile product include use as coastal erosion barriers, habitat creation, spoil pit creation, temporary dams, and island building. GEOSTRUX™ Geotextile Tubes are fabricated to exacting tolerances that allow them to be used for dewatering of contaminated sediments, fly ash, copper tailings; and, at marinas, lakes and rivers

Basics

Geotextile Tube - A large tube [greater than 7.5 ft (2.3 m) in circumference] fabricated from high strength woven geotextile in lengths greater than 20 ft (6.1 m). Geotextile tubes used in coastal and riverine applications are most often filled hydraulically with a slurry of sand and water, although many other fill materials have been used. The tubes can also be filled by a combination mechanical and hydraulic method.

What defines a Geotextile Tube?



Jacksonville Project

- https://www.youtube.com/watch?v=aKyfyDp-ohM

Randy Pit
rpit@gsibp.com
262-408-9942