



Featured Technical Topic Summary FGI Monthly Members Meeting Friday, June 6, 2025



TOPIC: Sediment Removal from Geomembrane Lined Containment Ponds

Each month Tim Stark introduces a new technical topic for discussion and possible action. This month's topic is: "Sediment Removal from Geomembrane Lined Containment Ponds". This topic generated significant discussion with the main "take-aways" listed below:

Pressure Washing

- Neil Nowak of WSP started this discussion with a project in Wyoming that was containing a liquid with 13,000 to 66,000 ppm total dissolved solids (TDS). The containment pond has a 60 mil HDPE primary geomembrane, but it was leaking. The leakage was observed in the leak detection zone so a deep-water survey was conducted with the pond full of liquid. The survey identified several leaks. As a result, sediment (see left photo below) had to be removed to fix some leaks found by an electrical leak location survey (see right photo below). Plastic shovels and low-pressure power washing was used to remove the sediment. The sediment was wheelbarrowed to the top of the slope instead of using equipment. It was suggested to use a reinforced geomembrane to reduce wrinkles to make repairs easier. Wrinkles can also make leak location surveys difficult.



Wyoming - Sediment in pond bottom after removal of water for primary geomembrane repairs; pond operational for seven years before repairs.



Sediments removed carefully by hand using plastic shovels and low-pressure power washer, then wheelbarrowing the sediments to the top of the pond.

- Tim Stark shared some photos of geomembrane damage that can be caused by pressure washing (see red arrow in right photo below), metal shovels, and hoses being placed directly on the geomembrane. Pressure washing and shovels damaged seam flaps (see red arrow in left photo below). It is recommended that high-pressure power washing should not be used on the surface of a geomembrane, but a slow water flow can be used.



- Todd Harman of Hallaton described installation of a buried sump system so pressure washing, and equipment was not needed to remove sediment for a containment pond. The benefit of this system is sediment could be pushed with a broom into the sump so no equipment or pressure washing had to access the top of the geomembrane. Photo #1 below shows installation of a large diameter HDPE pipe to serve as the sump. Photo#2 shows a pipe drilled into the sump so the sediment can be vacuumed to the top of the slope with a vacuum truck. Photo #3 shows a trench for the vacuum pipe to be placed from the sump to the top of the slope. Photo #4 shows the sump backfilled with soil and ready for geomembrane to be placed and connected to the large diameter HDPE sump pipe.



Photo #1



Photo #2



Photo #3



Photo #4

- Pat Elliott showed photos of a produced water pond in which discharge, and removal hoses were placed directly on the geomembrane with untaped metal hose couplings. These couplings damaged the geomembrane (see Photo #1). Photo #3 shows a concrete roadway on top of the geomembrane for ingress and egress of vehicles, e.g., small dozer, for sediment removal, into a deicing fluid pond at Denver International Airport. Use rubber squeegees to push sediment on top of the geomembrane as shown in Photo #4. Photo #5 shows large hole found in deicing fluid pond that had to be fixed. Other photos from his project are shown in Photos #6 through #9.



Photo #1

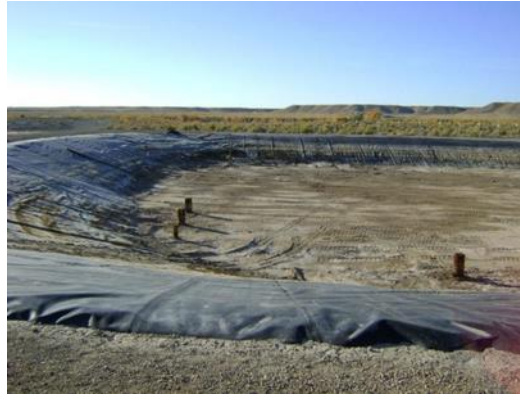


Photo #2



Photo #3



Photo #4



Photo #5



Photo #6



Photo #7



Photo #8



Photo #9

Best Practices

- No metal shovels and high pressure power washing to move sediment
- Use brooms or rubber squeegees to push sediment
- No equipment operating directly on the geomembrane