



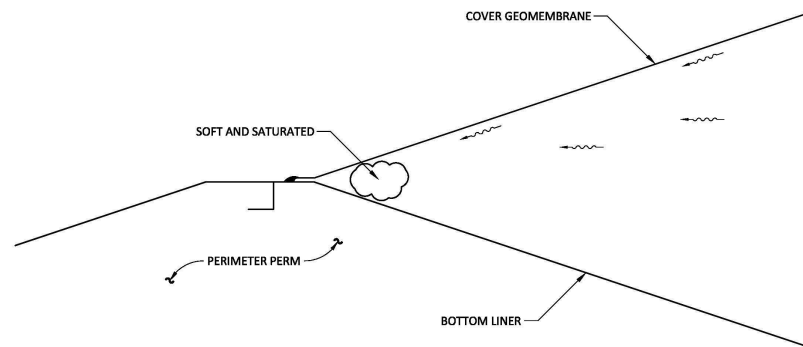
Managing Leachate Seeps Below Final Cover

Ali Khatami, Ph.D., P.E.
SCS Engineers

Leachate Seeps

- Many reasons for leachate seeps
- Operator manages leachate seeps while slope unclosed
- Various means and methods for management of leachate seeps
- Full closure and leachate seeps
- Partial closure and leachate seep

Leachate Seeps Below Geomembrane

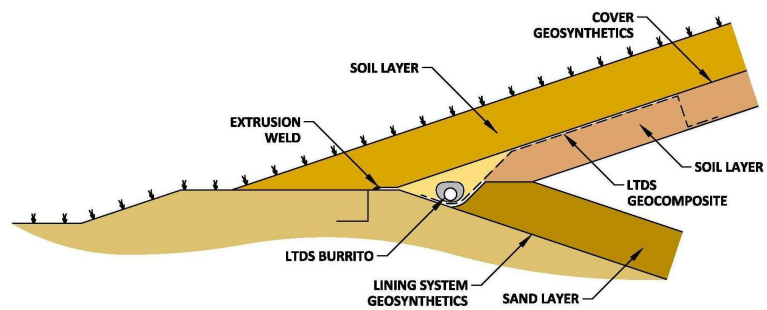


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Leachate Toe Drain System (LTDS)

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Location of LTDS



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Leachate at Toe of Slope



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Leachate Pool at Perimeter Berm



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Removing Leachate by Vac Truck



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Vac Truck



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Exposing Anchor Trench



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Excavating Overfill



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Excavating Overfill



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Grading Slope



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Graded Slope



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Graded Slope



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Graded Slope



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LTDS Geocomposite Deployment



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LTDS Geocomposite



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LTDS Geocomposite



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Anchor Trench Excavation



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Anchor Trench for LTDS Geocomposite



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Bottom of LTDS Geocomposite



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Extension of LTDS Geocomposite



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Extended LTDS Geocomposite on Slope



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Anchor at High End of Seep



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Connection Points to Cleanouts



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Connection Point to Sump Riser



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Connection Point to Sump Riser



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Deployment of LTDS Geotextile



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LTDS Pipe Placement



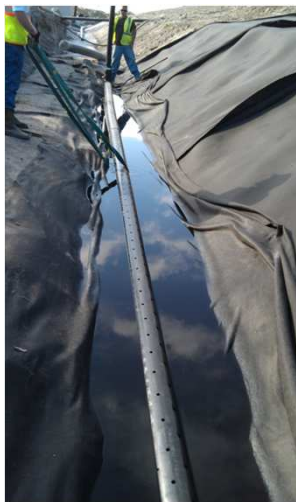
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Vertical Pipe



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LTDS Pipe Placement



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Vertical Pipe



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LTDS Pipe Connection to Cleanout Pipe



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Connection of LTDS Pipe to Sump Riser



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Connection of LTDS Pipe to Sump Riser



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Connection of LTDS Pipe to Sump Riser



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LTDS Gravel Placement



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Forming Gravel around LTDS Pipe



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LTDS Gravel Placement



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LTDS Gravel Placement



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Gravel at End of LTDS Pipe



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Closing LTDS Burrito



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Placement of Soil Above LTDS Burrito



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Soil Above LTDS Burrito



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LTDS at Completion



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LTDS Pipe at Cell Construction Time



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LTDS Drain Pipes



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LTDS Drain Pipe into Leachate Sump



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LTDS Drain Pipe into Leachate Sump



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LTDS Drain Pipe into Leachate Sump



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Sump and LTDS Drain Pipe



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LTDS Drain Pipe at Leachate Sump



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LTDS Drain Pipe into Leachate Corridor



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Closed Burrito



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Cover Geomembrane Welded to Bottom Geomembrane



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Cover Geomembrane Welded to Bottom Geomembrane



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Granular Bentonite Over Extrusion Weld



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Granular Bentonite Over Extrusion Weld



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GCL Strip Over Granular Bentonite



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GCL Strip Over Granular Bentonite



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GCL Strip Over Granular Bentonite



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GCL Strip Over Granular Bentonite



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Cover Soil Placement



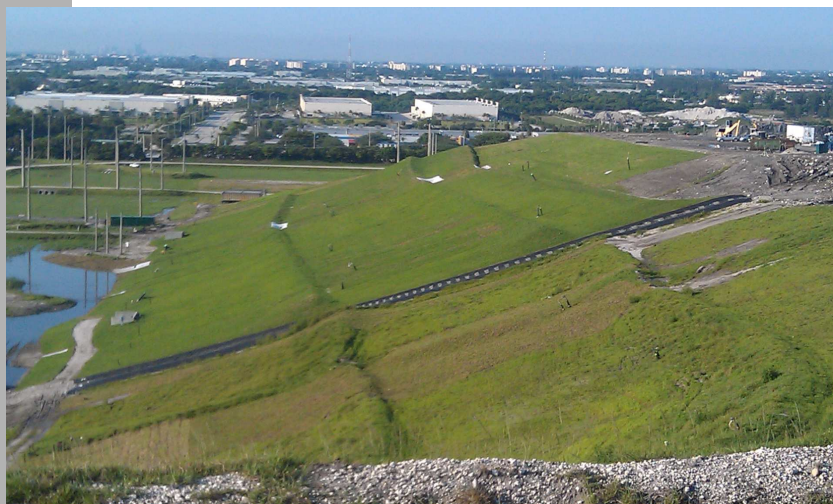
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Slope Final Condition



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Slope Final Condition



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Benefits of LTDS

- Collects and removes leachate below final cover geomembrane
- Eliminates ponding of leachate below final cover geomembrane at toe of slope
- Provides gas collection at toe of slope
- Connects to leachate collection sump, sump riser, or cleanouts
- Addresses aggressive leachate seeps on slope

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Construction Recommendations

- Construct LTDS and drain pipes at time of cell development
- Set LTDS pipe invert below top of berm
- Leave no sand between LTDS geocomposite and LTDS geotextile
- Construct vertical pipes for future connection to gas system
- Do not use sacrificial geomembrane over LTDS, use geotextile to allow infiltration

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