



Presented to the Michigan Department of Environmental Quality:

Landfill Construction Quality Assurance: Beyond the Routine

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Poor Subgrade





Footing





Creative but...





Rocks Mean Repair





Delivered from Agru fine, but...





Not Bad





Bad





Reason for Reflective Tape





Hooked up, Time, Visual





Shingle Downslope





Wash Seam Before Grinding





Tie-in Time





This is Not Easy





Right Where We Left It





Had to Fix Spots Next Day





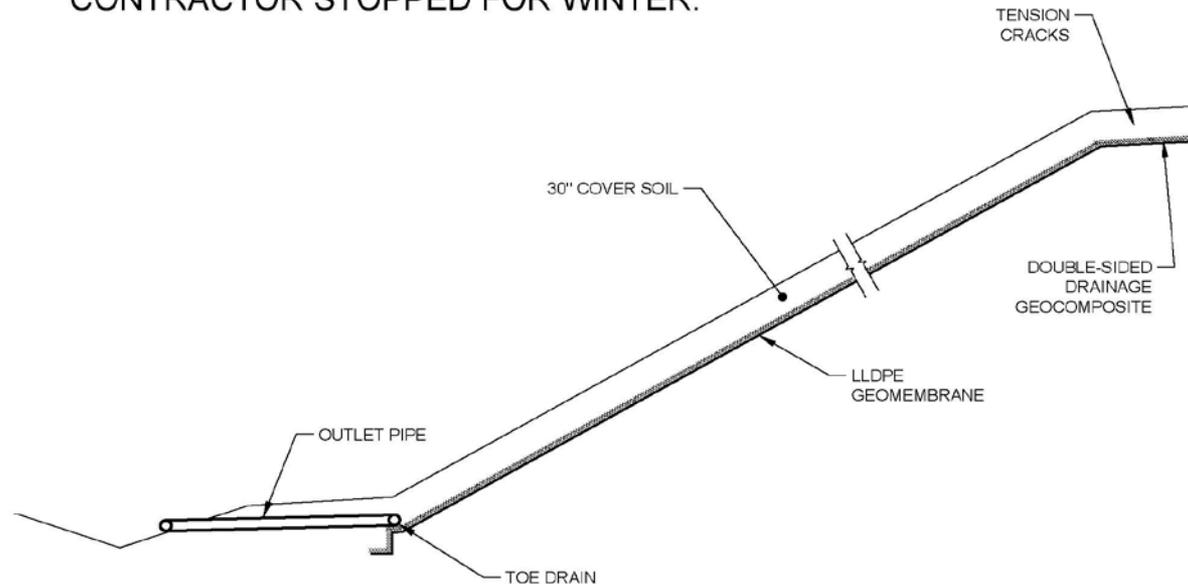
Deployed Over Failing Destructive





Sequence & Timing Matter!

TIMING AND SEQUENCE OF CONSTRUCTION MAY BE IMPORTANT. FOLLOWING SOIL COVER PLACEMENT, CONTRACTOR STOPPED FOR WINTER.



TENSION CRACKS FORMED IN SPRING PRIOR TO COMPLETING TOE DRAIN AND OUTLET PIPES



We Almost Made It





Having Fun Yet?





Where Was That Defect?





Winter Issues





Winter Issues





Winter Issues





Post-Construction Fire



FIRE ON A LINER SYSTEM: RESPONSE AND REACTION

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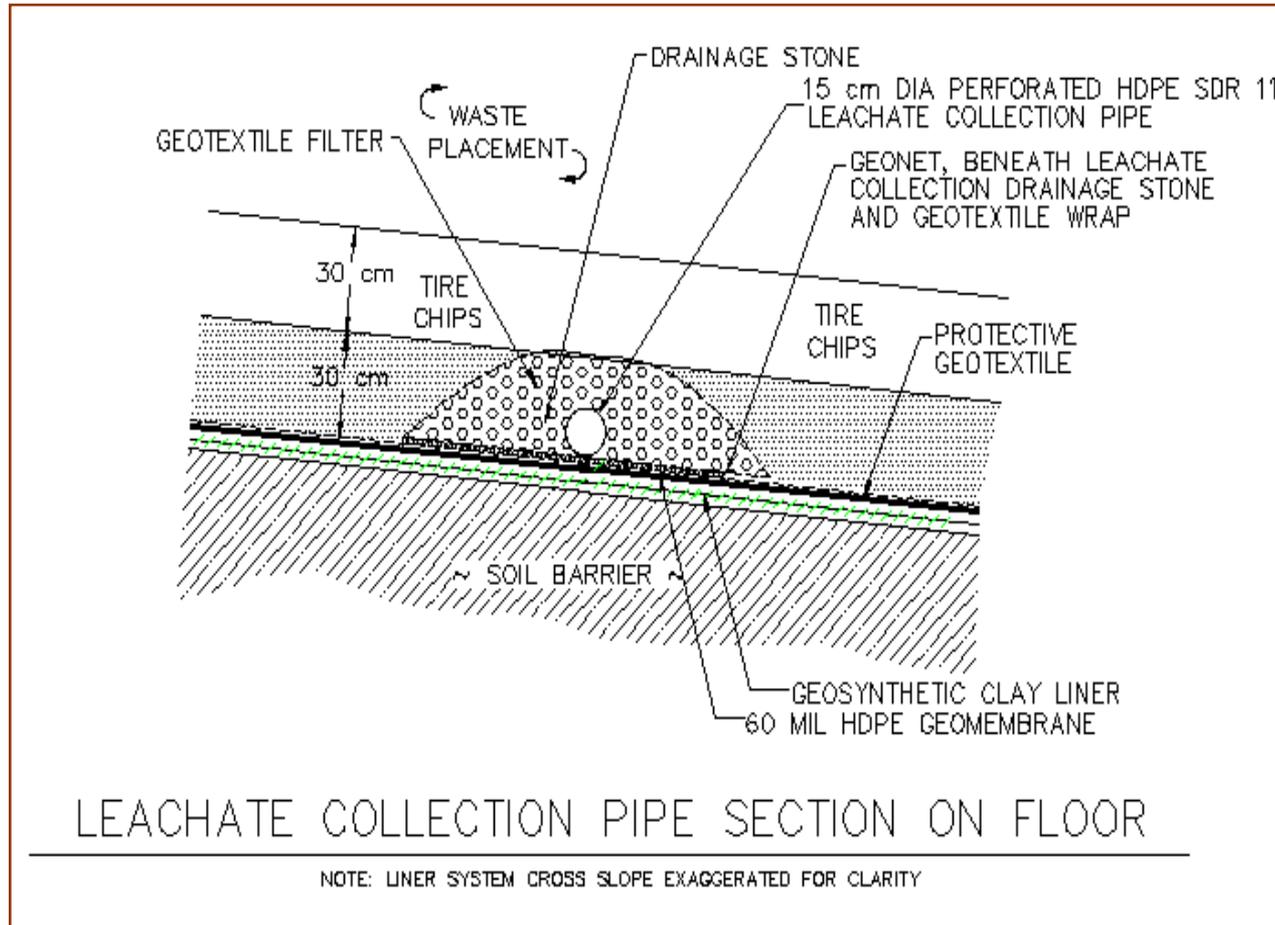
ABSTRACT

The use of alternative components in landfill construction as replacements for natural materials is commonly practiced in modern landfill design for the purpose of improving the design and offering means of conserving resources. Tire chips have been used as replacements for granular materials in both leachate and gas collection systems. In addition, tire chips have been used as a protective layer for the geosynthetic components.

Under certain conditions, tire chips will burn. If this occurs, not only will the tire chips be destroyed and need to be replaced, but adjacent construction materials may also be damaged. This paper reviews various aspects of the extinguishing techniques and assessment process in the aftermath of a fire in tire chips used as a protective layer in a landfill. The paper also presents perspectives on the use of tire chips as a protective layer, as considered both before and after a fire event. The assessment includes review of the design, investigation for potential damage caused by the fire, and a review of potential changes to be made in future designs and operations at the facility.



Water In Sand Protected Geomembrane





GCL - Needles





Water Under Liner





Placing Sand Acts Like Squeegee





Next Layer





Next Layer





Next Layer





Next Layer





Next Layer





Last Layer





Uplift Happens: NSBs, 2ndaries , Underdrains



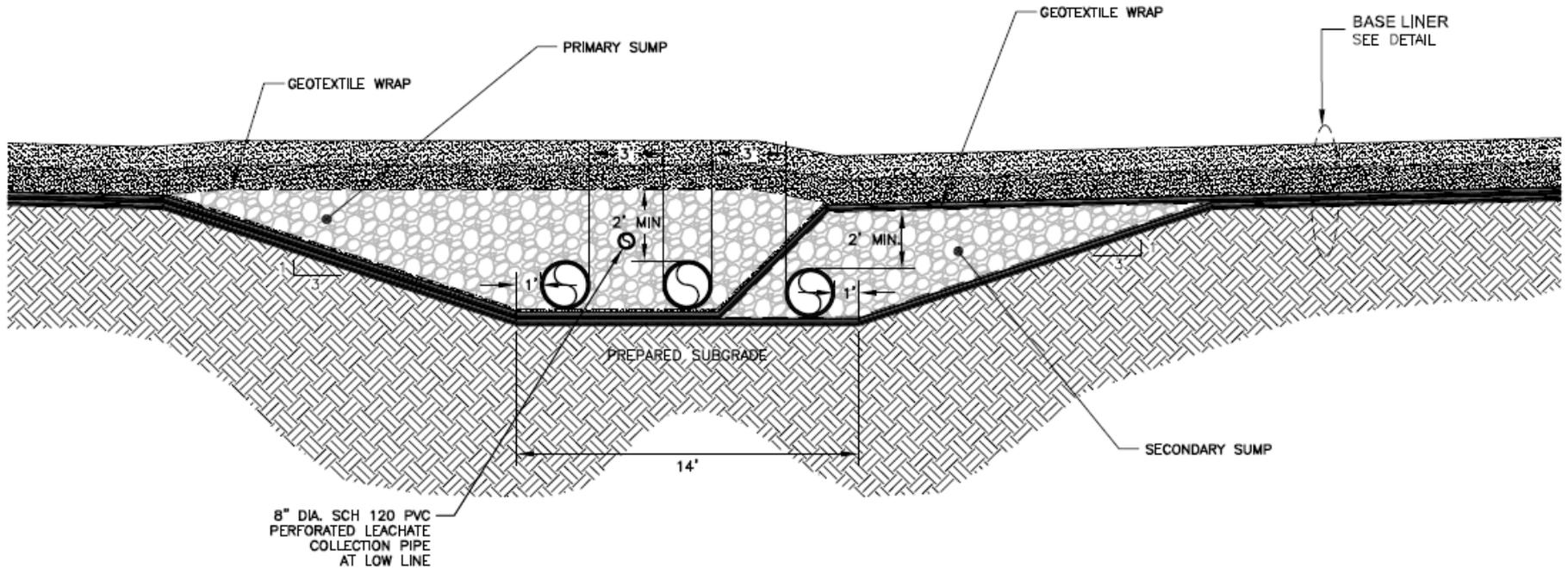


Jet Grouting





Uplift from Secondary Sump is Possible



B-B'

LEACHATE COLLECTION SUMP CROSS SECTION

NOT TO SCALE

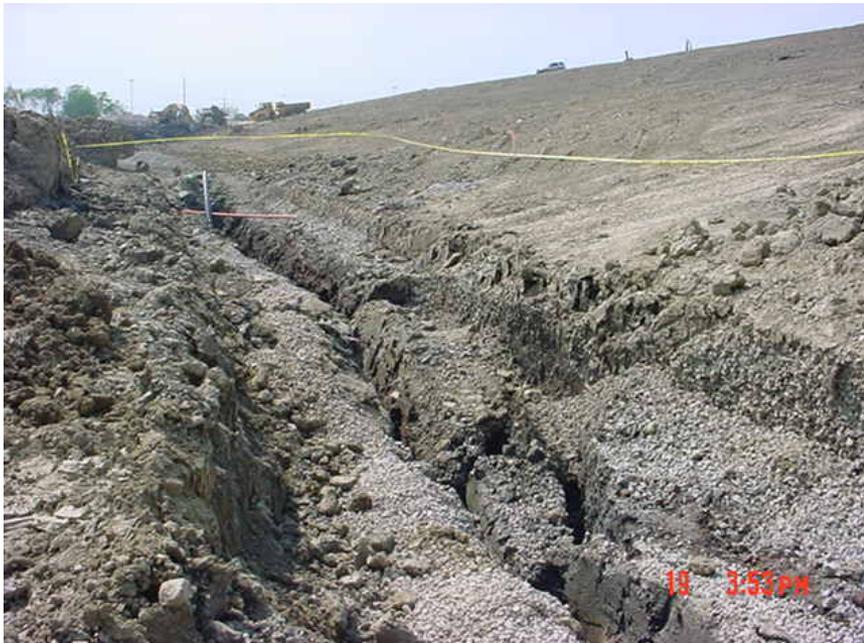


Saturated Uncemented Ash





Not According to Plan





Unbonded





Routine, be Safe!





Leak Location





Leak Location





Leak Location



April 20, 2016

45



Dozer 1, Liner 0





Is the Gas System on?





Smoke Test



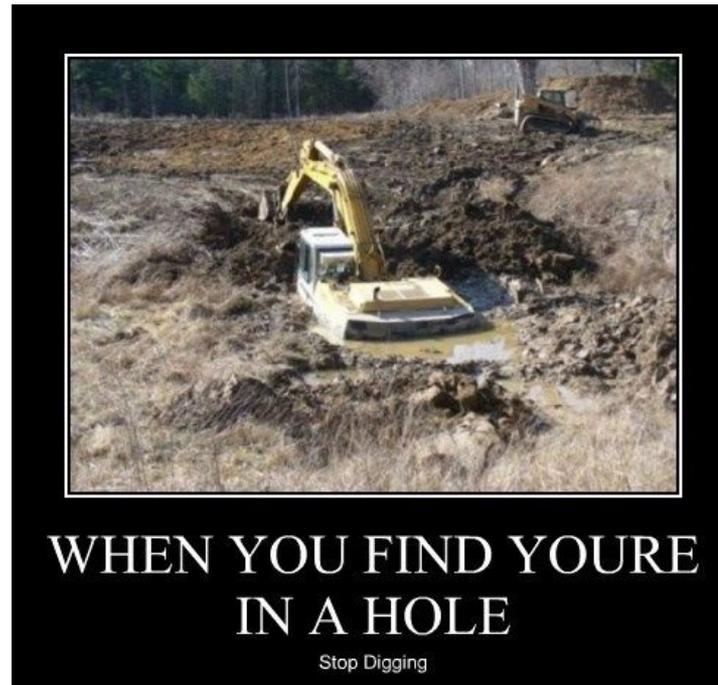


Smoke Test





Questions and Discussion



THANK YOU!