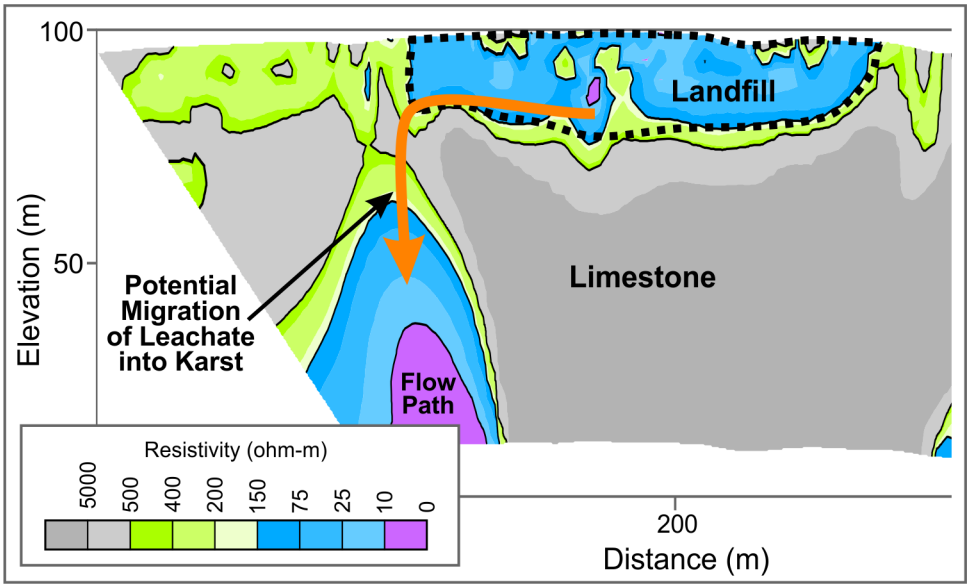
Case Study

Leachate Excursion at Karst Landfill

An unlined landfill had a history of operational and post-closure problems including problems maintaining the cap and cover, seeps, leachate, and groundwater contamination. The landfill is located in fossiliferous limestone which has karst dissolution features such as fissures, sinkholes, and caves. Surface seeps near the landfill had a pronounced oily sheen, and are attributed to contamination of the groundwater by the landfill.



Aestus' GeoTrax Survey™ scanning technology was used to delineate the landfill boundaries as well as the geologic conditions beneath the landfill to a depth of about 100 meters. The graphic above shows:

- Landfill extents with underlying competent limestone
- Karst void/cave likely containing leachate impacted groundwater

Why is landfill leachate highly detectable in Aestus' imagery?

At the majority of landfills, leachate has a higher fluid electrical conductivity than the surrounding groundwater. This makes the flowpaths from landfills highly visible as electrically conductive pathways. A set of GeoTrax Surveys can allow the delineation of the flowpaths to evaluate remediation of the landfill prism and/or to target downgradient impacts.

Results

- ☑ GeoTrax Survey™ identified landfill extents and underlying geology/ conditions
- ☑ Located leachate excursion in complex karst geology below landfill
- ☑ Safe and effective Ultra-HRSC without drilling through landfill prism
- ☑ More comprehensive depiction of site issues as compared to untargeted drilling

More Certainty & Optimal Outcomes

Our client needed more certainty in their subsurface data. We integrated existing site data, our GeoTrax Survey™ electrical images, and targeted confirmation drilling data to yield a more complete understanding of the subsurface. This allowed them to:

- ☑ Make better technical/business decisions
- ☑ Have clear roadmap for next steps
- ☑ Achieve project goals faster and cheaper

Aestus

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