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The Landfill site COMMON WASTE HOT SPOT COMMON WASTE & CONSTRUCTION MATERIALS (Bjerg and Kjeldsen 2010)

Grindsted Landfill is situated in the south-western part of Jutland, Denmark. The landfill has been active for about 50 years from the 1930'ies to the 1970'ies, where household waste and construction material have been deposited along with chemical waste from a local chemical industry (Kjeldsen et al. 1998). The landfill, its leachate plume and the surrounding areas have earlier been subject to a high number of mainly chemical investigations of water samples from boreholes (e.g, Kjeldsen et al 1998, Bjerg and Kjeldsen 2010).



The El-log method measuring electrical resistivity in a 20 cm normal configuration and gamma radiation (Sørensen 1989) is expanded to measure time domain IP as well. The geophysical data are acquired in-situ while auger drilling. Water samples are collected at specific levels. The DCIP data are inverted for the Cole-Cole parameters using a 1D vertical constrained inversion procedure (Fiandaca et al. 2012).

Introduction Leachate plumes from landfills and other contaminated sites are a threat for groundwater, surface water, and eco systems. Efficient mapping and site characterization are required for the establishment of reliable monitoring and remediation plans. The GEOCON project aims at advancing geological, geophysical and contaminant monitoring technologies for contaminated site investigations. The perspectives of the IP method are investigated in combination with geological sampling and chemical analyses of water samples. Along a leachate plume from a landfill hosting both household and chemical waste, borehole IP data, geological samples, grain size, and contaminant concentrations in water samples are examined for correlations related to geology and concentrations of contaminants.

The dataset consists of three Ellog drillings with DCIP and Gamma measurements at B1, B3 and B5, drilling with geological sampling at B2, grain size analyses at samples from B1 and chemical analyses of water samples at screens and by Ellog in B1, B2, B3 an B5.



B2, formation factor (F) calculated at water sampling points. Lithological log at borehole B2, from samples in the interval 0-22 m depth and interpreted from gamma log in the interval 22-32 m. The geological determined grain size of the sandy sediments are marked (f=fine, m=medium, c=coarse). Grain size analyses of selected samples from B2.

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Conclusion

observed

- contaminants,

- tration contaminants and

References

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In the primarily sandy sediments at the Grindsted Landfill we have

(1) that the formation resistivity overall correlates with the pore water resistivity, representing concentrations of some of the

(2) that the IP parameters MN, τ and C seems to primarily correlate with clay content and grain size of the sandy sediments, (3) that MN secundarily correlates with the pore water resistivity, (4) that MN just above clay & lignite layers in B1 have high values that might be related to the presence of long-term high concen-

(5) that there is no significant evidence of that the contaminants influence on the IP parameters τ and C.

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