

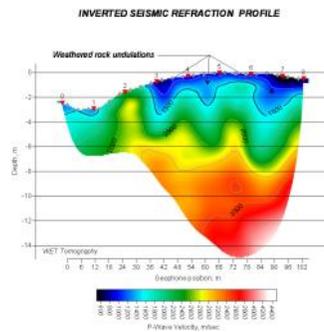
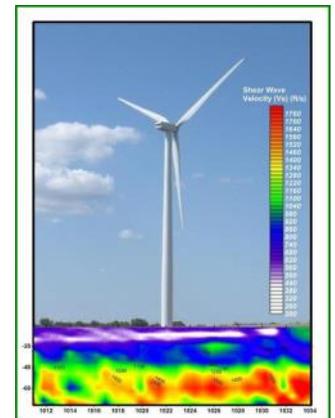
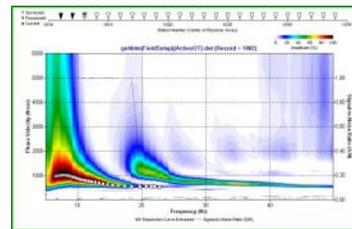
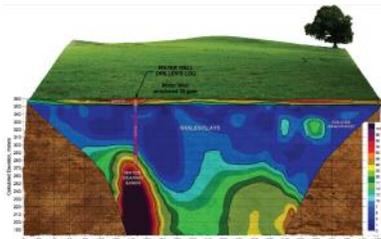
# ENGINEERING GEOPHYSICS

## ABOUT US

Gehrig, Inc. was incorporated in 2008 with the purpose of providing exploration, engineering and environmental geophysics services to quality clients. Our main office is located in Muenster, TX, with additional personnel located in Dallas and Fort Worth. Gehrig's expert team is well-equipped, mobile and client-focused to get the job done right.

## SERVICES

- In-Situ Engineering Properties
- Top-of-Rock Profiling
- Dam and Levee Imaging
- Shear Wave Velocity Profiling (Vs30)
- Rippability Studies
- Fault Investigations
- Karst and Void Delineation
- Reinforcement and Grade Beam Location
- Bridge Deck Assessment
- Vibration Monitoring (PPV)
- Resistivity Testing
- Pavement Thickness
- Thermal Conductivity



## Our Toolbox

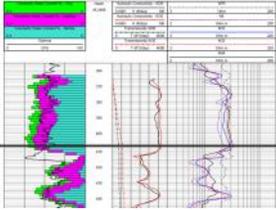
- Electrical Resistivity Tomography (ERT)
- Induced Polarization Tomography (IP)
- Multi-Channel Ground Conductivity (EM)
- Seismic Refraction and Reflection
- Seismoelectric Soundings
- Ground Penetrating Radar (GPR)
- Wireline Borehole Geophysics
- Magnetics
- Microgravity
- Geographic Information Systems (GIS)

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# CASE STUDIES

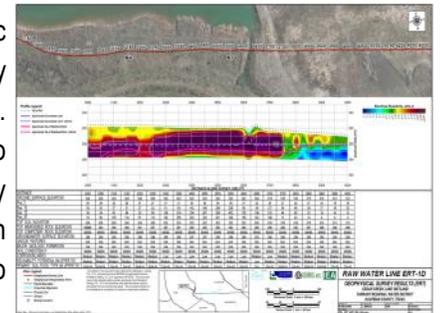
## ***Nuclear Magnetic Resonance (NMR) Wireline Logging for Aquifer Characterization***



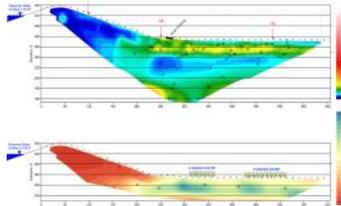
Our scientists produced NMR logs for several pilot boreholes in Central Colorado. The data were utilized to assess basin aquifers that were candidates for a public water supply Aquifer Storage and Recovery (ASR) system. NMR logs provide permeability and porosity values at discrete intervals in PVC-cased or uncased wells. This provides groundwater resource scientists hydraulic transmissivity and conductivity data for aquifer characterization.

## ***ERT and IP for Pipeline Alignment***

The client approached us to determine whether we could utilize geophysics to reduce the geologic risks associated with constructing a 15-mile large diameter pipeline. We chose Electrical Resistivity Tomography (ERT), and Induced Polarization (IP) for this project after testing a variety of methods. We acquired ERT and IP data along the entire length of the project alignment and processed it into 2-D profiles. We were able to ascertain the elevation of the water table, soil corrosivity, and identify Areas of Geologic Concern (AGC) that could potentially influence project cost and construction safety. Our processed data were integrated with data from the client and presented in an easy to understand Plan-Profile-Table (PPT) format.



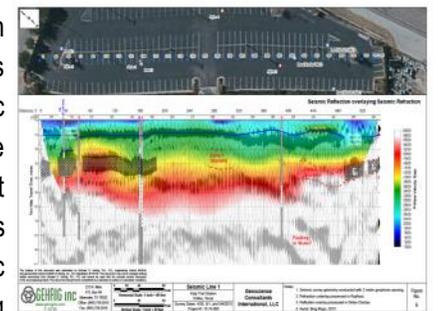
## ***Earthen Dam Seepage Study in East Texas***



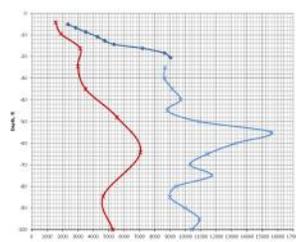
We were contacted by a civil engineering firm and asked to locate and delineate preferential seepage pathways beneath an earthen dam. We utilized ERT, induced polarization and self potential tomography to characterize the subsurface. These geoelectric methods successfully determined the depth and lateral extent of the seepage pathways which were successfully remediated by the client.

## ***Subsurface Characterization for the DART Katy Trail Rail Station, Dallas, Texas***

Gehrig, Inc. scientists were approached by an engineering geology firm that was faced with characterizing the subsurface in a geologically complex urban environment. The location was formerly a cut bank of the Trinity River that had been filled and was currently a parking lot. Acoustic and electrical noise from adjacent train tracks and urban utilities was a major challenge for the geophysical team. We tested a variety of methods before acquiring high resolution seismic data at the site. We utilized reflection and refraction processing methods to develop 2-dimensional profiles for each data type. We successfully integrated geotechnical boring logs and both types of seismic data to locate and delineate large limestone float blocks that were of interest to the engineering geologists and geotechnical engineers.



## ***Pre-Design Due Diligence for a North Texas Power Station***



Our scientists were contacted by a geotechnical engineering firm and asked to acquire electrical resistivity, in-situ dynamic properties of the soils, and thermal resistivity data for proposed power stations in North Texas. We collected resistivity data via the Wenner 4-Pin method. Shear wave velocity profiles and in-situ dynamic properties were developed and calculated based on seismic data that we acquired and processed using the Multichannel Analysis of Surface Waves (MASW) seismic refraction methods, and borehole sonic waveform. Thermal resistivity data was acquired in test trenches. We acquired and processed all data in general accordance with applicable ASTM guidelines.