

Seminar sehari
Sumbangan Geofizik Dalam Kajian Sekitaran dan
Pemuliharaan

Abstrak-abstrak Kertas Teknik

Engineering and environmental geophysics: an overview

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The application of geophysical techniques to engineering and environmental problems has become increasingly important and widespread over the last two decades. This can be attributed to heightened environmental awareness and parallels the rather rapid developments in data processing techniques, computer technology and new geophysical survey equipment and methods. The geophysical techniques commonly utilized in such surveys include seismic reflection and refraction, gravity, magnetics, electrical, electromagnetics, radioactivity, borehole and the relatively new georadar. Engineering applications include geotechnical site investigations (involving bedrock mapping, fault delineation, detection of sinkholes and other subsurface voids, mapping of core boulders and geotechnical investigations to determine the mechanical parameters of rocks and soils); surveys for submarine cable and pipeline routes; studies for bridge, tunnel and highway alignments; investigations of dam sites; and marine surveys for land reclamation, marine salvage operations, coastal engineering and the construction of offshore structures. Environmental geophysics involves hydrogeological investigations (inclusive of the mapping of saline water intrusion); environmental monitoring (including mapping of contaminant/leachate plumes, investigations of buried wastes, detection of radon gas and similar sources of environmental radioactivity) and monitoring of geohazards (such as volcanic activity, earthquakes, tsunamis, landslides, land subsidence and gas blowouts). Geophysics has also been employed increasingly in archeological studies. It is thus evident that geophysics is a very powerful yet cost-effective tool with an increasingly wide range of applications.