



geoconvention

Calgary • Canada • May 7-11

2018

The Critical Importance of Hydrogeology to WCSB Development

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Summary

The presentation will provide an overview of the critical importance of hydrogeology and water to current and future oil and gas development. It is applicable to a wide audience, including company directors, senior financial and technical managers, project-based geoscience and engineering staff, and operations staff, including risk-based decision makers and environmental specialists.

Water has always been critical to petroleum exploration and development. From understanding regional flow systems as drivers for the migration and trapping of oil and gas deposits, to produced water management, to waterflood schemes, etc., all had to be understood to drive recovery and manage cash flow. As conventional production gave way to heavy oil and oil sands projects, large water volumes were required to enable thermal recovery and bitumen processing. More recently, our focus on tight reservoir development, via horizontal wells and multi-zone fracs, requires large water volumes and secure disposal zones.

At the same time, changing climate patterns, and population and industry growth has focused societal concerns on water sustainability and quality over the long term. It is thus increasingly complex for the petroleum industry to secure long-term water supplies, and to safely and economically manage produced water. Other considerations, such as the risks posed by aging infrastructure to non-saline water resources, and other key receptors, place additional pressure on industry to manage the collective liability.

It is often stated “no water, no project”. Thus, as an industry we must improve our understanding of water resources and recognize that hydrogeology factors into all aspects of the life cycle of an O&G asset. Our discipline must incorporate the knowledge of petroleum geoscientists, physical and contaminant hydrogeologists, and surface water professionals. Those whom invest in increased water knowledge, and available smart tools, will maximize their individual and corporate success.

The presentation will review some of these aspects, efforts, tools, regulations and drivers, as well as upcoming CSPG Hydrogeology short courses. It will also illustrate how the CSPG Hydrogeology Division can play a lead role in hydrogeology knowledge training and transfer.