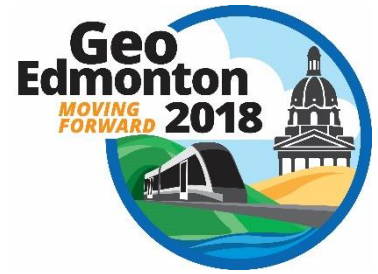


Injection Well Field Optimization using Analytical Methods

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ABSTRACT

Waste fluid disposal through injection is a common and economical means of addressing waste. Responsible planning and management of disposal wells and well fields are essential for reliable operations, which are critical to energy production success. Technical expertise in hydrogeology can be applied to optimize disposal operations, thereby increasing reliability and therefore, saving disposal costs by securing a dependable fluid waste management option.

A disposal well field must be planned and developed in consideration of multiple parameters: maximum injection rates, formation properties, fluid compatibility and duration. Analytical scoping and sensitivity analysis can be used to determine reasonable preliminary estimates of well numbers, spacing and injection rates for a particular disposal horizon. A multitude of different parameters can be assessed analytically to better understand the uncertainty associated with specific parameters and focus design efforts and costs. Solutions can then be refined to optimize the injection well field rates, sequencing, spacing, and number of wells based on all available information over the life of an operation. If there are a number of operators in an area, consideration for other users is also required. An analytical or numerical cumulative impact assessment can then be completed to assess the impact of a new or expanded well field on existing operators and the formation itself.

This presentation will provide some insight to responsible planning and management of disposal wells and well fields. The presentation will provide an overview of analytical assessment for injection pressures and will be practical for those involved with feasibility, design, and operation of injection well fields. The talk will specifically address what a hydrogeologist can provide to operations groups in planning and managing disposal wells. Therefore, the content will be focused toward operations managers and practicing hydrogeologists.