

SURFACTANT ENHANCED SOIL WASHING OF DRILLING CUTTINGS TO ACHIEVE ALBERTA ENVIRONMENT TIER I F1 - F4 GUIDELINES BENCH SCALE TO FIELD SCALE BASE STUDY

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This paper will focus on the development of an applied surfactant enhanced soil washing process to treat drilling cuttings, originating from an oil and gas drilling site in Alberta. The presentation will detail how the surfactant enhanced soil washing process treated drilling cuttings contaminated with petroleum hydrophobic organic compounds at greater than 25,000 ppm to compliance with the Alberta Environment Tier I Guidelines. Graphical data, flow drawings, photographs, graphical, and data interpretation are included.

Normally hydrophobic organic compounds, such as those present in F1 (C6-10), F2 (C10-16), F3 (C16-34), F4 (C34-50), exhibit limited solubility in water and generally phase separate and sorb (i.e., adsorption and absorption) onto the solid matrix (i.e., drilling cuttings, sands, etc.). The sorption of these contaminants onto the solids associated like drilling cuttings is generally regarded as the principal limiting factor that negatively effects conventional physical, chemical and/or biological treatment of upstream impacted solids.

The ability of certain surfactants to help desorb F1 to F4 compounds from drilling wastes presents an innovative option for sustainable oil and gas waste treatment, and the potential for enhancing the oil recovery from said waste streams.

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