



**Environmentally
Friendly
Drilling**

*providing unbiased science to address
environmental issues in oil and gas operations*



HARC

**U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

SOIL WATER AND AIR SPRING ISSUES FORUM

Houston Advanced Research Center – HARC is a research hub that provides independent analyses of air, energy, and water issues to people and organizations seeking scientific answers. We are focused on building a sustainable future that helps people thrive and nature flourish.

HARC manages the **Environmentally Friendly Drilling (EFD)** program which is the leading consortium of government, industry, environmental organizations and academia focused on providing unbiased science to identify, develop and transfer critical, cost effective technologies that provide policy makers and industry with ability to develop reserves safely and in an environmentally friendly manner.

Environmentally Friendly Drilling – Dr. Rich Haut – HARC EFD

Brief overview of the EFD program and its focus on collecting data, conducting analyses, and developing tools for improving environmental performance.

Site Restoration – Dr. David B. Wester of Texas A&M University – Kingsville

Dr. Wester has been conducting research into the effects of age and depth on stockpiled topsoil, applicable to soil stored during excavation of pipeline trenches or drilling pad construction. The research also includes study of restoration of soils that have become mixed as a result of such activities, disrupting the native strata and function of the soil. His work includes analysis of biological and chemical properties of the soil, as well as greenhouse studies and test plots in the field.

Water Treatment and Recycling – Frank Platt – Texas A&M University – Global Petroleum Research Institute

Testing of water treatment systems to remove organic and inorganic substances so that flowback and produced water can be recycled, thereby reducing demand for fresh water needed for drilling and hydraulic fracturing. The GPRI program has a mobile water laboratory that can be deployed to field sites where flowback and produced water are available in significant volumes. Some of the technologies being tested include the latest in advanced filtration with reverse osmosis membranes and ceramics.

Database for Best Management Practices – Katherine Mutz – University of Colorado Law School

This ongoing project compiles a searchable database of management practices pertaining to shale oil and shale gas, encompassing water quality, water quality, soil conservation, air quality and more. Additional information on this effort can be viewed at <http://www.oilandgasbmps.org>

Flaring Issues, Solutions and Technologies – Carolyn LaFleur – HARC Environmentally Friendly Drilling

Reducing flaring with a variety of technologies to utilize otherwise stranded gas for power generation and fuel for drilling and hydraulic fracturing operations.

Land Use Site Selection Information Tool (LUSSIT) - Rob Lenarcic – Latitude Geographics

LUSSIT is a GIS-based analytical tool that aggregates a large number of attributes that can be used to understand the environmental and land use aspects of for siting of drilling locations, production facilities, roads, pipelines, etc. This powerful, sophisticated, web-based tool spatially integrates data from many sources, including environmental monitoring systems.

Discussion – Questions and Answers with Speakers