

# Shale Oil and Gas Exploration and Production

Advances in horizontal drilling and hydraulic fracturing have unlocked significant energy reserves in geologic formations once thought to be economically infeasible to access. This type of exploration and production activity presents unique environmental challenges within an evolving regulatory framework. Environmental issues that must be addressed include the identification and acquisition of water sources; treatment, management and reuse of water production and produced water; chemical waste management activities; and air emissions documentation and control.



Zephyr Environmental Corporation provides environmental, health and safety consulting and training services for the oil and gas exploration and production industry. We are currently assisting our clients on a range of issues involving water sourcing, water treatment and reuse, and air quality permitting and compliance. Additionally we are advising clients in connection with regulatory drivers on federal, state, and regional levels.

## WATER SOURCING

- Identification and evaluation of water sourcing options including treated industrial effluent, surface water bodies, and groundwater sources.
- Identification, analysis, and navigation through site-specific (state, regional, county) water acquisition rules, regulations, and approval processes (including lead-time scheduling to ensure water is available to meet drilling schedules).
- Assistance to obtain approval for water withdrawal from groundwater and/or surface water resources.
  - Request for water withdrawal from a state-designated scenic waterway.
  - Evaluation for water withdrawal from tribal lands.

## WASTEWATER TREATMENT AND WATER REUSE

- Evaluation of viable water treatment technologies.
- Evaluation of produced and flowback water treatment efficiency and effectiveness.
- Development of permit for approval to recycle and reuse treated flowback and produced water.

## WASTE HANDLING AND MANAGEMENT

- Development of storm water pollution prevention plans, SPCC plans, and operating plans to properly manage well fracturing chemicals and produced as well as flowback water.
- Regulatory assistance with the proper management of exempt and nonexempt exploration & production (E&P) wastes.

## AIR QUALITY PERMITTING AND COMPLIANCE

- Permitting evaluation and application development. Zephyr has developed tools for effective emission quantification and permit evaluation for a portfolio of operating sites. Zephyr has successfully employed these tools to efficiently quantify emissions and evaluate permitting options for up to 400+ sites in an operating region.
- Auditing to determine compliance status with respect to federal and state regulations, preparation of disclosure of violations, and development and implementation of corrective action plans.
- Title V reasonable inquiry and deviation reporting assistance.
- Preparation of employee and contractor training materials.

*Assisting clients worldwide with their EHS consulting, training, and data systems needs.*

