



## **Boies Ranch B-30H FED Pad Attachment J(2) Waste Management Plan**

This plan is being submitted as an attachment in accordance with COGCC Rule 303.b (3).

### General Information

Ursa Operating Company LLC has developed and implemented a comprehensive waste management plan to address Exploration and Production (E&P) and other wastes related to its operations in the Piceance Basin, Colorado. This plan provides an overview of key points relative to Form 2A approval, based on Ursa's comprehensive plan.

E&P wastes are not regulated (i.e. exempt) as hazardous wastes by the Environmental Protection Agency (EPA) (40 CFR 261) or by the Colorado Oil and Gas Conservation Commission (COGCC). COGCC manages E&P wastes in the State of Colorado. Both agencies publish a list of E&P exempt wastes on their websites. To qualify as an E&P waste, the waste must be generated during the drilling, completions, or production operations. These wastes must be managed (treated, stored, transported and disposed of) in accordance with COGCC, County and municipal regulations, and land use codes and ordinances.

Non-E&P Wastes are those that are not generated as part of Oil and Gas downhole operations, and are generally classified as non-hazardous or hazardous. These wastes must be managed in accordance with Colorado Department of Public Health and Environment (CDPHE) regulations, and County and Local landfill or waste disposal facility requirements.

NOTE: Chemicals used for stimulation and completions are not considered wastes until they are introduced (i.e. used) into the completions phase of operations. However, they must be managed in accordance with EPA, COGCC and CDPHE regulations, including posting of Material Safety Data sheets (MSDS). The MSDS provides chemical information, and safety and environmental actions to be taken in the event of an exposure or spill.

### Construction Wastes

No E&P wastes are generated during construction activities. Wastes primarily generated are typical of most household or commercial trash that can be disposed of at local landfills. Equipment maintenance and servicing wastes (oil, hydraulic fluids, etc.) are not allowed to be managed on Ursa's locations, and must be recycled or disposed of in accordance with CDPHE regulations.



### Drilling Wastes

Conductor pipe is typically installed prior to drilling to support sidewalls to allow drilling. The material removed is essentially soil and is not a waste. Drill Cuttings (aka muds) are the primary E&P waste generated during drilling (aka spudding), which consists of drilling a surface hole, and production hole. Drilling is typically done using air and water (surface hole) and green (synthetic non-oil based) mud for the production hole. MSDS sheets are required to be maintained for any additives used in the drilling process.

### *Cuttings Sampling and Stabilization*

Both surface and production hole drill cuttings will be generated at each well pad. Raw cuttings (not stabilized) will be sampled and profiled at the location of generation in accordance with Ursa's Waste Management Plan. Once the raw cuttings are sampled they will be stabilized (absorption / removing liquids) in a temporary area on the well pad. The cuttings will be stabilized using either native soils (preferable) or a commercially available inert adsorbent (sawdust, EZ Stabil, etc.). In some cases, relocation of cuttings to another location during drilling would be required due to the small pad size permitted by the previous operator. If the volume of cuttings on the well pad during drilling exceeds the capacity of the on-site temporary area, limits operational capabilities to complete drilling, or creates safety concerns, a Sundry (Form 4) will be submitted for approval to relocate the cuttings to another location pending the results of sampling analytical results.

### *Cuttings Management and Disposal*

If sampling results for either surface or production hole cuttings meet 910-1 standards they will be treated as non-waste (essentially soil material) and will be managed under one or more of the following options: 1) remain on site for pad stabilization/reclamation, 2) relocated to another location for pad stabilization/reclamation/berming, 3) relocated to a COGCC approved cuttings management facility, or 4) disposal at an approved waste facility. Options 2 & 3 would be in accordance with COGCC approved Sundry Notice (Form 4). Disposal at an approved waste facility would be managed for Item 4 under an approved waste manifest in accordance with CDPHE regulations. If cuttings don't meet standards, then Ursa will implement one of two options: continued mixing to meet 910-1 standards for beneficial reuse/relocation, or transport to an authorized waste facility in accordance with Federal and State (COGCC / CDPHE) regulations, including manifesting. Final decisions will be based on site-specific operations logistics.



### *Drilling Fluid Management*

Drilling fluid that is no longer required at a pad will be re-used at the next pad that the drilling rig moves to, in most cases. More than one drilling rig may be in use, and in those cases, excess drilling fluid may be shared amongst other drilling rigs that require additional drilling fluid. If the fluid properties are no longer acceptable, the solids will be removed from the fluid. Those solids will be treated as drill cuttings, per the previous paragraph. The remaining clean fluid will be recycled and used in the drilling operation at the next pad.

### Completions

During completions, a mixture of approximately 99.5 % water (fresh or recycled) and propants will be injected into the production zone to maintain the flow of gas and oil from the wellbore. This water returned to the surface is referred to as flowback, which is the primary E&P waste. This waste is then treated/recycled/reused for additional stimulation at other locations. Most flowback is treated at a COGCC approved facility under their Section 900 Rules. MSDS sheets are required to be maintained for any additives used in the stimulation process. In addition, all additives used are required to be reported to the COGCC within 120 days of completion activities. All tanks are labeled in accordance with Federal and COGCC regulations.

### Production

Once a well is drilled and completed, separators at each location separate out the produced water and condensate from the natural gas, prior to the gas being transported by underground pipelines to a processing facility. Both produced water and condensate tanks are installed at each well pad to collect water produced from the production formation, as well as condensate. Produced water and Condensate are classified as the primary E&P wastes by the COGCC and EPA. Produced water that can be recycled is treated at Ursa's permitted Wasatch Facility in accordance with COGCC 900 rules. This water can then be recycled/reused to minimize the need for additional fresh water used for completion activities. Produced water that cannot be recycled is disposed of in Underground Injection Control (UIC) wells that are permitted by the COGCC. Wherever possible, Ursa uses pipelines to transport water to injection wells. This location is proposed for connection to a water line to reduce traffic, noise, dust, and to minimize impacts to the community.

Condensate (aka oil) is a saleable product and is typically collected by trucks for transport to a processing facility. Production tanks are managed in accordance with COGCC and EPA regulations regarding primary and secondary containment to minimize the potential for a spill or release to the environment. All tanks are labeled in accordance with Federal and COGCC



regulations, and are inspected daily, monthly and quarterly; also in accordance with Ursa Best Management Practices, and EPA, COGCC and local fire district regulations.