BMSA Oil and Gas Committee Meeting with Antero
Minutes for November 4, 2009

Topic: Post Drilling and Completion Operations and Interim and Final Reclamation

O&G Committee Members Attending: Chairman Bill Nelson, Mary Ellen Denemony, Robert McCurdy, Don Mumma, Frances Rose, Lynn Shore

Antero Representatives in Attendance: Lars Inman, Jerry Alberts, Kelly Bruchez, Mark Kachmar, Dave Stricklin Also in Attendance: Ten members of the community.

During Post Drilling and Completion Operations a Workover Rig is brought to drill out frac plugs and run tubing into the subsurface to enhance production and/ore for maintenance within the well. The rig also is used to clean out the well bore. This is done, usually, within a week of completion. This allows perforation for the gas to flow. Tubular maintenance allows for optimum production over the 30 year-life of the well. The vast majority of this is done during daylight hours. Related equipment for use on site at this time are, beside the most visible ones – work-over rig and coiled tubing unit – a pump skid (6' by 12') to pour water to clean out plug; frac tanks (500 bbls) store water; nitrogen truck - its contents used for "gas assist"; wireline unit which is mounted on a truck; trailer to hold supplies; workers pick-up trucks and a snubbing stack on the wellhead used to be able to get in and out of the well and to maintain gas production. Trucking to and from wellheads for produced water hauling inside the PUD will be virtually non-existent once the water facility on pad F is constructed and operational. Produced oil (condensate) hauling – other than natural gas will be approximately 20 truck loads of oil per well throughout the life of the well.
Automation cuts down on the amount of trucking. Remote monitoring, using low profile antenna equipment, reduces pad site visits. There are daily visits tot the well site by a pumper (employee) in a pickup truck. The primary function is production enhancement and well site safety. The pumper checks: fluid levels in tanks (gauges oil levels); thief hatches and Enardo valves on condensate and produced water tanks; dump valves from separators (separates oil, gas, water); tank and load-out (trucks access to get oil) valve integrity; pilot light on combustor; performs preventative maintenance; responsible for preventative down-hole maintenance;
Phase 2 Completions of Mancos wells: Use a workover rig to pull tubing from wellbore; set plug above upper Mancos perforations – a potential for cross flow between high and low pressure zones doesn't allow for doing both a Williams Fork and a Mancos well at the same time; fracture stimulate up-hole Williams Fork targets; use work-over rig to drill-out frac plugs and run tubing back in well; 20 Mancos wells with 7 up-hole Williams Fork frac stages would take roughly 3 months to complete (1 month of fraccing); this "ideal" plan to finish the stages of Mancos wells. Fewer pumps and smaller frac stages equals quieter operations. There will be no dehydration units on the well pads. The company that receives the gas will do the dehydrating.
Interim and Final Reclamation Overview: COGCC Rules are followed for both Interim and Final Reclamation. Disturbed areas – pipeline right-of-ways, well pads, access roads

must be reclaimed to their original condition or final land use as early as practicable; must be maintained to control dust and minimize erosion and noxious weeds – weeds controlled 3 times per year and site is graveled. (The Pit reclamation rules are not applicable to Antero's drilling since it utilizes pit-less closed-loop drilling techniques as a Best Management Practice.)

Exceptions to the above Areas affected by drilling or subsequent operations to begin within 12 months – if no drilling for a then interim reclamation starts; areas reasonably needed for production operations such as a pumper arriving each day to check on wellpad.

Interm Reclamation occurs no later than 3 months on crop land or 6 months on non-crop land for areas no longer in use; rule includes detailed reclamation standards and seeding methods; this is complete when vegetative cover is 80% of pre-disturbance levels; reclamation effort is "memorialized" with submittal of COGCC Form 4.

Final Reclamation is done when a well is no longer producing. Each company has a Bond of $5,000 per well or $100,00 for the area being worked – whichever is smaller. Antero's Reclamation Plan covers both interim and final reclamation. Final Reclamation commences following plugging and abandonment of a well and completion of pipeline projects: Well locations, access roads, production facilities, pipelines are reclaimed and kept free of weeds; Comply with interim reclamation standards,; Equipment and debris removed, location graded and recon toured; COGCC Form 4 submitted.

Reclamation Objectives; Revegetation of disturbed areas to stabilize soils and establish a plant community; Plant community contains little undesirable vegetation and is capable of supporting post disturbance land uses. Reclamation is achieved when vegetative cover is 80% of pre-disturbance levels. The Key Components of Antero"s Reclamation Strategy are Site preparation; Interim reclamation and Site-specific reclamation/revegetation plan that is applicable to each well pad or pipeline site.

Reclamation – Site Preparation: Remove/isolate topsoil form poor-quality subsoil; Seed topsoil piles with quick germinating cover grasses;; Implement soil conservation techniques such as surface manipulation and re-contouring and drainage management. The Goal is to establish stable slopes, water courses and drainage features to minimize erosion and sedimentation.

The Purpose of Interm Reclamation involves the reclamation of areas disturbed during the well pad construction, but not need needed during the productive life of the well. Its objectives cover stabilization of disturbed areas – implementation of wind and storm-water Best Management Practices; establishment of non-invasive plant communities; comply with goals and objectives of site-specific Reclamation/Revegetation Plan.

The Site-Specific Reclamation/Revegetation Plan will be completed for each well pad and/or pipeline project and will comply with GarCo Regulations; the plan is part of the submittal for the permits with the county. It will be based on information obtained from field inspections with the following parameters evaluated: Local land use; Soil types; Terrain/slope gradient/elevation; Description of local vegetation communities and habitats; Noxious weeds; Wetland/drainage surveys – well boring will go underneath these type of areas. Recommendations for Reclamation Success include seed mix and methods suitable for area and the defined reclamation goals in COGCC Rule 1003. Successful Reclamation is obtained when the area being reclaimed reaches 80% vegetation cover compared to the surrounding area; Re-seeding occurs twice a year until

final reclamation is achieved – October-November and the spring months are the best time to reseed; Seed mix includes perennial and annual plant species – the BLM and/or vegetation specialists make the recommendations for the area.
A number of community members asked questions which were answered by Antero employees. In regards to whether the company will "bore or trench", this will be determined by experts and will depend on water and/or gas lines and on what else is in the pathway – roads, boulders, drainage, walking paths etc.
Four pads, C,D,L,M, in the PUD will have special consideration for landscaping such as sprinkler systems. When the GarCo permit is received the construction of the landscaping will begin.
Some pads will be smaller than the average size of 2 ac. C Pad will be the smallest.
Some of the material taken from the well pads will be stored near/on F Pad as per the Surface Use Agreement (SUA). BMC and Antero will determine the height of the stored material. As an area is developed, excess material will be used.
There will be a phased development of gas and water lines. Antero hopes that dust suppression will be successful. Mr. Inman will look into dust suppression on trenches for water and gas lines.
The plan is to inject non-potable water below the aquifer through an injection well – between 7,000 to 7,500 feet below the surface.
Water wells in the area are being tested prior to drilling to have a basis on which to compare water wells after gas drilling starts.
Fire danger mitigation will be in the comprehensive drilling plan and in the County Permit Plan.
Plans are being submitted in the correct order to the different government agencies in the correct order needed. Plans will be submitted to COGCC in the first quarter of 2010.
Antero wants to have the GarCo permit request submitted first.
An annual operations meeting will be held in the evening in January so that Antero can outline the plans for the year.
At least two more meetings will be held this year to discuss when Antero is in permitting process and the mitigation of problems; One will be after Thanksgiving and one before Christmas – to be announced later.
A regular Oil and Gas Meeting will be held at 3:30 p.m., on November 10, 20009, at the Activity Center.