

## Dave Kubeczko - DNR

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**Subject:** Gunnison Energy LLC, Trail Gulch Unit 1090 30 Pad, Form 2A #401964719, SWSE Section 30 T10S R90W, Gunnison County, OGLA Review

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**From:** Jessica Donahue <Jessica.Donahue@OXBOW.COM>

**Sent:** Tuesday, November 5, 2019 10:06 AM

**To:** Dave Kubeczko - DNR <dave.kubeczko@state.co.us>

**Subject:** RE: Gunnison Energy LLC, Trail Gulch Unit 1090 30 Pad, Form 2A #401964719, SWSE Section 30 T10S R90W, Gunnison County, OGLA Review

Dave,

The determination looks like a good summary of the data. I don't have any edits or comments.

Thank you,

Jessica

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**From:** Dave Kubeczko - DNR <[dave.kubeczko@state.co.us](mailto:dave.kubeczko@state.co.us)>

**Sent:** Tuesday, November 5, 2019 9:44 AM

**To:** Jessica Donahue <[Jessica.Donahue@OXBOW.COM](mailto:Jessica.Donahue@OXBOW.COM)>

**Subject:** Gunnison Energy LLC, Trail Gulch Unit 1090 30 Pad, Form 2A #401964719, SWSE Section 30 T10S R90W, Gunnison County, OGLA Review

**Importance:** High

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Jessica,

Below is the sensitive area analysis prepared as part of the OGLA review for the **Gunnison Energy LLC, Trail Gulch Unit 1090 30 Pad, Form 2A #401964719, SWSE Section 30 T10S R90W, Gunnison County**. Please review and comment/edit as needed. This will become an attachment to the Form 2A.

If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or email. Thanks.

Dave

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**Gunnison Energy LLC, Trail Gulch Unit 1090 30 Pad, Form 2A #401964719, SWSE Section 30 T10S R90W, Gunnison County**  
**SENSITIVE AREA ANALYSIS FOR POTENTIAL SHALLOW GROUNDWATER**

COGCC conducted a review of available water well data in the vicinity of this existing oil and gas location, had discussions with BLM and USFS personnel who are currently conducting both a NEPA analysis and a Forest Service decision memo for this location and several other nearby locations in the area, and requested additional information from the operator to evaluate whether this oil and gas location is in a 'sensitive area' for water resources. The results of that analysis are presented below.

**COGCC Water Well Information and Data Review:**

COGCC's review of available water well data in the vicinity of the existing well pad found four (4) hand dug wells approximately 3 miles to the east; three were dug 60 to 80 years ago and one was dug in 2009. These hand dug wells are shallow, between 10 and 12 feet below ground surface (bgs), with water between 4 and 12 feet bgs. These wells were located in an area with several mapped intermittent streams along a gently to nearly level area where there were no trees present. The current owner has recently constructed a new water well nearby for domestic and stock use, located over 3.4 miles to the east-southeast of the location. Based on construction and pump installation information for this constructed water well (Permit No. 313687 – Steven Olsen), the well was completed in consolidate sediments of the Wasatch Formation, with the first water-bearing zone encountered at 146 feet bgs; total depth - 328', screened intervals - 160' to 200' bgs, 220' to 240' bgs, and 260' to 320' bgs; pump depth - 320', static water level - 143'; two-hour pumping rate - 3.5 gallons per minute (gpm).

Based on construction and pump installation information for another constructed water well (Permit No. 284106 – Thomas Phillippe) located approximately 4 miles to the southwest, the well was completed in consolidate sediments of the Wasatch Formation, with the first water-bearing zone encountered at 180 feet bgs; total depth - 220', screened interval - 180' to 220' bgs, pump depth - 220', static water level - 135'; two-hour pumping rate – 2.0 gallons per minute (gpm).

**Discussions with BLM and USFS personnel (Montrose):**

Aspens have root systems that are generally less than 12 inches deep. Per discussions with the USFS (who is doing the surface permitting for this location and several others), aspens need moist soil and do not specifically require shallow ground water to thrive in this area; neither are aspens indicative of shallow groundwater; nearly 45 percent of the area under their jurisdiction (Grand Mesa National Forest) is covered with aspens. With the elevation of this location, there is a lot of snow and surface water that moves through the area. The average rainfall is 14 inches per year and snowfall ranges from 50 to 80 inches a year (and up to 100+ inches); this area has 4 or more feet of snow cover for nearly half the year, so water availability is high for the aspens.

A recent seismic study in the area was accompanied by a water well information review conducted by the USFS, who indicated that the shallowest groundwater in the Grand Mesa National Forest area is between 80 and 100 feet below ground surface (bgs). They also mentioned that this particular location is considered to be generally dry and had been disturbed during previous oil and gas pipeline activities. Deep pipelines were constructed at this location for a compressor station that have been onsite for several years since production started at this well. Construction footing borings for the compressor went to at least 25 feet

bgs and encountered no groundwater. The compressor station has since been removed, and again, no groundwater encountered during the dismantling of the facility.

The closest non-coalbed methane water wells are over 2 miles away. A buffer on available data for water wells within 5 miles indicates that depth to groundwater ranges anywhere from 10' to 487'. The closest water wells to this location are actually 2 to 3 miles away, including the one referenced by the operator. The estimated depth given by the operator is relatively conservative at 125 feet bgs and is based on static water levels in nearby water wells and not actual depths to first water bearing zones which are approximately 170 and 180 feet based on the data concerning depth to the first potential water bearing zones in those wells. There are a couple of wells completed next to perennial streams that had water levels of 10 to 40 feet bgs. As this location is over 1500 feet from surface water, shallow groundwater is not likely (elevation difference between Little Muddy Creek [8000'] and this location [8115'] is over 100 feet).

The Forest Service also indicated that no well pads built in this area, some with 15 to 25 feet of cut, ever encountered shallow groundwater. Again, this is USFS surface and the BLM has completed its NEPA with a 'finding of no significant impacts' (FONSI) for this project. The USFS is currently preparing their Decision Memo, which will have similar results. That document will undergo a public objection period. Montrose BLM indicated that there was no indication of shallow groundwater in the vicinity of this well pad based on their analysis.

#### **Discussions with BLM personnel (Silt):**

Per BLM's Colorado River Valley Field Office's environmental manager and plant scientist; aspen require elevated moisture, as in moist soils, within their shallow root zone. They are not a wetland indicator species, nor do they require shallow groundwater. The moisture they utilize is generally in the vadose zone, not the saturated zone of a perched or shallow water table. Although aspen often occurs "along" drainages, it is not a phreatophyte. The moisture that supports aspen along drainages -- typically on slightly elevated benches or on hillslopes angling down toward the drainage -- is from surface and shallow subsurface runoff toward the channels, not water in the channel.

The entire expansion area is essentially devoid of aspen on a hillside between the existing road, well pad, compressor and the Bull Mountain pipeline. It is heavily dominated by Parry's rabbitbrush and perennial grasses. Parry's rabbitbrush is itself associated with ample soil moisture, but again in unsaturated soils such as along roads that benefit from runoff from the compacted surface, along the edges of irrigated pastures, or on hillslopes that carry surface and shallow subsurface runoff from upslope.

In summary, BLM saw no issue related to this proposed pad expansion in relation to surface water, shallow subsurface water, or the nearby presence of aspen, and that continues to be their interpretation of the situation. It would be different if the pad were to be constructed within an aspen stand, in which the loss of a sizable number of aspen trees would probably have led to relocating it, or within or near an area supporting wetland indicator plants. Neither of these situations applies.

#### **Operator Comments:**

Gunnison Energy currently does not have any site specific data since they haven't done any activity at the site as of yet. The proposed pad is an expansion of an existing pad, the Federal 30-4. The Federal 30-4 was spud in 1981. Review of the original paperwork for the well did not mention any shallow groundwater. Conductor casing for the proposed horizontal wells on this pad is planned to a depth of 120 feet bgs and surface casings will be set to a depth of 3500 feet bgs. These casing requirements are in place to ensure that any potential water zones are sufficiently protected.

Based on review of existing water well information and data, discussions with the BLM and USFS (who are also analyzing this and other well pad projects in the area), and additional information concerning conductor and surface casing requirements for the proposed wells on

this location, the operator's determination that this location is not in a 'sensitive area' for water resources is reasonable and accurate.

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