

**From:** [Kyla Vaughan](#)  
**To:** [Koepsell, Arthur](#)  
**Subject:** RE: John Craig 6-2 Form 2A Document # 400293379, Nighthawk Production LLC  
**Date:** Monday, July 16, 2012 10:46:25 AM

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Good Morning Arthur!

It is my understanding that you spoke with Brett Forkner with LT Environmental, Inc. on Friday afternoon in regards to the Conditions of Approval for the baseline sampling. I understand that you indicated what we sampled for will be sufficient for your program considering that we followed the COGA SAP for the John Craig 6-2. I wanted to confirm this with you and with that understanding, Nighthawk agrees to the COA's you have listed below.

Best Regards,

Kyla Vaughan  
Environmental Compliance  
Specialist

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**From:** Koepsell, Arthur [mailto:Arthur.Koepsell@state.co.us]  
**Sent:** Friday, July 13, 2012 10:48 AM  
**To:** Kyla Vaughan  
**Subject:** John Craig 6-2 Form 2A Document # 400293379, Nighthawk Production LLC

Kyla,

The COGCC is reviewing the Form 2A (#400293379) for the Nighthawk Production LLC John Craig 6-2, located in the SENW Sec 2 T10S R56W Lincoln County, Colorado. The COGCC requests the following changes to the information provided and acknowledgement of conditions of approval prior to passing the Oil and Gas Location Assessment (OGLA).

## Soils

The soils for the location are listed as 220 Access Denied Areas. The soils in this area have not been mapped by the NRCS. I have been to this area and it is my opinion that the soils are Valent Sand. For the purposes of this application the Soils will be assumed to be Valent Sand.

## Location Photos

The East facing Location picture is missing from the photos, in its place is a picture of the ingress. Please provide the East facing photo and I will add it to the file. In the future please separate the photos into location photos and reference area photos.

## Conditions of approval

Due to the sandy nature of the soil on the location and the likelihood of wind erosion taking place on the pad the following COA will apply:

Best management practices (BMPs) should be utilized to minimize disturbance of the vegetative cover while constructing and operating the location and to aid soil stabilization and revegetation of the disturbed area during interim reclamation. Cut and fill slopes should be minimized to the greatest extent practicable. The BMPs may include, but shall not be limited to, the use of mulches and/or tackifiers, erosion control mats and/or blankets, appropriate seed mixes and/or soil amendments and any other practices necessary to prevent soil erosion by wind and stormwater, and to encourage the growth of desirable soil stabilizing vegetation. The perimeter of the pad and any cut/fill slopes should be stabilized immediately after construction is complete.

## Baseline Sampling

Prior to drilling, operator shall sample the two wells, springs, or surface water features within a one (1) mile radius of the proposed oil and gas location. Testing preference shall be given to water wells and springs over surface water. The sample location shall be surveyed in accordance with Rule 215.

Initial baseline testing shall include laboratory analysis of pH, total dissolved solids (TDS), specific conductivity (SC), sodium adsorption ratio (SAR) calculation, calcium (Ca), potassium (K), magnesium (Mg), sodium (Na), arsenic (As), boron (B), barium (Ba), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), manganese (Mn), lead (Pb), selenium (Se). All metals analyzed for total recoverable; bromide (Br), chloride (Cl), fluoride (F), sulfate (SO<sub>4</sub>), alkalinity (total, HCO<sub>3</sub>, and CO<sub>3</sub> – all expressed as CaCO<sub>3</sub>), benzene, toluene, ethyl benzene, o-xylene, m- + p-xylene (BTEX), dissolved methane, diesel range organics (DRO), gasoline range organics (GRO). Sampling shall be performed by qualified individuals using methods consistent with commonly accepted environmental sampling procedures. Field observations such as pH, temperature, specific conductance, odor, water color, sediment, bubbles, and effervescence shall also be included.

After 90 days, but less than 180 days of completion of the first proposed well a “post-completion” test shall be performed for the same analytical parameters listed above and repeated one (1), three

(3) and six (6) years thereafter.

If free gas or a dissolved methane concentration level greater than one (1) milligrams per liter (mg/l) is detected in a water well, gas compositional analysis and stable isotope analysis of the methane (carbon and deuterium) shall be performed to determine gas type (biogenic or thermogenic). If the methane concentration increases by more than five (5) mg/l between sampling periods, or increases to more than ten (10) mg/l, the operator shall notify the Director and the owner of the water well immediately. If thermogenic methane concentrations increase between sampling periods, the operator shall submit to the Director an action plan to determine the source of the increase.

Copies of all test results described above shall be provided to the Director and the landowner where the water quality testing well is located within three (3) months of collecting the samples used for the test. The analytical data and surveyed sample locations shall also be submitted to the Director in an electronic data deliverable format approved by Director.

Please feel free to contact me if you have any questions or concerns.

Thanks,

Arthur

Arthur W. Koepsell, P.G.  
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