

Dave Kubeczko - DNR

Subject: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A # 401554105_Form 15 #401642044_OGLA Reveiw and Final Set of COAs

Scan No. 2108521

OPERATOR PRODUCED WATER PIT COAs CORRESPONDENCES

2A #401554105 & 15 #401642044

From: Cari Mascioli [mailto:CMascioli@ursaresources.com]

Sent: Thursday, August 16, 2018 2:18 PM

To: Dave Kubeczko (dave.kubeczko@state.co.us)

Cc: Dwayne Knudson

Subject: RE: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Preliminary Draft Set of COAs

Dave,

Please add the following additional information to the operator comments on the submittal tab of the Form 2A.

- Ursa and XTO Energy each own a 50% interest in the surface. Ursa operates the surface in regards to oil and gas operations per the joint operating agreement.
- Monitoring wells to be installed at the pit facility location will be sampled in accordance with 609 rules unless otherwise revised in the Form 28.

Thank you,

Cari

Cari Mascioli

Regulatory Analyst

Office: (970) 284-3244

Cell: (970) 319-8236

CMascioli@ursaresources.com

From: Cari Mascioli [mailto:CMascioli@ursaresources.com]

Sent: Wednesday, August 22, 2018 4:01 PM

To: Dave Kubeczko - DNR

Cc: Alex Fischer - DNR; John Noto - DNR; Greg Deranleau - DNR; Matt Honeycutt; Dwayne Knudson

Subject: RE: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Final Set of COAs

Dave,

Ursa agrees with the final COAs for the Boies Ranch Produced Water Pit.

Thank you,

Cari

Cari Mascioli

Regulatory Analyst

Office: (970) 284-3244

Cell: (970) 319-8236

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

Sent: Tuesday, August 21, 2018 5:25 PM

To: Cari Mascioli <CMascioli@ursaresources.com>; Dwayne Knudson <dknudson@ursaresources.com>

Cc: Alex Fischer - DNR <alex.fischer@state.co.us>; John Noto - DNR <john.noto@state.co.us>; Greg Deranleau - DNR <greg.deranleau@state.co.us>

Subject: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Final Set of COAs

Importance: High

Cari and Dwayne,

Based on the most recent email sent from Alex, below are COGCC's final list of COAs for the Form 2A and Form 15 for the URSA Operating Company LLC, Boies Ranch Produced Water Pit Location. Bold green and yellow highlighted text is new; bold white text highlighted black is deleted text. Bold blue text is previously revised text based on the original set of COAs reviewed by COGCC. These COAs have incorporated internal COGCC comments and URSA's comments on the original Draft COAs. COGCC will place these on the Form 2A and Form 15 and the COGCC Oil and Gas Location Assessment Specialist will pass their task on Friday, August 24, 2018. Please review prior to the OGLA task being is passed on August 24, 2018. The entire email trail of COAs concerning this location is also part of this email.

Form 2A #401554105 Oil and Gas Location Assessment (OGLA) Permit Conditions of Approval (COAs):

Planning: The following conditions of approval (COA) will apply:

COA 90a - Prior to start of pit site construction (blade to the ground), operator shall have adequate financial assurance per Rules 704 and 908.g.(1)B. At a minimum, the cost estimate amount shall be equivalent for the cost of construction of this phase. When the operator submits the Form 28 for this facility, a Pit Closure, Remediation, and Reclamation Cost Estimate for the entire location will be required.

COA 90b - Prior to first use of the produced water storage and re-use pit, operator shall submit and receive approval of an E&P Waste Management Plan per Rule 907.a.(3).

COA 90c - The operator has submitted a Draft Operations Plan consistent with the requirements per Rule 908. CENTRALIZED E&P WASTE MANAGEMENT FACILITIES; b. Permit requirements; (8) Operating plan. Within 6 months of approval of the Form 2A and Form 15 of the produced water storage and re-use pit, and based on any changes or revisions to the pit facility or plan of operations, operator shall submit a completed Form 28 Permit for the Boies Ranch Produced Water Pit Centralized E&P Waste Management Facility.

COA 90d - Within 30-days of the Form 2A and Form 15 approval and prior to first use of the Pit Facility, provide Financial Assurance as required by Rule 704. The COGCC will have a third party review the closure of the facility and prepare an independent closure estimate. Should the independent estimate be greater than what is provided, the Operator shall provide the additional financial assurance to address the short fall.

COA 90e - Within 30-days of the Form 2A and Form 15 approvals construction of the produced water storage and re-use pit, the operator shall provide an updated and revised Operating Plan and Contingency Plan, generally consistent with Rules 908.b.(8) and 908.b.(11) via Form 4 Sundry Notice. The Contingency Plan shall include procedures if liners are compromised and if fluids are found in the leak detection system.

COA 90f - Any additional conditions of approval (COAs) that will be attached to the proposed (currently not submitted) Form 28 Permit for the Centralized E&P facility (which must be submitted within six (6) months of construction of the produced water storage and re-use pit) will also apply to the Form 2A and Form 15 permits for this pit location. The COAs for the Form 28 may supersede and/or update these existing COAs.

COA 90g - Per Rule 902.e, and under the Form 2A and Form 15 permits, this produced water storage and re-use pit is permitted for a maximum of three (3) years use. The operator shall cease using the pit after three (3) years use and immediately begin pit closure in accordance with Rule 905 unless the following conditions are met; 1) a Form 28, Application for a Centralized E&P Waste Management Facility, has been fully submitted, deemed

complete by COGCC, a Rio Blanco Permit has been obtained and submitted to COGCC, and the pit construction and operation is in full compliance with Rule 908.

COA 91 - Notify the COGCC 48 hours prior to start of pit site construction, pit liner installation, start of **hydrostatic testing / liner integrity testing**, start of pit use, and pipeline testing using the Form 42. Operator shall provide COGCC with **the alternative testing methods in lieu of standard hydrostatic testing. These methods shall test for leaks after detection upon installation of the primary and secondary liners and installation of the leak detection system(s).**

COA 93a - Groundwater Testing: Prior to pit operations, operator shall sample the following downgradient existing water well that have been identified by COGCC as being potential locations. The initial samples shall be collected prior to pit construction. Follow up sampling shall occur yearly during pit operations and continue for three years after pit closure:

Upgradient Water Well: Permit No. 213553 – Mantle, Dean & Brooke; domestic well; TD - 95'; perforated interval - 90' to 95'; no SWL reported; formation - bedrock; located approximately 2785' to the southwest (upgradient);

The groundwater samples will be analyzed for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

COA 93b - Surface water samples from Black Sulphur Creek (one upstream, one straight out from the pit, and one downstream from the produced water storage and re-use pit location), shall be collected prior to pit use and every 12 months (for the first three (3) years, and again at 6 (six) years to evaluate potential impacts from pit operations. No other surface water sampling will be required unless the analytical results indicate changes or impacts to surface water.

At a minimum, the surface water samples will be analyze for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

Pit Location Construction: The following conditions of approval (COAs) will apply to construction of the produced water storage and re-use pit location:

COA 23 - Operator must ensure secondary containment for fluids **transferred via truck and / or** contained at pit site during operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. **Any stormwater run-on / runoff berms or ditches constructed** at the pit site location shall be stabilized, inspected at regular intervals **during construction** (at least every 14 days and after precipitation events), and maintained in operational condition.

COA 76 - During construction of the access road **and the produced water storage and re-use pit facility location** (due to the very fine-grained nature of surface soils and materials in the area), operator shall strategically apply fugitive dust control measures, including encouraging established speed limits on private roads, to reduce fugitive dust and coating of vegetation and deposition in water sources. Operator shall also employ practices for control of fugitive dust caused by **URSA** operations, including, but not limited to the use of speed restrictions, regular road maintenance, and restriction of construction activity during high wind days. Additional management practices such as road surfacing, wind breaks and barriers may be used.

COA 24 - Operator shall stabilize exposed soils and slopes as an interim measure during operations at this produced water storage and re-use pit location.

COA 58 - Berms or other containment devices shall be constructed of corrugated steel (or equivalent) with an impervious liner, to contain any spilled or released material around temporary or permanent condensate/oil and /or produced water storage tanks.

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

COA 47 - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut.

COA 66 - Delivery **and vacuum** truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. Signs clearly marking the truck loading / unloading station shall be provided and maintained by the operator. The loading/unloading station will be the only permitted access for trucked fluids transfers to or from the pit.

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested **in accordance with the previously submitted integrity testing procedures and protocols.** **to the operating capacity of the pit facility.** **Operator shall notify the COGCC 48 hours prior to start of the hydrotest / integrity testing using the Form 42.** **Hydrostatic testing / integrity testing** results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry.

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids.

Operator shall adhere to the CDPHE Air Permit (which details hydrocarbon removal processes and sampling requirements) as attached to the Form 2A and Form 15.

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions with the Form 28 for this E&P Facility; as well as in accordance with the 900-Series Rules.

COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use.

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:

COA 26 - **Operator will comply with CDPHE Regulation 2 and COGCC's 800 series rules to control potential odors and VOC emissions associated with the water storage and water transfer operations for all fluids generated at nearby well pads that are sent to (including any flowback operations) at the produced water storage and re-use pit location.**

Material Handling and Spill Prevention: The following COAs will apply if any temporary surface or buried permanent offsite pipelines that are used at the produced water storage and re-use pit location :

COA 45 - Operator shall pressure test pipelines **within the pit facility location boundaries** in accordance with the new **1100 Series Rules - FLOWLINE REGULATIONS** (including **1101. Registration Requirements; 1102. Flowline and Crude Oil Transfer Line Requirements; 1103. Flowline and Crude Oil Transfer Line Valves; 1104. Integrity Management; and 1105. Abandonment**); prior to putting into initial service any temporary surface or permanent buried pipelines and following any reconfiguration of the pipeline network, and tested annually.

COA 46 - Operator will **attempt to** utilize, to the extent practical, all existing pipeline infrastructure for the storage and transfer of water for use at the produced water storage and re-use pit location or at nearby well pad locations. If temporary surface pipelines are needed, operator will utilize, to the extent practical, all existing access and other public roads, and/or existing pipeline right-of-ways, when placing/routing the surface pipelines. This will reduce surface disturbance and fragmentation of wildlife habitat in the area.

COA 48 - Operator must implement best management practices to contain any unintentional release of fluids along portions of **any surface pipeline within the pit facility location boundaries**. Operator must visually inspect the length of the surface pipeline to ensure integrity. Operator shall conduct daily inspections of surface poly pipeline **within the pit facility location boundaries** for leaks during active transfer of fluids and implement best management practices to contain any unintentional release of fluids along all portions of the surface pipelines **within the pit facility location boundaries**; especially where temporary pumps and other necessary equipment are located. Operator will endeavor to minimize surface disturbance during pipeline monitoring.

When in operation, pump stations along the surface poly or steel pipeline **within the pit facility location boundaries** will be continuously monitored to ensure response to pressure changes or pump issues, and in order to swiftly respond to any pump failure.

Spill Response: The following COAs will apply for any spills or releases from the pit and associated flowlines, pipelines, and other transfer equipment that are used at the produced water storage and re-use pit location:

COA 73a - All operator and contractor personnel working at the location during water storage and transfer operations must be trained on COGCC requirements for spill response and reporting (documentation of this training will be maintained in the operator's office/onsite trailer). Operator will hold and document weekly meetings during operations to refresh all personnel onsite regarding response and reporting requirements and staff responsibilities during spill events.

COA 73b - Operator will initially (first 14 days) conduct daily inspections of equipment for leaks and equipment problems. All equipment deficiencies must be corrected immediately or as soon as practical (all identified problems and corrections/repairs will be documented and records will be maintained in the operator's office/onsite trailer). Timely inspections should continue during the entire pit produced water storage and transfer operations.

COA 73c - A spill response trailer or spill response container will be available (within 15 minutes) at URSA's Rio Blanco Field Office; 24 hours a day, 7 days a week during construction and produced water storage and transfer operations to facilitate a timely response to any spills that may occur.

COA 73d - Appropriate heavy equipment (e.g., a backhoe, front end loader) will be staged near the location (available within 15 minutes) during all produced water storage and water transfer operations so that any emergency diversions or pits to contain spills can be built immediately upon discovery; or to quickly build additional earthen berms in the event of a spill outside of containment.

Form 15 #401642044 Pit Permit Conditions of Approval (COAs):

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

COA 47 - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut.

COA 66 - Delivery **and vacuum** truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. Signs clearly marking the truck loading / unloading

station shall be provided and maintained by the operator. The loading/unloading station will be the only permitted access for trucked fluids transfers to or from the pit.

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested **in accordance with the previously submitted integrity testing procedures and protocols. to the operating capacity of the pit facility.** **Operator shall notify the COGCC 48 hours prior to start of the hydrotest / integrity testing using the Form 42.** **Hydrostatic testing / integrity testing** results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry.

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids. **Operator shall adhere to the CDPHE Air Permit (which details hydrocarbon removal processes and sampling requirements) as attached to the Form 2A and Form 15.**

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions within the Form 28 for this E&P Facility; as well as in accordance with the **900 Series Rules**.

COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use.

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:

COA 26 - **Operator will comply with CDPHE Regulation 2 and COGCC's 800 series rules to control potential odors and VOC emissions associated with the water storage and water transfer operations for all fluids generated at nearby well pads that are sent to (including any flowback operations) at the produced water storage and re-use pit location.**

Material Handling and Spill Prevention: The following COA will apply any temporary surface or buried permanent **within the pit facility location boundaries** pipelines that are used at the produced water storage and re-use pit location:

COA 45 - Operator shall pressure test pipelines **within the pit facility location boundaries** in accordance with the new **1100 Series Rules - FLOWLINE REGULATIONS** (including **1101. Registration Requirements; 1102. Flowline and Crude Oil Transfer Line Requirements; 1103. Flowline and Crude Oil Transfer Line Valves; 1104. Integrity Management; and 1105. Abandonment**); prior to putting into initial service any temporary surface or permanent buried pipelines and following any reconfiguration of the pipeline network, and tested annually.

Spill Response: The following COAs will apply for any spills or releases from the pit and associated flowlines, pipelines, and other transfer equipment that are used at the produced water storage and re-use pit location:

COA 73a - All operator and contractor personnel working at the location during water storage and transfer operations must be trained on COGCC requirements for spill response and reporting (documentation of this training will be maintained in the operator's office/onsite trailer). Operator will hold and document weekly meetings during operations to refresh all personnel onsite regarding response and reporting requirements and staff responsibilities during spill events.

COA 73b - Operator will initially (first 14 days) conduct daily inspections of equipment for leaks and equipment problems. All equipment deficiencies must be corrected immediately or as soon as practical (all identified problems and corrections/repairs will be documented and records will be maintained in the operator's

office/onsite trailer). Timely inspections should continue during the entire pit produced water storage and transfer operations.

COA 73c - A spill response trailer or spill response container will be available (within 15 minutes) at URSA's Rio Blanco Field Office; 24 hours a day, 7 days a week during construction and produced water storage and transfer operations to facilitate a timely response to any spills that may occur.

COA 73d - Appropriate heavy equipment (e.g., a backhoe, front end loader) will be staged near the location (available within 15 minutes) during all produced water storage and water transfer operations so that any emergency diversions or pits to contain spills can be built immediately upon discovery; or to quickly build additional earthen berms in the event of a spill outside of containment.

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

Dave

David A. Kubeczko, PG
Oil and Gas Location Assessment Specialist
Western Colorado



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 *Please consider the environment before printing this e-mail*

From: Cari Mascioli [mailto:CMascioli@ursaresources.com]
Sent: Thursday, August 09, 2018 8:40 AM
To: Dave Kubeczko (dave.kubeczko@state.co.us)
Cc: Dwayne Knudson
Subject: RE: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Preliminary Draft Set of COAs

Good morning Dave,
The Ursa team met this week to review the preliminary draft COAs for the Boies Ranch Produced Water Pit, please find below Ursa's comments. If you have any questions or concerns regarding our comments, let's set up a meeting to discuss these COAs further.

Form 2A #401554105 Oil and Gas Location Assessment (OGLA) Permit Conditions of Approval (COAs):

Planning: The following conditions of approval (COA) will apply:

COA 90a - **Within 15 days of approval of the Form 2A OGLA Permit and Form 15 Pit Permit, and** Prior to start of pit site construction (blade to the ground), operator shall have adequate financial assurance per Rules 704 and

908.11.g.(1)B. At a minimum, the cost estimate amount shall be equivalent for the cost of construction of this phase. When the operator submits the Form 28 for this facility, a Pit Closure, Remediation, and Reclamation Cost Estimate for the entire location will be required.

Correct rule citation is 908.g.(1)B

COA 90b - Prior to first use of the produced water storage and re-use pit, operator shall submit and receive approval of an E&P Waste Management Plan per Rule 907.a.(3).

COA 90c - The operator has submitted a Draft Operations Plan consistent with the requirements per Rule 908. CENTRALIZED E&P WASTE MANAGEMENT FACILITIES; b. Permit requirements; (8) Operating plan. Prior to first use of the produced water storage and re-use pit, and based on any changes or revisions to the pit facility or plan of operations, operator shall submit an updated and revised Operating Plan and Contingency Plan, generally consistent with Rules 908.b.(8) and 908.b.(11) via Form 4 Sundry Notice. The Contingency Plan shall include procedures if liners are compromised and if fluids are found in the leak detection system.

COA 90d - Any additional conditions of approval (COAs) that will be attached to the proposed (currently not submitted) Form 28 Permit for the Centralized E&P facility (which must be submitted within 3 months of approval the Form 2A and Form 15 construction completion for this produced water storage and re-use pit) will also apply to the Form 2A and Form 15 permits for this pit location. The COAs for the Form 28 may supersede and/or update these existing COAs.

What does completed mean? Submitted and In Process?

COA 90e - Per Rule 902.e, and under the Form 2A and Form 15 permits, this produced water storage and re-use pit is permitted for a maximum of three (3) years use. The operator shall cease using the pit after three (3) years use and immediately begin pit closure in accordance with Rule 905 unless the following conditions are met; 1) a Form 28, Application for a Centralized E&P Waste Management Facility, has been fully submitted, deemed complete by COGCC, a Rio Blanco Permit has been obtained and submitted to COGCC, and the pit construction and operation is in full compliance with Rule 908.

COA 91 - Notify the COGCC 48 hours prior to start of pit site construction, pit liner installation, start of hydrostatic test, start of pit use, and pipeline testing using the Form 42. Operator will also need to notify the COGCC 48 hours prior to start of all hydraulic stimulation operations for nearby well pad locations that will use fluids from and return fluids to this pit using the Form 42 (the appropriate COGCC individuals will automatically be email notified, including the LGD for hydraulic stimulation operations).

Please include the alternative testing methods in lieu of hydrotesting discussed during the monthly meetings as an alternative, these methods included leak detection upon installation of primary and secondary liners and installation of leak detection system(s).

COA 92 - Operator must implement all operations detailed in the operating plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A in accordance with the 900-Series Rules.

COA is not necessary - operator must comply with the rules.

COA 93a - Groundwater Testing: Prior to pit operations, operator shall sample the following existing water wells (one upgradient and one downgradient) that have been identified by COGCC as being potential locations. The initial samples shall be collected prior to pit construction. Follow up sampling shall occur yearly during pit operations and continue for three years after pit closure:

Upgradient Water Well: Permit No. 213553 – Mantle, Dean & Brooke; domestic well; TD - 95'; perforated interval - 90' to 95'; no SWL reported; formation - bedrock; located approximately 2785' to the southwest (upgradient);

Downgradient Water Well: Permit No. 184556 – Mobil Oil Corporation; domestic well; TD - 6' bgs; open hole; SWL - 4' bgs; formation - alluvium; located approximately 2865' to the east-northeast (downgradient);

The groundwater samples will be analyzed for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

~~Documented refusal to grant access by well owner or surface owner (for water well), or if no water wells or springs are located/identified within approximately 1.5 miles, shall not constitute a violation of this COA.~~

~~Ursa agrees with this statement - URSA's monitoring wells will be more representative than the more distant wells that were not installed for the purpose of monitoring . The last sentence of the COA is extraneous~~

COA 93b - Surface water samples from Black Sulphur Creek (one upstream, one straight out from the pit, and one downstream from the produced water storage and re-use pit location), shall be collected prior to pit use and every 12 months (until pit closure) to evaluate potential impacts from pit operations. At a minimum, the surface water samples will be analyze for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

~~Ursa agrees with this statement - Annual samples from Black Sulphur Creek are not an effective way to evaluate potential impacts from pit operations - A groundwater testing program that uses the monitoring wells will be most effective at evaluating if there are impacts from pit operations.~~

Pit Location Construction: The following conditions of approval (COAs) will apply to construction of the produced water storage and re-use pit location:

COA 23 - Operator must ensure secondary containment for ~~any volume of~~ fluids contained at pit site during operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. All BMPs at the pit site location shall be stabilized, inspected at regular intervals (at least every 14 days and after precipitation events), and maintained in operational condition.

~~This COA appears to combine containment for containers that are not tanks and berms/grading for stormwater? COA 58 specifies the secondary containment requirements for tanks. See COA 74~~

COA 76 - During construction of the access road (due to the very fine-grained nature of surface soils and materials in the area), operator shall strategically apply fugitive dust control measures, including encouraging established speed limits on private roads, to reduce fugitive dust and coating of vegetation and deposition in water sources. Operator shall also employ practices for control of fugitive dust caused by ~~other Ursa~~ operations, including, but not limited to the use of speed restrictions, regular road maintenance, and restriction of construction activity during high wind days. Additional management practices such as road surfacing, wind breaks and barriers may be used.

COA 24 - Operator shall stabilize exposed soils and slopes as an interim measure during operations at this produced water storage and re-use pit location.

COA 58 - Berms or other containment devices shall be constructed of corrugated steel (or equivalent) with an impervious liner, to contain any spilled or released material around temporary or permanent condensate/oil and /or produced water storage tanks.

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

COA 47a - The produced water storage and re-use pit must be double-lined as shown on the Design Drawings and Construction Layout Drawings and the liners must be in compliance with **Rule 904. PIT LINING REQUIREMENTS AND SPECIFICATIONS**; including Rule 904.d. which states liner thickness, anchoring, and foundation requirements; and Rule 904.e. which states that the pit will have a leak detection system.

Unnecessary restatement of rules

~~**COA 47b** - The produced water storage and re-use pit liners cannot be installed until the operator has obtained their Special Use Permit for this facility from Rio Blanco County. Operator will provide a signed copy of this permit via a Form 4 Sundry Notice, and will also provide the required notifications to all agencies prior to pit liner installation. Ursa agrees with this statement - Seems not enforceable by COGCC?, should pit liner installation be tied to the Rio Blanco permit?~~

COA 47c - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. ~~Operators must submit a P.E. approved/stamped as-built drawing (plan view and cross sections) of the pit within 14 days of construction. Covered by COA 61.~~

COA 66 - Delivery and vacuum truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. ~~Signs clearly marking the truck loading/unloading station shall be provided and maintained by the operator.~~ The loading/unloading station will be the only permitted access for ~~manual trucked~~ fluids transfers (if necessary) to or from the pit. ~~Specifically excluded from this COA are skimming and oil transferring operations.~~

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction ~~completion~~ of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested to the operating capacity of the pit facility (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of ~~72-24~~ hours prior to either draining the pit or commencing operations. Operator shall notify the COGCC 48 hours prior to ~~start of the hydrotest~~ using the Form 42. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry.

Test using fresh water?

~~Please include the alternative testing methods in lieu of hydrotesting discussed during the monthly meetings as an alternative, these methods included leak detection upon installation of primary and secondary liners and installation of leak detection system(s).~~

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids.

This COA appears to refer to off-location flowback fluid storage and management? Will completions fluids from flowback be stored in the pit or processed at the location or only produced water?

Reference CDPHE Air Permit with detailed hydrocarbon removal processes and sampling requirements, already provided to D. Kubeczko.

~~**COA 41** - No oil or condensate is permitted on the surface of completions fluids.~~

See above comment

Please remove.

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions with the Form 28 for this E&P Facility; as well as in accordance with the 900-Series Rules.

COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use, after hydrostatic testing and be based on submittal of the Form 42 providing that date.

How does this COA mesh with COA #90d

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:

~~**COA 26** - Potential odors associated with the water storage and water transfer operations (including any flowback operations) must be controlled/mitigated.~~

Will flowback go to this location?

Proposed COA - Ursa will comply with CDPHE regulation 2 and COGCC 800 series regulations governing odors.

~~**COA 33** - Operator shall follow all requirements of COGCC's current policy - **NOTICE TO OPERATORS, Rule 912. VENTING OR FLARING PRODUCED NATURAL GAS - STATEWIDE, dated January 12, 2016,** and to **Rule 912. VENTING OR FLARING NATURAL GAS, a. thru e.** in regards to venting and flaring.~~

Don't specify a date for the policy - it is being currently updated.

This COA is not applicable to the Pit.

Material Handling and Spill Prevention: The following COAs will apply to the Form 2A and Form 15 permits if any temporary surface (COAs 45, 47, 48, and 49) or buried permanent offsite pipelines (poly or steel, COA 45) that are used either at the produced water storage and re-use pit location or at nearby well pad locations that will use fluids from and return fluids to this pit during completion operations:

~~**COA 45** - Operator shall pressure test pipelines (any temporary surface lines used for hydraulic stimulation and/or flowback operations) in accordance with the new **1100 Series Rules - FLOWLINE REGULATIONS** (including **1101. Registration Requirements; 1102. Flowline and Crude Oil Transfer Line Requirements; 1103. Flowline and Crude Oil Transfer Line Valves; 1104. Integrity Management; and 1105. Abandonment**); prior to putting into initial service any temporary surface or permanent buried pipelines and following any reconfiguration of the pipeline network, and tested annually, unless agreed to by both parties that the flowlines can be managed under an approved COGCC variance.~~

Is this a COA for that only specifies compliance with the rules or are we asking for more?

This COA is not applicable to the Pit.

COA 46 - Operator will attempt to utilize, to the extent practical, all existing pipeline infrastructure for the storage and transfer of water for use at the produced water storage and re-use pit location or at nearby well pad locations. If temporary surface pipelines are needed, operator will utilize, to the extent practical, all existing access and other public

roads, and/or existing pipeline right-of-ways, when placing/routing the surface pipelines. This will reduce surface disturbance and fragmentation of wildlife habitat in the area.

COA 48 - Operator must implement best management practices to contain any unintentional release of fluids along all portions of the surface pipeline route. Operator must visually inspect the entire length of the surface pipeline to ensure integrity. Operator shall conduct daily inspections of surface poly pipeline routes for leaks during active transfer of fluids and implement best management practices to contain any unintentional release of fluids along all portions of the surface pipelines; especially where temporary pumps and other necessary equipment are located. Operator will endeavor to minimize surface disturbance during pipeline monitoring. When in operation, pump stations along the surface poly or steel pipeline route will be continuously monitored to ensure response to pressure changes or pump issues, and in order to swiftly respond to any pump failure.

Please reword to be specific i.e. lines within pit disturbance.

COA 49 - Operator must utilize appropriate secondary containment for any volume of fluids that may be released before pump shut down from the surface pipeline at all stream and intermittent stream crossings. For stream or intermittent stream crossings, operator will ensure appropriate containment that may include 1) installing over-sized pipe "sleeves" which extend the length of the crossing and beyond to a distance deemed adequate to capture and/or divert any possible release of fluids and prevent infusion into the stream water; 2) catchment basins sized and constructed to contain fluid; 3) valves at both ends of the crossing; and/or 4) other comparable containment measures determined by the operator.

Please reword to be specific i.e. lines within pit disturbance.

Nearby Well Completions Operations: The following conditions of approval (COAs) will apply to the produced water storage and re-use pit location during water storage and transfer activities as well as completion operations at nearby locations:

~~**COA 91** - Notify the COGCC 48 hours prior to start of all hydraulic stimulation operations for nearby well pad locations that will use fluids from and return fluids to this pit using the Form 42 (the appropriate COGCC individuals will automatically be email notified, including the LGD for hydraulic stimulation operations).~~

~~**COA 25** - No open top tanks can be used for water storage, water transfer, or initial flowback fluids containment. In accordance with COGCC rules, the tanks will be set on compacted earth to decrease the permeability of the soil. All flowback and stimulation fluids from the wells/pads being completed using fluids from this pit (if applicable) must be sent to tanks, separators, or other containment/filtering equipment before the fluids can be placed into any pipeline or storage vessel located on the well pad; or into tanker trucks for delivery back to this pit.~~

~~**COA 27** - Potential odors associated with completion activities and operations must be controlled/mitigated.~~
Please remove these COAs.

Form 15 #401642044 Pit Permit Conditions of Approval (COAs):

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

See above comments regarding these COAs

COA 47a - The produced water storage and re-use pit must be double-lined as shown on the Design Drawings and Construction Layout Drawings and the liners must be in compliance with **Rule 904. PIT LINING REQUIREMENTS AND SPECIFICATIONS**; including Rule 904.d. which states liner thickness, anchoring, and foundation requirements; and Rule 904.e. which states that the pit will have a leak detection system.

COA 47b - The produced water storage and re-use pit liners cannot be installed until the operator has obtained their Special Use Permit for this facility from Rio Blanco County. Operator will provide a signed copy of this permit via a Form 4 Sundry Notice, and will also provide the required notifications to all agencies prior to pit liner installation.

Ursa agrees with this statement - Seems not enforceable by COGCC?, should pit liner installation be tied to the Rio Blanco permit?

COA 47c - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. ~~Operators must submit a P.E. approved/stamped as-built drawing (plan view and cross sections) of the pit within 14 days of construction. Covered by COA 61.~~

COA 66 - Delivery and vacuum truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. ~~Signs clearly marking the truck loading/unloading station shall be provided and maintained by the operator.~~ The loading/unloading station will be the only permitted access for manual trucked fluids transfers (if necessary) to or from the pit. ~~Specifically excluded from this COA are skimming and oil transferring operations.~~

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction completion of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested to the operating capacity of the pit facility (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of ~~72~~ 24 hours prior to either draining the pit or commencing operations. Operator shall notify the COGCC 48 hours prior to start of the hydrotest using the Form 42. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry. ~~Please include the alternative testing methods in lieu of hydrotesting discussed during the monthly meetings as an alternative, these methods included leak detection upon installation of primary and secondary liners and installation of leak detection system(s).~~

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids.

This COA appears to refer to off-location flowback fluid storage and management? Will completions fluids from flowback be stored in the pit or processed at the location or only produced water?

~~Reference CDPHE Air Permit with detailed hydrocarbon removal processes and sampling requirements, already provided to D. Kubeczko.~~

~~**COA 41** - No oil or condensate is permitted on the surface of completions fluids.~~
See above comment
~~Please remove.~~

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions within the Form 28 for this E&P Facility; as well as in accordance with the **900 Series Rules**.

COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use, **after hydrostatic testing and be based on submittal of the Form 42 providing that date.**

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:
See above comments regarding these COAs

~~**COA 26** - Potential odors associated with the water storage and water transfer operations (including any flowback operations) must be controlled/mitigated.~~

~~*Will flowback go to this location?*~~

~~Proposed COA - Ursa will comply with CDPHE regulation 2 and COGCC 800 series regulations governing odors.~~

~~**COA 33** - Operator shall follow all requirements of COGCC's current policy - **NOTICE TO OPERATORS, Rule 912. VENTING OR FLARING PRODUCED NATURAL GAS - STATEWIDE, dated January 12, 2016,** and to **Rule 912. VENTING OR FLARING NATURAL GAS, a. thru e.** in regards to venting and flaring.~~

~~*Don't specify a date for the policy - it is being currently updated.*~~

~~This COA is not applicable to the Pit.~~

Thank you,
Cari

Cari Mascioli

Regulatory Analyst
Office: (970) 284-3244
Cell: (970) 319-8236
CMascioli@ursaresources.com

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

Sent: Wednesday, August 1, 2018 12:14 PM

To: Dwayne Knudson <dknudson@ursaresources.com>; Cari Mascioli <CMascioli@ursaresources.com>

Subject: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Preliminary Draft Set of COAs

Importance: High

Cari and Dwayne,

Below are Alex Fischer's comments and either revised and / or additional COAs he has requested for the either the Form 2A or Form 15 on July 19, 2018 (1st email) and July 18, 2018 (2nd email), which were from the original set of COAs sent to COGCC-Denver on July 12, 2018:

Below those two excerpts from emails are John Noto's comments and either revised and / or additional COAs he has requested for the either the Form 2A or Form 15 on July 19, 2018, which were from the original set of COAs sent to COGCC-Denver on July 12, 2018:

Please review this *“Preliminary Draft Set of Conditions of Approval (COAs)”* for URSA Operating Company’s, Boies Ranch Produced Water Pit Location (Rio Blanco County, NENW, Sec 33, T2S, R98W) as submitted under **Form 2A #401554105** (06-21-18) and **Form 15 #401642044** (06-07-18) for your review and comment. These and/or similar COAs may become part of the Form 28 Permit. Please get back to me as soon as with any issues, concerns, or revisions for these COAs. If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or email. Thanks.

Dave

From: Fischer - DNR, Alex [mailto:alex.fischer@state.co.us]
Sent: Thursday, July 19, 2018 12:18 PM
To: John Noto - DNR
Cc: Dave Kubezko; Stan Spencer - DNR; Greg Deranleau; Craig Burger - DNR; Steven Arauza - DNR
Subject: Re: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Preliminary Draft Set of COAs

All-

My mistake for not reading Dave's COAs thoroughly. I included the following COAs on the Form 15:

- Within 6 months of approval of the Form 2A and Form 15 for the Pit Facility, the Operator shall submit a completed Form 28 Permit for the Boies Ranch Produced Water Pit Centralized E&P Waste Management Facility.
- Within 30-days of the Form 15 approval and prior to first use of the Pit Facility, provide Financial Assurance as required by Rule 704. The COGCC will have a third party review the closure of the facility and prepare an independent closure estimate. Should the independent estimate be greater than what is provided, the Operator shall provide the additional financial assurance to address the short fall.

Dave has 3-months for the Form 28 submittal and 15 days for the Financial Assurance. It really doesn't matter to me if it 3 months vs 6 months or 15 days vs 30 days. We want a comprehensive Form 28, and if it takes additional time (30-days) then that is fine. We just need to be consistent with the COAs.

Thanks
Alex

From: Fischer - DNR, Alex [mailto:alex.fischer@state.co.us]
Sent: Wednesday, July 18, 2018 6:14 AM
To: John Noto - DNR
Cc: Dave Kubezko; Stan Spencer - DNR; Greg Deranleau; Craig Burger - DNR; Steven Arauza - DNR
Subject: Re: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Preliminary Draft Set of COAs

All,

The Form 15 will also have the following COA Form 15:

- Within 30 days of the Form 15 approval and prior to first use of the Pit Facility, provide Financial Assurance as required by Rule 704. The COGCC will have a third party review the closure of the facility and prepare an independent closure estimate. Should the independent estimate be greater than what is provided, the Operator shall provide the additional financial assurance to address the short fall.

Thanks
Alex

From: John Noto - DNR [mailto:john.noto@state.co.us]
Sent: Thursday, July 19, 2018 11:38 AM

To: Dave Kubeczko

Cc: Alex Fischer - DNR; Stan Spencer - DNR; Greg Deranleau; Craig Burger - DNR

Subject: Re: URSA Operating Company LLC, Boies Ranch Produced Water Pit Location_Form 2A #401554105_Form 15 #401642044_OGLA Reveiw and Preliminary Draft Set of COAs

Dave,

My comments are in *blue italic* below:

Form 2A #401554105 Oil and Gas Location Assessment (OGLA) Permit Conditions of Approval (COAs):

Planning: The following conditions of approval (COA) will apply:

COA 90a - Within 15 days of approval of the Form 2A OGLA Permit and Form 15 Pit Permit, and prior to start of pit site construction (blade to the ground), operator shall have adequate financial assurance per Rules 704 and 908.11.g.(1)B. At a minimum, the cost estimate amount shall be equivalent for the cost of construction of this phase. When the operator submits the Form 28 for this facility, a Pit Closure, Remediation, and Reclamation Cost Estimate for the entire location will be required.

Correct rule citation is 908.g.(1)B

COA 90b - Prior to first use of the produced water storage and re-use pit, operator shall submit and receive approval of an E&P Waste Management Plan per Rule 907.a.(3).

COA 90c - The operator has submitted a Draft Operations Plan consistent with the requirements per Rule 908. CENTRALIZED E&P WASTE MANAGEMENT FACILITIES; b. Permit requirements; (8) Operating plan. Prior to first use of the produced water storage and re-use pit, and based on any changes or revisions to the pit facility or plan of operations, operator shall submit an updated and revised Operating Plan and Contingency Plan, generally consistent with Rules 908.b.(8) and 908.b.(11) via Form 4 Sundry Notice. The Contingency Plan shall include procedures if liners are compromised and if fluids are found in the leak detection system.

COA 90d - Any additional conditions of approval (COAs) that will be attached to the proposed (currently not submitted) Form 28 Permit for the Centralized E&P facility (which must be **completed** within 3 months of approval the Form 2A and Form 15 for this produced water storage and re-use pit) will also apply to the Form 2A and Form 15 permits for this pit location. The COAs for the Form 28 may supersede and/or update these existing COAs.

What does completed mean? Submitted and In Process?

COA 90e - Per Rule 902.e, and under the Form 2A and Form 15 permits, this produced water storage and re-use pit is permitted for a maximum of three (3) years use. The operator shall cease using the pit after three (3) years use and immediately begin pit closure in accordance with Rule 905 unless the following conditions are met; 1) a Form 28, Application for a Centralized E&P Waste Management Facility, has been fully submitted, deemed complete by COGCC, a Rio Blanco Permit has been obtained and submitted to COGCC, and the pit construction and operation is in full compliance with Rule 908.

COA 91 - Notify the COGCC 48 hours prior to start of pit site construction, pit liner installation, start of hydrostatic test, start of pit use, and pipeline testing using the Form 42. Operator will also need to notify the COGCC 48 hours prior to start of all hydraulic stimulation operations for nearby well pad locations that will use fluids from and return fluids to this pit using the Form 42 (the appropriate COGCC individuals will automatically be email notified, including the LGD for hydraulic stimulation operations).

COA 92 - Operator must implement all operations detailed in the operating plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A in accordance with the 900-Series Rules.

COA is not necessary - operator must comply with the rules.

COA 93a - Groundwater Testing: Prior to pit operations, operator shall sample the following existing water wells (one upgradient and one downgradient) that have been identified by COGCC as being potential locations. The initial samples shall be collected prior to pit construction. Follow up sampling shall occur yearly during pit operations and continue for three years after pit closure:

Upgradient Water Well: Permit No. 213553 – Mantle, Dean & Brooke; domestic well; TD - 95'; perforated interval - 90' to 95'; no SWL reported; formation - bedrock; located approximately 2785' to the southwest (upgradient);

Downgradient Water Well: Permit No. 184556 – Mobil Oil Corporation; domestic well; TD - 6' bgs; open hole; SWL - 4' bgs; formation - alluvium; located approximately 2865' to the east-northeast (downgradient); The groundwater samples will be analyzed for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

Documented refusal to grant access by well owner or surface owner (for water well), or if no water wells or springs are located/identified within approximately 1.5 miles, shall not constitute a violation of this COA.

URSA's monitoring wells will be more representative than the more distant wells that were not installed for the purpose of monitoring . The last sentence of the COA is extraneous

COA 93b - Surface water samples from Black Sulphur Creek (one upstream, one straight out from the pit, and one downstream from the produced water storage and re-use pit location), shall be collected prior to pit use and every 12 months (until pit closure) to evaluate potential impacts from pit operations. At a minimum, the surface water samples will be analyze for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

Annual samples from Black Sulphur Creek are not an effective way to evaluate potential impacts from pit operations - A groundwater testing program that uses the monitoring wells will be most effective at evaluating if there are impacts from pit operations.

Pit Location Construction: The following conditions of approval (COAs) will apply to construction of the produced water storage and re-use pit location:

COA 23 - Operator must ensure secondary containment for any volume of fluids contained at pit site during operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. All BMPs at the pit site location shall be stabilized, inspected at regular intervals (at least every 14 days and after precipitation events), and maintained in operational condition.

This COA appears to combine containment for containers that are not tanks and berms/grading for stormwater? COA 58 specifies the secondary containment requirements for tanks. See COA 74

COA 76 - During construction of the access road (due to the very fine-grained nature of surface soils and materials in the area), operator shall strategically apply fugitive dust control measures, including encouraging established speed limits on private roads, to reduce fugitive dust and coating of vegetation and deposition in water sources. Operator shall also employ practices for control of fugitive dust caused by other operations, including, but not limited to the use of speed restrictions, regular road maintenance, and restriction of construction activity during high wind days. Additional management practices such as road surfacing, wind breaks and barriers may be used.

COA 24 - Operator shall stabilize exposed soils and slopes as an interim measure during operations at this produced water storage and re-use pit location.

COA 58 - Berms or other containment devices shall be constructed of corrugated steel (or equivalent) with an impervious liner, to contain any spilled or released material around temporary or permanent condensate/oil and /or produced water storage tanks.

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

COA 47a - The produced water storage and re-use pit must be double-lined as shown on the Design Drawings and Construction Layout Drawings and the liners must be in compliance with **Rule 904. PIT LINING REQUIREMENTS AND SPECIFICATIONS**; including Rule 904.d. which states liner thickness, anchoring, and foundation requirements; and Rule 904.e. which states that the pit will have a leak detection system.

Unnecessary restatement of rules

COA 47b - The produced water storage and re-use pit liners cannot be installed until the operator has obtained their Special Use Permit for this facility from Rio Blanco County. Operator will provide a signed copy of this permit via a Form 4 Sundry Notice, and will also provide the required notifications to all agencies prior to pit liner installation.

Seems not enforceable by COGCC?, should pit liner installation be tied to the Rio Blanco permit?

COA 47c - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. Operators must submit a P.E. approved/stamped as-built drawing (plan view and cross sections) of the pit within 14 days of construction.

COA 66 - Delivery and vacuum truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. Signs clearly marking the truck loading/unloading station shall be provided and maintained by the operator. The loading/unloading station will be the only permitted access for manual fluids transfers (if necessary) to or from the pit.

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested to the operating capacity of the pit facility (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of 72 hours prior to either draining the pit or commencing operations. Operator shall notify the COGCC 48 hours prior to start of the hydrotest using the Form 42. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry.

Test using fresh water?

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids.

This COA appears to refer to off-location flowback fluid storage and management? Will completions fluids from flowback be stored in the pit or processed at the location or only produced water?

COA 41 - No oil or condensate is permitted on the surface of completions fluids.

See above comment

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions with the Form 28 for this E&P Facility; as well as in accordance with the 900-Series Rules.

COA 19 - Without an approved Form 28 for a “Centralized E&P Waste Management Facility”, the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use after hydrostatic testing and be based on submittal of the Form 42 providing that date.

How does this COA mesh with COA #90d

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:

COA 26 - Potential odors associated with the water storage and water transfer operations (including any flowback operations) must be controlled/mitigated.

Will flowback go to this location?

COA 33 - Operator shall follow all requirements of COGCC’s current policy - **NOTICE TO OPERATORS, Rule 912. VENTING OR FLARING PRODUCED NATURAL GAS – STATEWIDE, dated January 12, 2016;** and to **Rule 912. VENTING OR FLARING NATURAL GAS. a. thru e.** in regards to venting and flaring.

Don't specify a date for the policy - it is being currently updated.

Material Handling and Spill Prevention: The following COAs will apply to the Form 2A and Form 15 permits if any temporary surface (COAs 45, 47, 48, and 49) or buried permanent offsite pipelines (poly or steel, COA 45) that are used either at the produced water storage and re-use pit location or at nearby well pad locations that will use fluids from and return fluids to this pit during completion operations:

COA 45 - Operator shall pressure test pipelines (any temporary surface lines used for hydraulic stimulation and/or flowback operations) in accordance with the new **1100 Series Rules - FLOWLINE REGULATIONS (including 1101. Registration Requirements; 1102. Flowline and Crude Oil Transfer Line Requirements; 1103. Flowline and Crude Oil Transfer Line Valves; 1104. Integrity Management; and 1105. Abandonment);** prior to putting into initial service any temporary surface or permanent buried pipelines and following any reconfiguration of the pipeline network, and tested annually, unless agreed to by both parties that the flowlines can be managed under an approved COGCC variance.

Is this a COA for that only specifies compliance with the rules or are we asking for more?

COA 46 - Operator will utilize, to the extent practical, all existing pipeline infrastructure for the storage and transfer of water for use at the produced water storage and re-use pit location or at nearby well pad locations. If temporary surface pipelines are needed, operator will utilize, to the extent practical, all existing access and other public roads, and/or existing pipeline right-of-ways, when placing/routing the surface pipelines. This will reduce surface disturbance and fragmentation of wildlife habitat in the area.

COA 48 - Operator must implement best management practices to contain any unintentional release of fluids along all portions of the surface pipeline route. Operator must visually inspect the entire length of the surface pipeline to ensure integrity. Operator shall conduct daily inspections of surface poly pipeline routes for leaks during active transfer of fluids and implement best management practices to contain any unintentional release of fluids along all portions of the surface pipelines; especially where temporary pumps and other necessary equipment are located. Operator will endeavor to minimize surface disturbance during pipeline monitoring.

When in operation, pump stations along the surface poly or steel pipeline route will be continuously monitored to ensure response to pressure changes or pump issues, and in order to swiftly respond to any pump failure.

COA 49 - Operator must utilize appropriate secondary containment for any volume of fluids that may be released before pump shut down from the surface pipeline at all stream and intermittent stream crossings. For stream or intermittent stream crossings, operator will ensure appropriate containment that may include 1) installing over-sized pipe “sleeves” which extend the length of the crossing and beyond to a distance deemed adequate to capture and/or divert any possible release of fluids and prevent infusion into the stream water; 2) catchment basins sized and constructed to contain fluid; 3) valves at both ends of the crossing; and/or 4) other comparable containment measures determined by the operator.

Nearby Well Completions Operations: The following conditions of approval (COAs) will apply to the produced water storage and re-use pit location during water storage and transfer activities as well as completion operations at nearby locations:

COA 91 - Notify the COGCC 48 hours prior to start of all hydraulic stimulation operations for nearby well pad locations that will use fluids from and return fluids to this pit using the Form 42 (the appropriate COGCC individuals will automatically be email notified, including the LGD for hydraulic stimulation operations).

COA 25 - No open top tanks can be used for water storage, water transfer, or initial flowback fluids containment. In accordance with COGCC rules, the tanks will be set on compacted earth to decrease the permeability of the soil. All flowback and stimulation fluids from the wells/pads being completed using fluids from this pit (if applicable) must be sent to tanks, separators, or other containment/filtering equipment before the fluids can be placed into any pipeline or storage vessel located on the well pad; or into tanker trucks for delivery back to this pit.

COA 27 - Potential odors associated with completion activities and operations must be controlled/mitigated.

Form 15 #401642044 Pit Permit Conditions of Approval (COAs):

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

See above comments regarding these COAs

COA 47a - The produced water storage and re-use pit must be double-lined as shown on the Design Drawings and Construction Layout Drawings and the liners must be in compliance with **Rule 904. PIT LINING REQUIREMENTS AND SPECIFICATIONS**; including Rule 904.d. which states liner thickness, anchoring, and foundation requirements; and Rule 904.e. which states that the pit will have a leak detection system.

COA 47b - The produced water storage and re-use pit liners cannot be installed until the operator has obtained their Special Use Permit for this facility from Rio Blanco County. Operator will provide a signed copy of this permit via a Form 4 Sundry Notice, and will also provide the required notifications to all agencies prior to pit liner installation.

COA 47c - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. Operators must submit a P.E. approved/stamped as-built drawing (plan view and cross sections) of the pit within 14 days of construction.

COA 66 - Delivery and vacuum truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. Signs clearly marking the truck loading/unloading station shall be provided and maintained by the operator. The loading/unloading station will be the only permitted access for manual fluids transfers (if necessary) to or from the pit.

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested to the operating capacity of the pit facility (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of 72 hours prior to either draining the pit or commencing operations. Operator shall notify the COGCC 48 hours prior to start of the hydrotest using the Form 42. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry.

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids.

COA 41 - No oil or condensate is permitted on the surface of completions fluids.

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions within the Form 28 for this E&P Facility; as well as in accordance with the **900 Series Rules**.

COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use after hydrostatic testing and be based on submittal of the Form 42 providing that date.

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:

See above comments regarding these COAs

COA 26 - Potential odors associated with the water storage and water transfer operations (including any flowback fluid off-loading from nearby completion operations) must be controlled/mitigated.

COA 33 - Operator shall follow all requirements of COGCC's current policy - **NOTICE TO OPERATORS, Rule 912.**

VENTING OR FLARING PRODUCED NATURAL GAS – STATEWIDE, dated January 12, 2016; and to **Rule 912.**

VENTING OR FLARING NATURAL GAS. a. thru e. in regard

Please call me if you have questions or want to discuss.

Thanks,
John

On Tue, Jul 17, 2018 at 11:39 AM John Noto - DNR <john.noto@state.co.us> wrote:

Dave,

I am reviewing the COAs today. Hope to have feedback to you by tomorrow.

Thanks,
John

On Thu, Jul 12, 2018 at 8:58 AM Dave Kubeczko - DNR <dave.kubeczko@state.co.us> wrote:

All,

Below is a "**Preliminary Draft Set of Conditions of Approval (COAs)**" for URSA Operating Company's, Boies Ranch Produced Water Pit Location (Rio Blanco County, NENW, Sec 33, T2S, R98W) as submitted under **Form 2A**

#401554105 (06-21-18) and **Form 15 #401642044** (06-07-18) for your review and comment. These have not been sent to the operator.

These and/or similar COAs may become part of the Form 28 Permit. If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or email. Thanks.

Dave

David A. Kubeczko, PG
Oil and Gas Location Assessment Specialist
Western Colorado

Colorado Oil & Gas Conservation Commission
Northwest Area Office

796 Megan Avenue, Suite 201
Rifle, CO 81650
FAX: (970) 625-5682
Cell: (970) 309-2514
dave.kubeczko@state.co.us | www.colorado.gov/cogcc

 *Please consider the environment before printing this e-mail*

This Email “HAS NOT” been sent to the operator.

Cari and Dwayne,

I have been reviewing the URSA Operating Company LLC (URSA), Boies Ranch Produced Water Pit Location (Rio Blanco County, NENW, Sec 33, T2S, R98W) **Form 2A #401554105** (06-21-18) and **Form 15 #401642044** (06-07-18). COGCC would like to attach the following conditions of approval (COAs) based on the information and data URSA has submitted on or attached to the Form 2A and the Form 15 permits, or provided to COGCC since submittal of these permits, prior to passing the Oil and Gas Location Assessment (OGLA) review.

Form 2A #401554105 Oil and Gas Location Assessment (OGLA) Permit Conditions of Approval (COAs):

Planning: The following conditions of approval (COA) will apply:

COA 90a - Within 15 days of approval of the Form 2A OGLA Permit and Form 15 Pit Permit, and prior to start of pit site construction (blade to the ground), operator shall have adequate financial assurance per Rules 704 and 908.11.g.(1)B. At a minimum, the cost estimate amount shall be equivalent for the cost of construction of this phase. When the operator submits the Form 28 for this facility, a Pit Closure, Remediation, and Reclamation Cost Estimate for the entire location will be required.

COA 90b - Prior to first use of the produced water storage and re-use pit, operator shall submit and receive approval of an E&P Waste Management Plan per Rule 907.a.(3).

COA 90c - The operator has submitted a Draft Operations Plan consistent with the requirements per Rule 908. CENTRALIZED E&P WASTE MANAGEMENT FACILITIES; b. Permit requirements; (8) Operating plan. Prior to first use of the produced water storage and re-use pit, and based on any changes or revisions to the pit facility or plan of operations, operator shall submit an updated and revised Operating Plan and Contingency Plan, generally consistent with Rules 908.b.(8) and 908.b.(11) via Form 4 Sundry Notice. The Contingency Plan shall include procedures if liners are compromised and if fluids are found in the leak detection system.

COA 90d - Any additional conditions of approval (COAs) that will be attached to the proposed (currently not submitted) Form 28 Permit for the Centralized E&P facility (which must be completed within 3 months of approval the Form 2A and Form 15 for this produced water storage and re-use pit) will also apply to the Form 2A and Form 15 permits for this pit location. The COAs for the Form 28 may supersede and/or update these existing COAs.

COA 90e - Per Rule 902.e, and under the Form 2A and Form 15 permits, this produced water storage and re-use pit is permitted for a maximum of three (3) years use. The operator shall cease using the pit after three (3) years use and immediately begin pit closure in accordance with Rule 905 unless the following conditions are met; 1) a Form 28, Application for a Centralized E&P Waste Management Facility, has been fully submitted, deemed complete by COGCC, a Rio Blanco Permit has been obtained and submitted to COGCC, and the pit construction and operation is in full compliance with Rule 908.

COA 91 - Notify the COGCC 48 hours prior to start of pit site construction, pit liner installation, start of hydrostatic test, start of pit use, and pipeline testing using the Form 42. Operator will also need to notify the COGCC 48 hours prior to start of all hydraulic stimulation operations for nearby well pad locations that will use fluids from and return fluids to this pit using the Form 42 (the appropriate COGCC individuals will automatically be email notified, including the LGD for hydraulic stimulation operations).

COA 92 - Operator must implement all operations detailed in the operating plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A in accordance with the 900-Series Rules.

COA 93a - Groundwater Testing: Prior to pit operations, operator shall sample the following existing water wells (one upgradient and one downgradient) that have been identified by COGCC as being potential locations. The initial samples shall be collected prior to pit construction. Follow up sampling shall occur yearly during pit operations and continue for three years after pit closure:

Upgradient Water Well: Permit No. 213553 – Mantle, Dean & Brooke; domestic well; TD - 95'; perforated interval - 90' to 95'; no SWL reported; formation - bedrock; located approximately 2785' to the southwest (upgradient);

Downgradient Water Well: Permit No. 184556 – Mobil Oil Corporation; domestic well; TD - 6' bgs; open hole; SWL - 4' bgs; formation - alluvium; located approximately 2865' to the east-northeast (downgradient); The groundwater samples will be analyzed for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

Documented refusal to grant access by well owner or surface owner (for water well), or if no water wells or springs are located/identified within approximately 1.5 miles, shall not constitute a violation of this COA.

COA 93b - Surface water samples from Black Sulphur Creek (one upstream, one straight out from the pit, and one downstream from the produced water storage and re-use pit location), shall be collected prior to pit use and every 12 months (until pit closure) to evaluate potential impacts from pit operations. At a minimum, the surface water samples will be analyze for pH, specific conductance, total dissolved solids (TDS), dissolved gases (methane, ethane, propane), alkalinity (total bicarbonate and carbonate as CaCO₃), major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, phosphorus), major cations (calcium, iron, magnesium, manganese, potassium, sodium), other elements (barium, boron, selenium and strontium), presence of bacteria (iron related, sulfate reducing, slime forming), total petroleum hydrocarbons (TPH) and BTEX compounds (benzene, toluene, ethylbenzene and xylenes). Field observations such as odor, water color, sediment, bubbles, and effervescence shall also be documented. The location of the sampled Water Sources shall be surveyed in accordance with Rule 215.

Pit Location Construction: The following conditions of approval (COAs) will apply to construction of the produced water storage and re-use pit location:

COA 23 - Operator must ensure secondary containment for any volume of fluids contained at pit site during operations; including, but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e., best management practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. All BMPs at the pit site location shall be stabilized, inspected at regular intervals (at least every 14 days and after precipitation events), and maintained in operational condition.

COA 76 - During construction of the access road (due to the very fine-grained nature of surface soils and materials in the area), operator shall strategically apply fugitive dust control measures, including encouraging established speed limits on private roads, to reduce fugitive dust and coating of vegetation and deposition in water sources. Operator shall also employ practices for control of fugitive dust caused by other operations, including, but not limited to the use of speed restrictions, regular road maintenance, and restriction of construction activity during high wind days. Additional management practices such as road surfacing, wind breaks and barriers may be used.

COA 24 - Operator shall stabilize exposed soils and slopes as an interim measure during operations at this produced water storage and re-use pit location.

COA 58 - Berms or other containment devices shall be constructed of corrugated steel (or equivalent) with an impervious liner, to contain any spilled or released material around temporary or permanent condensate/oil and /or produced water storage tanks.

Earthen Pit Construction: The following conditions of approval (COAs) will apply for construction of the produced water storage and re-use pit and ancillary facilities:

COA 47a - The produced water storage and re-use pit must be double-lined as shown on the Design Drawings and Construction Layout Drawings and the liners must be in compliance with **Rule 904. PIT LINING REQUIREMENTS AND SPECIFICATIONS**; including Rule 904.d. which states liner thickness, anchoring, and foundation requirements; and Rule 904.e. which states that the pit will have a leak detection system.

COA 47b - The produced water storage and re-use pit liners cannot be installed until the operator has obtained their Special Use Permit for this facility from Rio Blanco County. Operator will provide a signed copy of this permit via a Form 4 Sundry Notice, and will also provide the required notifications to all agencies prior to pit liner installation.

COA 47c - No portion of any pit that will be used to hold liquids shall be constructed on fill material, unless the pit and fill slope are designed and certified by a Professional Engineer (P.E.), subject to review and approval by the Director prior to construction of the pit. The construction and lining of the pit shall be supervised by a P.E., or their agent. The entire base of the pit must be in cut. Operators must submit a P.E. approved/stamped as-built drawing (plan view and cross sections) of the pit within 14 days of construction.

COA 66 - Delivery and vacuum truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. Signs clearly marking the truck loading/unloading station shall be provided and maintained by the operator. The loading/unloading station will be the only permitted access for manual fluids transfers (if necessary) to or from the pit.

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COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use after hydrostatic testing and be based on submittal of the Form 42 providing that date.

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COA 47 - Operator will utilize, to the extent practical, all existing pipeline infrastructure for the storage and transfer of water for use at the produced water storage and re-use pit location or at nearby well pad locations. If temporary surface pipelines are needed, operator will utilize, to the extent practical, all existing access and other public roads, and/or existing pipeline right-of-ways, when placing/routing the surface pipelines. This will reduce surface disturbance and fragmentation of wildlife habitat in the area.

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COA 49 - Operator must utilize appropriate secondary containment for any volume of fluids that may be released before pump shut down from the surface pipeline at all stream and intermittent stream crossings. For stream or intermittent stream crossings, operator will ensure appropriate containment that may include 1) installing over-sized pipe "sleeves" which extend the length of the crossing and beyond to a distance deemed adequate to capture and/or divert any possible release of fluids and prevent infusion into the stream water; 2) catchment basins sized and constructed to contain fluid; 3) valves at both ends of the crossing; and/or 4) other comparable containment measures determined by the operator.

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COA 25 - No open top tanks can be used for water storage, water transfer, or initial flowback fluids containment. In accordance with COGCC rules, the tanks will be set on compacted earth to decrease the permeability of the soil. All flowback and stimulation fluids from the wells/pads being completed using fluids from this pit (if applicable) must be sent to tanks, separators, or other containment/filtering equipment before the fluids can be placed into any pipeline or storage vessel located on the well pad; or into tanker trucks for delivery back to this pit.

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Form 15 #401642044 Pit Permit Conditions of Approval (COAs):

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COA 47b - The produced water storage and re-use pit liners cannot be installed until the operator has obtained their Special Use Permit for this facility from Rio Blanco County. Operator will provide a signed copy of this permit via a Form 4 Sundry Notice, and will also provide the required notifications to all agencies prior to pit liner installation.

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COA 66 - Delivery and vacuum truck hoses will not be allowed to be placed directly onto the pit liner. As indicated on the design and construction drawings, the operator will construct a loading/unloading station located next to the pit's tank battery and manifold areas, to deliver fluids to or remove fluids from the pit by truck (if necessary). The loading/unloading station will have a catch basin in case a leak occurs while personnel are connecting or disconnecting hoses or transferring fluids. Signs clearly marking the truck loading/unloading station shall be provided and maintained by the operator. The loading/unloading station will be the only permitted access for manual fluids transfers (if necessary) to or from the pit.

COA 61 - Operator must submit a professional engineer (PE) approved/stamped as-built drawing (plan view and cross-sections) of the produced water storage and re-use pit and ancillary facilities on the oil and gas location (including all tanks and other pit operations equipment) within 30 calendar days of construction of the location, pit, and all operating equipment. This submittal shall also certify the volume of the pit, and the available freeboard.

COA 62 - After installation of the uppermost liner and prior to operating the pit, the synthetic liner(s) integrity shall be tested to the operating capacity of the pit facility (not to exceed the 2-foot freeboard requirement). The operator shall monitor the pit for leaks for a period of 72 hours prior to either draining the pit or commencing operations. Operator shall notify the COGCC 48 hours prior to start of the hydrotest using the Form 42. Hydrotest monitoring results must be maintained by the operator for the life of the pit and provided to COGCC prior to using the pit via a Form 4 Sundry.

COA 59 - The produced water storage and re-use pit must be fenced and netted. The operator must maintain the fencing and netting until the pit is closed. The fencing shall be placed a minimum of 1-foot from the pit liner anchor trench.

COA 74 - Operator will use adequately sized secondary containment devices for all chemicals and/or hazardous materials stored or used on location.

COA 40 - Operator will implement measures to ensure that adequate separation of hydrocarbons from the influent occurs to prevent accumulation of oil on the surface of stored completions fluids. Operator shall also employ a method for monitoring buildup of phase-separated hydrocarbons on the surface of stored fluids.

COA 41 - No oil or condensate is permitted on the surface of completions fluids.

COA 81 - Operator must implement all operations detailed in the operations plan, pit liner installation specifications, and all other attachments to the Form 15 and Form 2A; and any revisions within the Form 28 for this E&P Facility; as well as in accordance with the **900 Series Rules**.

COA 19 - Without an approved Form 28 for a "Centralized E&P Waste Management Facility", the produced water storage and re-use pit shall be used for a period of no more than three (3) years for storage, recycling, reuse, treatment, or disposal of E&P waste or fresh water, as applicable. The three year time clock will start from the date of first use after hydrostatic testing and be based on submittal of the Form 42 providing that date.

Pit Location Emissions Mitigation: The following conditions of approval (COAs) will apply:

COA 26 - Potential odors associated with the water storage and water transfer operations (including any flowback fluid off-loading from nearby completion operations) must be controlled/mitigated.

COA 33 - Operator shall follow all requirements of COGCC's current policy - **NOTICE TO OPERATORS, Rule 912. VENTING OR FLARING PRODUCED NATURAL GAS – STATEWIDE, dated January 12, 2016;** and to **Rule 912. VENTING OR FLARING NATURAL GAS. a. thru e.** in regards to venting and flaring.

COGCC would appreciate your concurrence with attaching these COAs to the Form 2A and Form 15 permits prior to passing the OGLA review. These and/or similar COAs may become part of the Form 28 Permit. If you have any questions, please do not hesitate to call me at (970) 309-2514 (cell), or email. Thanks.

Dave

David A. Kubeczko, PG
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