



Caerus Piceance LLC
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**ELU M12-496 Well Pad
 WATER PLAN**

Purpose:

The information presented below is to inform the ECMC of the plan by Caerus Piceance LLC (Caerus) for water use, specifically for development of the ELU M12-496 Well Pad. This plan covers all requested information by ECMC outlined in Rule 304.c.(18). Caerus does not anticipate using freshwater for drilling or completions of the thirty-four (34) wells that will be developed on this pad.

Surface/Groundwater Water Sources and Volumes:

Table 1 describes all the freshwater sources that may be used for the development of the ELU M12-496 Well Pad. Caerus maintains numerous industrial freshwater rights in the Piceance Basin surface water bodies for development of its assets. The water balance within the field, Caerus' infrastructure usage and Completions' program fluctuates based on development initiatives. Therefore, the volumes below are estimates developed with the best information available at the time of this documents' writing. As a typical Condition of Approval on Federal Applications for Permits to Drill, Caerus submits annual reports to the BLM year-end regarding water usage for each well pad so that they may continuously assess water usage for future review.

Table 1: Fresh Water (Surface) Sources

| Name | Fresh Water Source Type | End Use | Lat/Long | Transport Method | Volume (bbls/well) |
|--|-------------------------|--------------------------------------|--------------------------------|------------------|-----------------------------|
| Una Bridge APOD (WD ID# 3901079) | Surface | Drilling and/or Completions | - 39 23' 37.57"N 108 6' 8.60"W | Pipeline | 72,765 |
| North Parachute Ranch West Fork POD (WD ID# 3901083) | Surface | Drilling and/or Completions | 39 37' 49.51"N 108 11' 42.57"W | Pipeline | 10,000 total (not per well) |
| North Parachute Ranch West Fork POD (WD ID# 3901083) | Surface | Pad Construction and/or Dust Control | 39 37' 49.51"N 108 11' 42.57"W | Trucking | 1,610 total (not per well) |

Note: Caerus will not use any fresh groundwater resources in the operations for the wells on this Well Pad

When Caerus is actively running completion operations, it is estimated that up to 100% of produced water is recycled for re-use in downhole completion operations, but this will vary depending on the development initiatives. Caerus is deeply committed to avoiding, when possible, the use of freshwater for operations. Caerus continually seeks opportunities for beneficial reuse by utilizing another Operator's produced water via water sharing agreements to avoid or offset freshwater use. These agreements are often entered into shortly before operations begin. The water sharing agreements are confidential, however, the general plans are submitted for approval to the ECMC. Caerus has invested significant resources in continued expansion and operations of its' produced water infrastructure for supporting completion operations. This



responsible environmental approach eliminates or reduces local freshwater impacts in Caerus' operating area in the Completion stage of operations.

Table 2 below outlines the anticipated recycled produced water sources that will be utilized for hydraulic fracturing operations. Each facility source listed below collects, treats and stores produced water from wells that are owned and operated by Caerus. Treatment at each source endeavors TSS (Total Suspended Solids) removal utilizing DAF (Dissolved Air Floatation technology) in which typical removal efficiencies are >90%.

Timeline for the reuse/recycling is highly dependent on the field water balance, but the typical window for storing recycled produced water in preparation for completion operations can be ~30-90 days prior to commencement. With thirty-four (34) wells planned on the ELU M12-496 Well Pad roughly 84 days will be devoted for conveying the recycled sources to completions operations via a pipeline and once finished, flowback/produced water is returned to the facilities via pipeline for treatment and storage or disposal in a permitted Class II Disposal well. Ideally, the water is once again treated, stored and returned to the next subsequent completion operation in Caerus development plan for reuse. However, due to scheduling changes and other unforeseen events causing water volumes to exceed capacity of the infrastructure, the final disposition of the treated recycled sources will be to Caerus' permitted Class 2 UIC wells.

Table 2: Recycled Produced Water Sources

| Name* | Waste Water Type | Treatment Type | Storage Type | Beneficial Use | Lat/Long | Transport Method | Volume (bbls/well) |
|--|-------------------------|----------------|--------------|----------------|-------------------------|------------------|--------------------|
| Divide Road Facility (ID #432214) | Recycled Produced Water | TSS Removal | Tanks | Completions | 39.669514 / -108.133126 | Pipeline | 125,910 |
| North Parachute Ranch EP Waste Mgmt (ID #120803) | Recycled Produced Water | TSS Removal | Tanks | Completions | 39.579317 / -108.105845 | Pipeline | 62,955 |
| High Mesa Evap Ponds (ID #149013) | Recycled Produced Water | TSS Removal | Ponds | Completions | 39.398429 / -108.059156 | Pipeline | 7,870 |

*Individual well sources are identified in the Form 28 Facility annual reports. (The most recent submitted annual reports are found in Document Nos. 403346930, 403348526, and 403346863).

Hydraulic Fracturing Chemical Additives:

Caerus does not utilize any of the constituents listed in ECMC Table 437-1 as "additives" in hydraulic fracturing operations. However, some of the constituents are naturally present in recycled produced water, which originates in the same formation to which it is reused. Please refer to Appendix A attached



to this plan for specifics of concentration of background levels for each recycled produced source that is outlined in “Table 2 – Recycled Produced Water Sources.” Caerus has not yet built or developed the wells on the ELU M12-496 Well Pad, so site-specific data are not yet available and therefore have not been analyzed. Once the wells are drilled and completed, Caerus will provide a Form 4 sundry with the full analyte suite analysis within six (6) months of wells coming online.

Rationale for Fresh Water Use:

Drilling – Fresh water will be used during drilling operations to ensure consistent mud properties and chemical compatibility with the base fluid and additives. Produced water contains dissolved solids that alter the mud properties and chemical composition of the mud that does not allow for mud properties required to drill the wells, so it will not be utilized during the drilling phase of operations.

Completions – Caerus does not add any proppants downhole during completions. While Caerus strives for recycled produced water to be used as the sole source for hydraulic fracturing operations, there are instances when this is not possible. Unforeseen/uncontrolled weather events, scheduling changes, extrapolation of water forecasts and other factors can create cumulative error in the planning process leading up to the day of execution, yielding a deficit of water volume required by design. At this juncture, Caerus utilizes its industrial freshwater rights, in accordance with appropriate water laws, to close the gap in required volume for completions operations. Please note that for the ELU M12-496 Well Pad Caerus intends to use 100% recycled produced water for the completion of all the wells.

Pad Construction/Dust Abatement – Fresh water will be used for the construction of pads and road maintenance due to proximity of surface and ground water sources, and in this instance is required by the surface owner. Utilizing surface water for this purpose has no potential impact for contamination since the surface sources that Caerus draws from are “background” to the areas in which they are used. Also, such use has little to no impact on the local and global water cycle, as it is returned to the surface.

Appendix A:

| Background Concentrations for Produced Water - Divide Road Facility | |
|---|---------------------------------|
| Analyte | Background Concentration (mg/L) |
| Cadmium | Non-detect |
| Chromium | 0.00619 |
| Lead | 0.00308 |
| Arsenic | Non-detect |
| TPH High Fraction | 18.53 |
| TPH Low Fraction | 102 |
| Benzene | 9.01 |
| Toluene | 14.5 |
| Ethylbenzene | 0.541 |
| Xylene | 7.74 |
| Naphthalene | Non-detect |
| 1,3,5-Trimethylebenzene | 0.431 |



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|------------------------|-------|
| 1,2,4-Trimethylbenzene | 0.503 |
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sample date 9/14/2021, Report: L1403879

| Background Concentrations for Produced Water – North Parachute Ranch E&P | |
|--|---------------------------------|
| Analyte | Background Concentration (mg/L) |
| Cadmium | Non-detect |
| Chromium | 0.00755 |
| Lead | Non-detect |
| Arsenic | Non-detect |
| TPH High Fraction | 22.3 |
| TPH Low Fraction | 134 |
| Benzene | 15.4 |
| Toluene | 20.6 |
| Ethylbenzene | 0.546 |
| Xylene | 11.4 |
| Naphthalene | Non-detect |
| 1,3,5-Trimethylebenzene | 0.706 |
| 1,2,4-Trimethylbenzene | 0.732 |

Sample Date 09/14/2021, Report: L1403880

| Background Concentrations for Produced Water – High Mesa Facility | |
|---|---------------------------------|
| Analyte | Background Concentration (mg/L) |
| Cadmium | Non-detect |
| Chromium | 0.0190 |
| Lead | 0.00488 |
| Arsenic | Non-detect |
| TPH High Fraction | 130 |
| TPH Low Fraction | 187 |
| Benzene | 5.35 |
| Toluene | 18.3 |
| Ethylbenzene | 0.866 |
| Xylene | 15.8 |
| Naphthalene | Non-detect |
| 1,3,5-Trimethylebenzene | 1.00 |
| 1,2,4-Trimethylbenzene | 1.19 |

Sample Date 09/09/2021, Report: L1401446