CUMULATIVE IMPACT PLAN
REVISED NORTH PARACHUTE UNIT (RNPU) PHASE I OGDP

RULES 304.C.(19) AND 303.A.(5)

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Cumulative Impact Plan

Caerus Piceance LLC

RNPU Phase I OGDP

This Cumulative Impact Plan (Plan or CI Plan) has been prepared in accordance with the Colorado Oil and Gas Conservation Commission (COGCC or Commission) Rule 304.c.(19) and follows the resources analyzed for potential cumulative impacts pursuant to Rule 303.a.(5).

The Plan provides an overview of the RNPU Phase I OGDP Project, specifically the proposed disturbance for the Location and associated facilities, and the methodology used for determining cumulative impacts. Finally, the Plan includes the following sections, as prescribed in Rule 304.c.(19):

Resources Impacted (Section 3.0) – A description of all resources to which cumulative adverse impacts are expected to be increased.

Minimization Measures (Section 4.0) – A description of specific measures taken to avoid or minimize the extent to which cumulative adverse impacts are increased.

Mitigation Measures (Section 5.0) – A description of all measures taken to mitigate or offset cumulative adverse impacts to any of the resources.

Additional Information (Sections 1.0 and 2.0) – Information determined to be reasonable and necessary to the evaluation of cumulative impacts by the Operator, the Director, Colorado Department of Public Health and the Environment (CDPHE), Colorado Parks and Wildlife (CPW), or the Relevant Local Government.

1.0 Project Overview

Caerus Piceance LLC (Caerus) is proposing to construct one new oil and gas well pad Location (PCU FED B27-197) and one new Central Delivery Point (CDP) (PCU FED A27-197), and associated access roads and pipelines, under this proposed RNPU Phase I Oil and Gas Development Plan (OGDP). The proposed PCU FED B27-197 Well Pad would have 22 new oil and gas wells and would be located in Lot 3, Section 27, Township 1S, Range 97W, in Rio Blanco County. The proposed PCU B27-197 Well Pad would house only the new wells and some minimal operational support equipment. Production generated from the new wells will be transferred via three-phase gathering line to the proposed PCU FED A27-197 CDP located in Lot 4 of Section 27, Township 1S Range 97W. These Oil and Gas Locations do not fall within a Proximate Local Government designation. The Locations are situated on federal surface administered by the Bureau of Land Management (BLM) White River Field Office (WRFO) and will be accessing federal minerals. The BLM WRFO manages the minerals for the Location and is conducting a comprehensive environmental assessment according to the National Environmental Policy Act (NEPA) during their processing of the federal Applications for Permits to Drill (APDs), which Caerus submitted on or about April 6, 2023, to concurrently permit with the OGDP application for the COGCC.

The proposed new Locations would be located on surface administered by the BLM WRFO in Sections 22 and 27. The proposed PCU FED B27-197 Well Pad is located on a ridgetop north of Lee Gulch and east of Piceance Creek at an elevation of approximately 6,500 feet. The surrounding area is composed of rolling ridges divided by draws and drainages that flow west to Piceance Creek. Vegetation communities and habitat types consist of pinyon/juniper woodland, disturbed areas, and sagebrush shrublands.

The proposed PCU FED A27-197 CDP is located in the valley bottom of Lee Gulch at an elevation of approximately 6,300 feet. The area surrounding the PCU FED A27-197 CDP is composed of gently rolling ridges divided by draws and drainages that flow west towards Piceance Creek. The vegetation community and habitat type are predominantly sagebrush shrublands.

The current primary uses of the land near the Locations are wildlife habitat, rangeland, and natural gas development. The historical and current land use description at both of the Locations is rangeland. This CI Plan provides information from Caerus' PCU FED B27-197 and PCU FED A27-197 CDP Form 2B analysis, Biological Survey Report, Aquatic Wildlife Habitat Assessment, and Wildlife Mitigation Plans.

1.1 Well Pad

The proposed PCU FED B27-197 Well Pad would support a total of 22 new wells and production equipment. Production from the PCU FED B27-197 wells would be taken via pipeline to the PCU FED A27-197 CDP. Both Locations would be constructed from the native earthen materials present and graded by standard cut-and-fill techniques. Location construction would involve clearing of vegetation, stripping, and stockpiling topsoil, and leveling the pad area. Construction equipment typically includes a dozer, flat blade, and dump truck, however, equipment needs may vary depending on the conditions of the individual Locations.

Separate stockpiles for both topsoil and subsoil would be established within the permitted Location boundary and would be maintained for future backfilling and rehabilitation of the disturbed areas of each well pad for interim reclamation and final abandonment after the life of the wells. Caerus will follow the Topsoil Management Plan attached to PCU FED B27-197 and the PCU FED A27-197 CDP Form 2As.

Construction of the proposed Locations, with associated cut and fill slopes, would initially disturb approximately 7.35 acres at the PCU FED B27-197 location and 5.69 acres at the PCU FED A27-197 location, for a total of 13.05 acres. Following interim reclamation, the total Project residual surface disturbance would be reduced to approximately 2.08 acres at the PCU FED B27-197 and 2.23 acres at the PCU FED A27-197, which is a total of 4.31 acres.

1.2 Access Roads

Access to the PCU FED B27-197 Well Pad would be from a proposed new road that start at Rio Blanco County Road 5 near the mouth of Lee Gulch and travel south-southeast 1.36 miles to the Location. The road would be constructed by upgrading an existing BLM two-track road. Right-of-way (ROW) width will vary based on slope and landform. Roadside ditches with appropriate erosion control measures will be installed and construction and maintenance of the access road

will conform to standards outlined in the 2007 version of BLM and United States Forest Service (USFS) “Surface Operating Standards for Oil and Gas Exploration and Development – The Gold Book” (Gold Book). The access roads would result in an initial disturbance of approximately 13.65 acres. When construction is complete, salvaged topsoil will be spread throughout the access road shoulders and disturbed areas not graveled and stabilized for long-term use will be seeded and mulched. The estimated seeding area is 6.71 acres, which would reduce the long-term disturbance acreage of the road to 6.94 acres, which would remain for the life of the Location.

Access to the PCU FED A27-197 CDP would be from a proposed new road that starts near the mouth of Lee Gulch and travels south 3,961 feet to the Location. A 400-foot secondary access road would be constructed for use during well completion operations. ROW width will vary based on slope and landform. Roadside ditches with appropriate erosion control measures will be installed and construction and maintenance of the access road will confirm to standards outlined in the 2007 version of the Gold Book. The new access road for the PCU FED A27-197 CDP would result in approximately 3.00 acres of surface disturbance, which would remain for the life of the Location.

1.3 Pipelines

The PCU FED B27-197 Well Pad would require approximately 1,398-feet of new permanent 60-foot-wide pipeline corridor ROW that would run from the southwest corner of the working pad surface to the southeast corner of the proposed PCU FED A27-197 CDP location. Construction of this corridor will result in approximately 2.57 acres of disturbance; however, the ROW would be fully reclaimed after construction. Existing and proposed water lines will be utilized to carry the recycled water for completions and produced water for flowback operations at the PCU B27-197 Well Pad, which will save an estimated 87,055 truck trips.

The PCU FED A27-197 CDP would require approximately 7,885-feet of new permanent 60-foot-wide and new temporary 20-foot-wide pipeline corridor ROW. Additionally, the PCU FED A27-197 CDP would require approximately 283-feet of new permanent 100-foot-wide pipeline corridor ROW. These pipeline corridors will total of 8,168 feet of new pipeline ROW resulting in approximately 18.75 acres of surface disturbance. The pipeline corridor would extend southwest from the Location to existing gathering infrastructure within the Piceance Creek valley.

1.4 Interim Reclamation

Caerus is requesting a variance to Rule 1003.b, and specifically requesting they be allowed to commence interim reclamation at the PCU FED A27-197 CDP within 48-months of initial construction. Caerus is also requesting a variance to Rule 1003.b at the PCU FED B27-197 Well Pad, specifically requesting they be allowed to commence interim reclamation within 36-months of setting the last conductor for the 22 wells. These variances are being requested because both the PCU FED A27-197 CDP and the PCU FED B27-197 Well Pad will require two build seasons due to the length of the proposed roads and pipelines. Caerus typically constructs in the fall when federal and CPW wildlife stipulations allow and when the ground is the most stable for construction. Caerus will adhere to the BLM WRFO’s Big Game Timing Limitation (WR-TL-12) for no construction to occur between December 1st and April 30th. Therefore, Caerus will need two

build seasons to comply with wildlife timing stipulations and to build the locations in suitable weather.

Caerus has consulted with the BLM WRFO on the interim reclamation delay requested for the PCU FED A27-197 CDP and PCU FED B27-197 Well Pad. The BLM WRFO has expressed support for the delay in interim reclamation due to their concern for the preservation of topsoil. In a letter dated April 17, 2023, the BLM stated that "based on the information provided to the WRFO the timelines are in accordance with the BLM's Onshore Order #1 requirements for interim reclamation as well as the guidance outlined in the BLM WRFO's 2015 RMPA for Oil and Gas Development. It appears that through the initial reviews that the extended timeline for interim reclamation would comply with the BLM's requirements for interim reclamation of the projects outlined within the POD." Caerus is requesting that COGCC grant the Rule 1003 variances with the condition of approval that Caerus will seek similar variances with the BLM WRFO once the permits are approved, and Caerus will promptly provide documentation to COGCC via a Form 4 Sundry.

Once interim reclamation is started, all disturbed, non-Working Pad Surface areas of the Locations would be reclaimed to their designated final land use. The disturbed areas would be reseeded with seed mixes that include species consistent with the native plant community. These species were identified during the baseline vegetation survey and are included in the Interim Reclamation Plans attached to Caerus' Form 2As for the Locations. Interim reclamation efforts would include regular maintenance for noxious and invasive weeds. Areas of each Location needed for production operations would be stabilized and maintained to minimize erosion and weeds to the extent possible. Caerus will follow their Integrated Weed Management Plan during reclamation of both Locations.

1.5 Surface Disturbance

Construction associated with the PCU FED B27-197 Well Pad, PCU FED A27-197 CDP, and associated access road and pipeline corridor would result in an estimated initial disturbance of approximately 51.02 acres and residual disturbance of 14.25 acres. Total initial and residual disturbance, including well pad, access road, and pipeline disturbance, is summarized in Table 1. Residual disturbance includes acreage that would remain disturbed for the life of the project (LOP), which is approximately 25 years plus the time required to successfully reestablish vegetation (those acres not subject to interim reclamation). As previously stated, based on COGCC's approval of the requested variance, site reclamation would be initiated for portions of the well pad and CDP not required for the continued operation of the wells or production activities within 36 and 48 months of completion, weather permitting.

Table 1
Total Estimated Surface Disturbance

OGDP Location	Location Component	#/feet	Initial (acres)	Residual (acres)[1]
PCU B27-197	Well Pad	1 well pad – 22 wells	7.35	2.08
	Access Road	7,431 feet	13.65	6.94

OGDP Location	Location Component	#/feet	Initial (acres)	Residual (acres)[1]
	Pipeline Corridor	1,398 feet	2.57	0.00
PCU A27-197	CDP	1 CDP	5.69	2.23
	Access Road	4,361 feet	3.00	3.00
	Pipeline Corridor	8,168 feet	18.75	0.0
RNPU Phase I OGDP Total[2]		**-**	**51.02**	**14.25**

[1] Residual disturbance is based on proposed interim reclamation.

[2] Total acreage estimates are based on Geographic Information System (GIS) software calculations and match what is presented in the Form 2A Plat package. These totals may not equal the total summation when using mathematic equation due to rounding, removal of overlapping development and minute boundary discrepancies. GIS-based calculations are considered more accurate than estimates calculated using simple addition and therefore will be used throughout this document.

2.0 Cumulative Impact Methodology

Cumulative impacts on the environment may result when the environmental effects associated with a proposed project are added to other past, current, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Information for this cumulative impact assessment was obtained from county, state, and federal websites, and other public domain sources, as well as recent drone activity and site visits. The proposed PCU FED B27-197 Well Pad and PCU FED A27-197 CDP is within the BLM's WRFO area in Rio Blanco County, Colorado. There are approximately 3,517 active wells (e.g., producing, shut-in, temporarily abandoned, injection, and drilling status) within the WRFO. The COGCC online database indicates 185 wells have been spud since January 2019.

Some of the past, present, and reasonably foreseeable development in the vicinity of the RNPU OGDP includes oil and gas exploration. In 2015 the BLM published the Oil and Gas Development Proposed RMP Amendment/FEIS, which considered changes in the location, type, and level of oil and gas development within the resource area. Based on an updated 2007 Reasonably Foreseeable Development (RFD) scenario, it is assumed that the majority of oil and gas development would occur within the Mesaverde Play Area (MPA; Piceance Basin) and consist of multi-well pads. The Proposed RMPA/FEIS considered drilling up to 15,040 wells from 1,100 well pads with an associated surface disturbance of 13,200 acres (Section 2.4.6, page 2-29 of the Proposed RMPA/FEIS). In the RMPA/FEIS, it was assumed an estimated 12 acres per pad would be disturbed initially (including areas needed for associated infrastructure), however, that would be reduced to approximately 5 acres per pad following interim reclamation. It should be noted that the proposed size of the PCU FED B27-197 well pad and of the PCU FED A27-197 CDP and their associated access roads and pipelines disturbances, will initially disturb more acreage than what was assumed in the RMPA/FEIS but after interim reclamation the final disturbance acreages for both Locations will be 14.25 acres which is aligned with the overall assumptions in the RMPA/FEIS.

Other past, present, and reasonably foreseeable actions in the Project area include livestock grazing and associated range improvement projects, vegetation treatments, and both wildfires

and prescribed burns. Other mineral development within the area includes sodium solution mining. Recreation use is characterized by dispersed camping, Off-highway vehicle (OHV) use, and hunting.

Specific to existing oil and gas activity, the PCU FED B27-197 Well Pad and the PCU FED A27-197 CDP have zero and one oil and gas locations, respectively, considered "active" within a 1-mile radius of the proposed location, according to the COGCC location files online.

In an effort to provide information relevant to COGCC decision making, a practical delineation of the spatial and temporal scales is needed for an informative cumulative impacts analysis. The geographic extent of each specific Cumulative Impact Analysis Area (CIAA) varies by resource and is larger for resources that are mobile or migrate, as compared to those that are stationary. For some resources, the CIAA is smaller due to the geographically confined nature of cumulative impacts (e.g., soils), while for others the CIAA is much larger (e.g., air quality). Table 2 provides the geographic extent for cumulative impact analysis that was applied for the RNPU Phase I OGDP. For most resources, the temporal boundary is assumed to be the 25-year life of production. For wildlife and vegetation, the temporal boundary is extended an additional 5 years to account for the time required to reach 75-100 percent reclamation.

Table 2
Geographic Scope for COGCC OGDP Cumulative Impact Analysis

Environmental Resource	Cumulative Impact Assessment Area (CIAA)
Air Quality	1-mile radius
Public Health	1-mile radius
Water Resources	½-mile radius
Terrestrial and Aquatic Wildlife Resources and Ecosystems	1-mile radius (specifically High Priority Habitats [HPH] within 1-mile)
Soil Resources	Limits of disturbance for the location (including access roads and pipeline rights-of-ways [ROWs])
Vegetation	1-mile radius
Public Welfare – Noise, Odor, Light	1-mile radius

3.0 Resources Impacted

The following section describes the resources for which cumulative impacts are anticipated, based on the information included on Form 2B and the plans associated with Form 2A.

3.1 Air Resources and Public Health[1]

3.1.1 Air Resources

Air quality in an area is generally influenced by the quantities of pollutants that are released within and upwind of the area, and it can be highly dependent upon the pollutants' chemical and physical properties. Air quality regulations and source-specific permits limit the allowable quantities of pollutants that may be emitted. The topography, weather, and land use in an area would also affect how pollutants are transported and dispersed and the resulting ambient concentrations.

[1] As the Public Health analysis is tied directly to the effects of Hazardous Air Pollutants, the Air Resources and Public Health cumulative impact analyses are combined in Section 3.1.

The proposed project is in south-central Rio Blanco County, Colorado on federal surface. It is situated 35 miles northwest of Parachute, Colorado and 20 miles southwest of Meeker, Colorado on ridgelines with an average elevation of roughly 6,400 feet. This area is within the Colorado Department of Public Health and Environment's (CDPHE) Western Slope air quality region which is designated as attainment and is in full compliance with the National Ambient Air Quality Standards (NAAQS) for Criteria Pollutants. No private residences are within two miles of the proposed wells.

The location of the PCU FED B27-197 and the PCU FED A27-197 CDP and broader CIAA currently contains various emission sources including rangeland activities, vehicle traffic, and oil and gas production activities. The addition of the infrastructure needed to construct, drill, and operate the well pad and associated wells would have a cumulative impact contribution to air quality within the 1-mile CIAA. However, the proposed wells' contribution to cumulative effects would be minor, as demonstrated by the Emissions Inventory results reflected in Form 2B (see Ref #120, 121, and 130).

Impacts to air resources would be minimized and mitigated by the measures included in Sections 4 and 5 of this Plan. Emissions would be permitted and regulated by the CDPHE, Air Pollution Control Division, and would be subject to appropriate controls to reduce emissions to minimal levels. However, in the context of cumulative impact assessment, any contribution to emissions, no matter how small, adds to the cumulative effects from past, present, and reasonably foreseeable future projects.

3.1.2 Public Health

Per the qualitative evaluation provided in Reference Numbers 131 and 132 of Form 2B, a Public Health incremental impacts evaluation was conducted as a high-level and conservative screening. This screening method used the total amount of each Hazardous Air Pollutant (HAP) that may be emitted from equipment or activities during pre-production and production (as reported in Form 2B, Ref #129 and 130) to estimate the steady state air concentration of each HAP within the facility using a box model methodology. The highest potential concentrations of each HAP were then used to evaluate both acute and chronic exposures. Acute exposure comparison was based on the U.S. Environmental Protection Agency (USEPA) Acute Exposure Guideline Levels for Airborne Chemicals (AEGLs) for commercial/Industrial exposure. For acute exposure for residential properties, the Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs) for acute duration exposure were used as a comparison. For chronic exposure, the reference calculations were obtained from the USEPA Regional Screening Level tables. The default exposure values prepared by USEPA were used in the risk evaluation.

Based on the airborne HAP concentrations estimated using HAP emission rates and the box model methodology, no HAP is expected to exceed the target cancer risk or noncancer hazard index for chronic duration exposures within the well pad location during pre-production or production. Additionally, no HAPs exceed the residential or industrial screening levels for acute duration exposures within the well pad location during pre-production or production. These results support the conclusion that HAP emissions are not expected to contribute to acute or chronic risks

to human health within or beyond the well pad Location. In simpler terms, since no acute or chronic human health risks are anticipated on the Location, no impacts are anticipated further away from the pad where receptors are located.

It should also be noted that the PCU FED B27-197 well pad PCU FED A27-197 CDP are not located within a disproportionately impacted community (DIC), which means that DICs would not be impacted by the HAP emissions.

3.2 Water Resources

There are no public water system intakes located within a mile of the proposed PCU FED B27-197 Well Pad or the PCU FED A27-197 CDP. Construction of oil and gas facilities and associated infrastructure would likely have the greatest potential impact on water resources within the ½-mile radius CIAA due to the potential for increased erosion and sedimentation rates. Soils compacted on existing roads, new access roads, and well pads contribute to slightly greater runoff than undisturbed sites.

The nearest mapped NWI wetland along the probable migration pathway from the proposed PCU FED B27-197 Well Pad Location is 1,188 feet west of the Location. This NWI-mapped wetland is a Riverine (R4SBC) habitat, which is referred to as the Lee Gulch. Additionally, Lee Gulch intersects the PCU FED A27-197 CDP Location.

The Lee Gulch is an ephemeral channel with no Ordinary High-Water Mark (OHWM). No signs of ponding or perennial water sources were observed during the Aquatic Wildlife Habitat Assessment survey conducted by WestWater Engineering within ¼ mile upstream or downstream of the PCU FED A27-197 CDP Location. According to the Aquatic Wildlife Habitat Assessment survey, the channel is nearly always dry, except after storm events, where sheet flow likely occurs along the two-track road where the channel would be located. The drainage lacks a defined bed and bank, and the channel does not contain habitat that would support aquatic wildlife species. The drainage bottom is also used as a two-track road to access BLM administered lands.

The proposed PCU FED A27-197 CDP pad would be located 5,183 feet upstream from Piceance Creek (a perennial stream). Piceance Creek is mapped as a Gold Medal Waters and Aquatic Native Species Conservation Waters (COGCC 2022a). Rio Blanco County Road 5 is located between Piceance Creek and Lee Gulch.

The proposed OGDP has the potential to impact downstream water quality in Piceance Creek from potential spills occurring onsite during drilling and completions activities and by increased sedimentation during construction activities; however, with the implementation of appropriate spill prevention and stormwater management plans and installation of proper erosion control methods (BMPs), impacts from the proposed project on aquatic species present downstream of the Location should be negligible. Minimization and mitigation measures intended to protect water resources within the CIAA are described in Section 4 and 5. Caerus' commitment to implementation of these measures would further limit impacts to water resources within the CIAA.

3.2.1 Onsite Fluid Storage

Fluid storage activities at the proposed PCU FED B27-197 Well Pad and PCU FED A27-197 CDP pad or other past, present, or reasonably foreseeable production facilities or industrial development could increase the potential for accidental spills of fuels, lubricants, and other petroleum products. Because the proposed PCU FED B27-197 Well Pad would be a “feeder” pad with no production facilities on it, there would be no permanent or temporary storage of oil, produced water, etc. on this Location.

The construction of the PCU FED A27-197 CDP location would include the installation of approximately three 1,000-barrel (bbl) permanent condensate tanks and three 1,000-bbl permanent produced water tanks. There will be no oil tanks at the Location.

While the potential might be limited, spills of fuels or produced fluids from drilling, completion, or production activities have the potential to contaminate surface waters and shallow alluvial groundwater. However, oil and gas development regulatory requirements to prevent spills from reaching surface and groundwater make these impacts unlikely, and therefore, represent a negligible potential cumulative impact within the CIAA. For example, the Caerus Spill Prevention, Control, and Countermeasure (SPCC) Plan details the protocols for each location. The PCU FED B27-197 would not have permanent hydrocarbon liquid storage tanks so sized secondary containment is not required, however the general secondary containment requirement for all other equipment would include a pad perimeter berm and administrative best practices. Further protection is also provided with stormwater best management practices (BMPs). Stormwater BMPs provide additional containment capable of containing a typical failure in accordance with 40 CFR 112.7(c). Stormwater BMPs would remain in place until the wells on the Location are plugged and abandoned, and all equipment removed.

3.2.2 Water Use

Total water volume needed for RNPU Phase I OGDP would be approximately 8,689,000 bbls. Water for the Project would come from a combination of permitted surface water sources, including approximately 219,000 bbls coming from outside of the project area to be used primarily for construction and drilling, and approximately 8,470,000 bbls of recycled produced water to be used for completions at the PCU B27-197 Well Pad. Existing and proposed water lines will be utilized to carry the recycled water for completions and produced water for flowback operations at the PCU B27-197 Well Pad, which will save an estimated 87,055 truck trips.

Caerus is not proposing any new water wells or water storage areas as part of this OGDP. The use of 219,000 bbls of fresh water represents a cumulative contribution to overall water use within the CIAA from other oil and gas development within the CIAA, however, 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 COGCC. 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.

Minimization and mitigation measures intended to protect water resources within the CIAA are described in Section 4 and 5. Caerus' commitment to implementation of these measures would further limit impacts to water resources within the CIAA.

3.3 Terrestrial and Aquatic Wildlife Resources and Ecosystems

Cumulative impacts on terrestrial wildlife populations and habitats primarily result from surface-disturbing activities. The RNPU Phase I OGDP would minimally contribute to water depletion due to the use of some surface water, but the Location does not have any sensitive aquatic species identified nearby that would be directly affected by the construction or operation of the Location.

3.3.1 Surface Disturbance Impacts

Development of the RNPU Phase I OGDP would incrementally increase the acres of cumulative surface disturbance from past, present, and reasonably foreseeable development within the 1-mile CIAA. Cumulative impacts to wildlife species can include habitat fragmentation, habitat loss, loss of foraging opportunities, and animal displacement; impacts that can last until successful final reclamation is completed. However, given the vast extent of available habitat for terrestrial wildlife species beyond the 1-mile CIAA and the relatively small size of the final well pad, CDP, associated roads and pipeline corridors after interim reclamation (approximately 14.25 acres); implementation of the Project is expected to have a minimal contribution to cumulative impacts on habitat loss. Directional drilling from the multi-well pad will also help reduce the "spider web" habitat fragmentation effect of historic vertical single-well pads and their associated linear infrastructure.

In 2022, Caerus enlisted WestWater Engineering (WestWater) to conduct surveys of 215 acres and 111.7 acres of suitable woodland raptor nesting habitat of mature pinyon/juniper woodlands and rock outcrops in and around the two Locations. During the survey, one occupied golden eagle nest was observed approximately 461 meters from the proposed PCU FED B27-197 access road and approximately 630 meters from the proposed PCU FED A27-197 CDP. Additionally, during the survey, two additional unoccupied golden eagle nests, and two unoccupied Cooper's hawk nests were observed. No other raptor nests were also observed during surveys (WestWater 2022).

In 2023, Caerus requested WestWater to perform monitoring of the known nests due to the proximity of one nest (within ½ mile) to the PCU A27-197 CDP. WestWater performed monitoring of the three known eagle nest sites from December 14, 2022, to March 23, 2023, on a bi-monthly (weather permitting) basis until the selected nest by the eagles was confirmed. A nest site was confirmed occupied during the 2023 nesting season, which is located approximately 5,804 feet from the PCU A27-197 CDP and 2,635 feet from the proposed access road. An adult eagle was observed incubating during the monitoring on March 23, 2023. The remaining two Golden Eagle nests were unoccupied and are likely alternate nest sites for this pair of eagles due to the proximity of the nests to one another and only one pair of eagles was observed during the monitoring effort. Due to the distance of the only occupied golden eagle nest from the Project area (greater than ½

mile), no further recommendations are offered for the 2023 nesting season. However, if Project construction activities and/or drilling and completions activities are delayed to a future nesting season, nest occupancy status checks will be completed by a qualified biologist prior to the initiation of pre-productions activities (Westwater 2023).

Because both the proposed PCU FED A27-197 CDP and portions of the access road fall within the 0.5-mile golden eagle nest buffer, WR-NSO-19 and WR-TL-17 stipulations could apply per the WRFO Oil and Gas RMPA. The nearest nest is approximately 0.4 miles from the PCU FED A27-197 CDP and located along a cliff face on the other side of a ridgeline from the Location. Due to the terrain, disturbance from noise and construction activities would be reduced and there would be no line-of-sight from the nest to these activities. Two additional nest sites are located 0.28 and 0.3 miles from the proposed access road entrance off Rio Blanco County Road 5. These nests are across the Piceance Creek valley bottom that also holds RCR 5, which sees daily industry and local traffic for access to the Piceance Basin. Additionally, there are existing nearby industrial and agricultural operations that have not deterred the use of these nest sites historically. Access to the Project area is limited by terrain, as well as other sensitive resources, making alternative access routes to the Project area more extensive, through less fragmented habitat, and with similar impacts. The BLM would apply a timing limitation that would require additional surveys of the nest sites and would restrict construction activities from February 1-August 31 or until birds have fledged if the nests are occupied. Caerus proactively included the BLM stipulation language regarding the golden eagle nest complex in their approved Wildlife Mitigation Plans prepared for CPW.

Caerus will comply with the BLM WRFO RMPA and US Fish and Wildlife Service (USFWS) survey requirements prior to any construction activity. Caerus will consult with BLM, CPW, and USFWS as required by the RMPA, should one of the nests become occupied within a restricted buffer.

Sections 4.0 and 5.0 include additional minimization and mitigation measures Caerus will implement to protect raptors.

The PCU FED B27-197 Well Pad and PCU FED A27-197 CDP Locations are located within the following High Priority Habitat (HPH) areas designated by CPW:

- Aquatic Native Species Conservation Waters (1202.c.(1).R.)
- Aquatic Sportfish Management Waters (1202.c.(1).S.)
- Elk Winter Concentration Area (1202.d.(2).)
- Mule Deer Severe Winter Range (1202.d.(3).)
- Mule Deer Winter Concentration Area (1202.d.(3).)

CPW defines Aquatic Sportfish Management Waters as waters where the protection and enhancement of these habitats is important to maintaining sportfish and their associated recreational opportunities. The management emphasis for these waters is directed towards both native and non-native fish populations that are sustained through natural reproduction (wild sportfish) or sustained through fish stocking based on various levels of water productivity

(optimum versus intensive management) (CPW 2020). Based on CPW's definition of Aquatic Sportfish Management Waters, WestWater biologists determined that the stream reach within ¼ mile of the proposed PCU FED A27-197 CDP pad location does not meet the definition for Aquatic Sportfish Management Waters and should be exempt from the COGCC 1202.c.(1).S. Rule (COGCC 2022b). This stream feature is intermittent in nature and does not contain any population of sportfish or other aquatic life. Based on these findings, aquatic sportfish and suitable habitat do not exist in Lee Gulch, therefore adverse impacts are avoided.

For proposed access road and pipeline disturbance interacting with the COGCC HPH aquatic map layers for Rules 1202.c.(1).R.-S., Caerus consulted with CPW and will employ best management practices pursuant to Rule 1202.c.(2).C. as affirmed by Caerus' Wildlife Mitigation Plans approved by CPW. Specifically, Caerus will ensure that the access roads are built to the BLM Gold Book standards for Roads and Access Ways and will employ several layers of stormwater controls including a stabilized gravel surface, bar ditches, culverts with inlet and outlet protection, and revegetation along each side of the access route.

For the A27 CDP proposed Working Pad Surface situated within the COGCC HPH aquatic map layer for Rule 1202.c.(1).S., as noted above, Lee Gulch is a typically dry drainage with no OHWM, contains no aquatic wildlife, and the drainage bottom has an existing two-track road for access to BLM administered lands, Caerus consulted with CPW, requested waivers of application of COGCC Rule 1202.c.(1).S. pursuant to Rule 309.e.(5).D.ii.bb. and COGCC Rule 1202.a.(3). pursuant to Rule 1202.a., and CPW granted the waivers with Caerus' commitment to the BMPs noted in the request.

The PCU B27-197 Well Pad and associated access roads and pipeline corridor would result in the initial disturbance of approximately 15.98 acres of Elk Winter Concentration, 23.57 acres of Mule Deer Severe Winter Range, and 23.57 acres of Mule Deer Winter Concentration Area. The PCU A27-197 CDP Pad and associated access roads and pipeline corridor would result in the initial disturbance of approximately 13.25 acres of Elk Winter Concentration Area, 27.45 acres of Mule Deer Severe Winter Range, and 27.45 acres of Mule Deer Winter Concentration Area. The majority of this HPH acreage occurs within sagebrush shrublands and pinyon/juniper woodlands. Interim reclamation would return approximately 35.76 acres to a grass/forb mix that would provide herbaceous forage for wildlife once that vegetation becomes established. Adverse impacts to big game from energy development result from the direct habitat removal for the footprint of the development and indirect impacts caused by traffic, noise and light, invasive plants, and the overall fragmentation of habitat as the density of facilities accumulates (CPW, 2020).

These impacts would be diminished after drilling and completion activities cease, and interim reclamation of the pad and pipeline disturbance is revegetated and available as forage. Minimization and mitigation measures developed between CPW and Caerus in their Wildlife Mitigation Plans (WMPs) are listed in Sections 4.0 and 5.0 of this CI Plan will help to lessen the impacts to big game and their habitat. Additionally, Caerus has scheduled construction of the Locations for September of 2023, which is outside the winter timing limitation for elk and mule deer. The BLM's big game winter timing limitation runs from December 1 to April 30 annually. By scheduling construction operations outside the winter timing limitation, stress on big game during

winter months will be avoided. If a timing limitation exception is needed for drilling and or completion activity, Caerus will work with CPW and BLM as required by the White River BLM Resource Management Plan.

Caerus developed the WMPs in consultation with CPW, which included numerous pre-application meetings to discuss the proposed development plan for the for the PCU FED B27-197 Well Pad and the PCU FED A27-197 CDP Pad as well as the potential impacts to wildlife as a result of construction and operation of the proposed Locations. Since the proposed Locations would be located within Elk Winter Concentration Area, Mule Deer Severe Winter Range, and Mule Deer Winter Concentration Area, the pre-application consultation meeting with CPW was necessary to ensure Caerus' planned operation would be protective of the species and to discuss options for compensatory mitigation to off-set impacts to the species. Caerus is proposing compensatory mitigation to off-set any residual direct and indirect impacts to elk and mule deer.

During the pre-application consultation meeting with CPW, Caerus agreed to pay compensatory mitigation fees associated with direct and indirect impacts to elk and mule deer from the construction and long-term operation of the PCU FED B27-197 Well Pad and the PCU FED A27-197 CDP. As an alternative to payment of the compensatory mitigation fees, Caerus and CPW have agreed to further evaluate potential mitigation projects within the northwest region of Colorado that could be used to off-set direct and indirect impacts to elk and mule deer. If Caerus and CPW agree on a compensatory mitigation project(s), Caerus will submit a sundry to their WMPs detailing the relevant plan components described under Rule 1203.b.(1).*3.3.2 Noise and Light Impacts*

Activities associated with development of the OGDP (noise, light, odors, and vehicle traffic) have the potential to impact wildlife resources by causing avoidance of forage, cover, disruption to nesting and brood rearing activities for migratory birds, and direct mortality with vehicle collisions from truck traffic.

The pre-production potential for light and noise related impacts on wildlife would be decreased at the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP Locations because Caerus intends to down-shield lighting during drilling and completion, and the intentional layout of the facilities on the Pads would decrease the pre-production potential for noise related impacts on wildlife. In addition, no permanent lighting would be located on the well pad, so long-term light related impacts would be limited to headlights from operational vehicles on location and enroute to and from the location during production. Such light exposure would be brief, as vehicle travel to the location in the dark would be minimal. Similarly, long-term noise impacts would largely be limited to vehicles going to and from the Location during production, as most of the production activity and equipment would be located at the PCU FED A27-197 CDP.

As previously stated, Caerus has worked closely with CPW to produce WMPs that contain mitigation measures that were designed to reduce impacts to wildlife; these measures are outlined in Sections 4 and 5 of this Plan and would further diminish cumulative impacts on terrestrial wildlife within the CIAA.

3.4 Soil Resources

The CIAA for soils is the limits of disturbance for the Locations. No surface disturbing activities for the RNPU Phase I OGDP would occur on lands classified as prime farmland or fragile soil. New disturbance from the proposed pad, access road, and pipeline corridor would be approximately 51.02 acres. Upon project completion and successful achievement of interim reclamation there would be roughly 14.25 acres that would remain disturbed during the life of the wells (approximately 25 years). Final reclamation would occur after all wells on a pad are plugged and abandoned. Construction of the PCU FED B27-197 Well Pad and PCU FED A27-197 CPD would result in the disturbance of four soil types summarized in the following table:

Table 3
Soils Impacted by the Project

Map Unit Symbol	Soil Name	Description
70	Redcreek-Rentsac complex, 5 to 30 percent slopes	Occurs on mountainsides and ridges. Soils are well drained and have a high runoff potential. Typical topsoil depth is 0 to 4 inches.
73	Rentsac channery loam, 5 to 50 percent slopes	Occurs on foothills and ridges. Soils are well drained and have a very high runoff potential. Typical soil depth is 0 to 2 inches.
91	Torriorhents-Rock outcrop complex, 15 to 90 percent slopes	Occurs on canyons, hills, mountains, and ridges. Soils are well drained and have a very high runoff potential. Typical topsoil depth is 0 to 3 inches.
6	Barcus channery loamy sand, 2 to 8 percent slopes	Occurs on alluvial fans and valleys. Soils are somewhat well drained and have a low runoff potential. Typical topsoil depth is 0 to 6 inches.

Cumulative impacts on soil resources can occur from any surface-disturbing activity that removes native vegetation and topsoil. These impacts can result in soil compaction, increased erosion, and sediment yield, all of which reduce soil productivity, stability, and viability. Of these impacts, compaction may be the most deleterious. Compaction affects the movement of water and air across the soil surface boundary. Infiltration, the movement of water into the soils, is critical for plant and soil health. If water can't move into the soil quickly, it would pond and run off, leaving vegetation dry and dying, increasing erosion, and increasing flood frequency and magnitude. Compaction can also cause a shift from aerobic to more anaerobic organisms and may increase losses of nitrogen to the atmosphere (denitrification). Surface disturbance can also impact soil biological functions and viability because the disturbance can 1) enhance or degrade the microbial habitat, 2) add to or remove food resources, and/or 3) directly add or kill soil organisms.

Most soil organisms – especially larger ones that contribute to soil health and viability – live in the top few inches of soil. Surface disturbance, compaction, and erosion disrupts and removes that habitat for soil organisms. As such, one of the most effective ways to reduce impacts to soil viability from surface disturbance is to protect and preserve topsoil. As cited in Section 4.5, during initial pad construction, topsoil on both of the Locations would be stripped from the disturbance area and stored onsite for future use during pad pull-back and interim reclamation. All stockpiled

topsoil would be protected from degradation due to contamination, compaction, and, to the extent practicable, from wind and water erosion. Site-specific BMPs will be implemented at each phase of construction to protect topsoil; these BMPs are specifically spelled out in the Stormwater Management Plans and the Topsoil Management Plans attached to Form 2As. Caerus also employs a weed management program that addresses annual and noxious weeds during all phases of construction, including the management of weeds on the topsoil pile.

Implementation of the above described, and other minimization and/or mitigation measures listed in Sections 4 and 5 of this Plan will help to lessen the potential for impacts to soils at the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP, and therefore, reduce the cumulative contribution to soil disturbance and loss of soil viability.

3.5 Vegetation

The CIAA for vegetation is defined as a 1-mile buffer around the proposed PCU FED B27-197 Well Pad and PCU FED A27-197 CDP Locations. Past, present, and other reasonably foreseeable activities within the CIAA that have or would continue to affect vegetation communities include oil and gas development and livestock grazing. The vegetation community present in the project area includes sagebrush shrublands and pinyon/juniper woodlands. Invasive non-native plant species are currently a minor component within the surrounding areas; biological surveys performed by WestWater found minimal invasive species within the Project area.

Surface disturbing activities for the PCU FED B27-197 Well Pad would result in an initial loss of 7.35 acres and permanent loss 2.08 acres of Colorado Plateau Pinyon-Juniper Woodland according to the GAP data for the Location.

Surface disturbing activities for the PCU FED A27-197 CDP would result in an initial loss of 5.69 acres and permanent loss of 2.23 acres of Inter-Mountain Basins Big Sagebrush Shrubland according to the GAP data for the Location.

In addition to direct vegetation loss, the increased traffic and soil disturbance could potentially result in the introduction and establishment of noxious and/or invasive weeds. Without prompt establishment of desirable species from reseeding and continued weed control, noxious and/or invasive weeds could readily establish in the disturbed areas. Construction of the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP Locations, when combined with all past, present, and reasonably foreseeable activities in the CIAA, would have minimal to moderate impacts on vegetation across the CIAA. Yet in the context of cumulative impacts, each acre of vegetation disturbance would incrementally add to other existing and future surface disturbances in the CIAA by increasing erosion, incrementally adding to the overall native vegetation loss, and potentially increasing invasion or expansion of invasive and noxious weeds.

Cumulative impacts for general vegetation, specifically the approximately 13.05 acres of shrub land and forest land listed as impacted on Form 2B, would be mitigated in accordance with COGCC requirements. Interim reclamation would reduce the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP Locations to 4.31 acres. Minimization and mitigation measures (listed in Section 4 and 5 of this Plan) used to implement noxious weed management, erosion control, and

apply dust abatement, would reduce impacts to native vegetation communities by reducing the potential for competition with invasive and noxious weed species, minimizing soil erosion and sedimentation, and reducing fugitive dust on plant surfaces.

The PCU FED B27-197 Well Pad and the PCU FED A27-197 CDP are constructed to host multiple, directionally drilled wells in a consolidated location that requires far fewer miles of access road and pipelines needed for production. Directional drilling from a single, multi-well well pad helps reduce the “spider web” effect of vegetative community fragmentation that occurred as a result of historic vertical single-well pads and their associated linear infrastructure. Based on the analysis above, the PCU FED B27-197 Well Pad and the PCU FED A27-197 CDP cumulative effect on vegetation resources (and the wildlife communities that rely on those resources) would be minimal.

3.6 Public Welfare – Noise, Odor, and Light

The PCU FED B27-197 Well Pad and PCU FED A27-197 CDP locations are wholly located within rangeland area in Rio Blanco County with Agricultural zoning designation. There are no Residential Building Units (RBUs) or other receptors within 1 mile of the proposed Location.

3.6.1 Noise

The area that the proposed PCU FED B27-197 Well Pad and PCU FED A27-197 CDP locations are in, is considered rangeland with very minimal traffic in the area. Caerus evaluated possible noise implications and reviewed the following receptors which are greater than 1-mile from the proposed working pad surface: railroads, RBU, High Occupancy Building Units (HOBU), school property, childcare centers or facilities, Designated Outside Activity Areas (DOAA), established public trails, and DIC. There is a public road (County Road 5) within approximately 3,469-feet from the working pad surface of the PCU FED B27-197 Well Pad and approximately 2,040-feet from the working pad surface of the PCU FED A27-197 CDP, which could contribute to ambient sound in the area. The nearest residential building unit is located greater than 1-mile north of the Project area.

Caerus enlisted Behrens and Associates to develop a noise model to predict the future noise impact of the proposed operations and determine what noise mitigation measures, if any, would be required to demonstrate compliance with the COGCC maximum permissible noise levels. Behrens and Associates completed the noise modeling assessment for the proposed activities at the proposed PCU FED B27-197 Well Pad and PCU FED A27-197 CDP locations. The noise modeling results were calculated using the ISO 9613-2 standards and include the effects of local topography, buildings, barriers, and ground cover. Additionally, the area surrounding the Locations were evaluated to establish noise points of compliance per COGCC 423.a.(5). The need for continuous noise monitoring was also evaluated per Rule 423.c.(1).

Due to the absence of RBU’s within 2000-feet of the working pad surface, A-weighted noise points of compliance were not evaluated. Due to the absence of RBU’s within 9,500-feet of the working pad surface, C-weighted noise points of compliance were not evaluated. An A-weighted noise point was evaluated at a golden eagle’s nest, which is located within the BLM WRFO’s ½-mile buffer from the proposed PCU FED A27-197 CDP location. Monitoring of the three known eagle

nests sites from December 14, 2022, to March 23, 2023, performed on a bi-monthly (weather permitting) basis by Westwater indicated that the nest is unoccupied. Additionally, per conversations with Caerus and BLM, the ridgeline that separates the unoccupied nest from the Location creates a natural terrain which makes the Location acceptable in regard to noise concerns for the Golden Eagle nest. There were no concerns for the PCU FED B27-197 pad as it exists outside the BLM WRFO's ½-mile buffer of the golden eagle nest.

Due to the absence of RBUs within 2000-feet of the working pad surface for both Locations, the results of the noise modeling assessment indicated that continuous noise monitoring is not required and there are no recommendations for noise mitigation for the drilling, completions, flowback, and production operations. As indicated by the Noise Mitigation Plan, the Drilling and Completions and Flowback operational phases may exceed allowable noise limits for Agricultural areas. Therefore, Caerus proceeded with consultations noted in COGCC Rules 423.b.(3)-(5).

Rio Blanco County has granted an allowance for temporarily increased maximum noise levels for the Drilling and Completions and Flowback operational phases for the development of the 22 wells on the PCU FED B27 Well Pad and the utilization of the PCU FED A27 CDP for remote stimulation as allowed by Rule 423.b.(3).B. Pursuant to Rule 423.b.(4). for locations in HPH, during pre-application consultations, Caerus and CPW agreed to the noise BMP of Caerus conducting Stages 1 and 2 of completions operations per well, which are generally considered the loudest stages, during daylight hours. Also pursuant to Rule 423.b.(4)., Caerus consulted with BLM WRFO who verbally indicated no concerns for the anticipated noise levels represented in the Noise Mitigation Plan attached in the Application's Forms 2A without further mitigation, a position which is subject to change based on the BLM WRFO's completion of their Environmental Assessment. Pursuant to Rule 423.b.(5)., Caerus requested written confirmation from BLM WRFO of their position regarding noise and received a response from the BLM on April 13, 2023, stating that the BLM is completing their NEPA analysis of the development and based on the initial reviews completed by the WRFO interdisciplinary team, no resources have been identified requiring adherence to the Rule 423-I standards. If the BLM identifies additional restrictions or mitigations are warranted those would be applied to the permit as Conditions of Approval during the federal approval process.

Caerus also evaluated HPH receptors that are within a 1-mile proximity radius to the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP, and the following Rule 1202.d. HPHs are applicable: Elk Production Area and Winter Concentration; Mule Deer Winter Concentration Area and Severe Winter Range. The proposed working pad surface of the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP reside at an elevation of 6,300-feet and 6,500-feet respectively. Seasonal timing stipulations for construction activity will apply to big game (elk and mule deer). These timing limitations would result in the avoidance or minimization of construction and pre-production noise during important wildlife seasons.

Therefore, for the reasons and commitments stated herein, Caerus does not believe that the temporary noise emitted during the pre-production phase or noise during the production phase would adversely impact members of the public or wildlife resources.

3.6.2 Odor

There are no RBUs located within a 1-mile radius from the proposed Locations, therefore, odor impacts on human receptors during pre-production are not anticipated. There is a small potential for odors generated during drilling and completions at the PCU FED B27-197 Well Pad to impact wildlife in the pre-production phase. However, due to the short duration of the pre-production phase and with the implementation measures of the BMPs laid out in the Wildlife Management Plan it is unlikely that odors would impact wildlife species primarily because Caerus does not utilize oil-based mud. In the unlikely event of an odor complaint, Caerus would determine the source of the odor and employ mitigation measures accordingly. The implementation of the minimization and mitigation measures listed in Sections 4 and 5 would further limit the impacts of odor within the CIAA.

3.6.3 Light

Caerus' development of the PCU FED B27-197 Well Pad and PCU FED A27-197 CDP locations would require work activities to be performed 24 hours per day during drilling, completion, drill-out, and flowback stages; all of which require the use of temporary lighting for safety purposes. Lighting needed for these activities would conform to nationally recognized industry and federally mandated safety standards.

Caerus enlisted Samuel Engineering to develop individual lighting mitigation plans for the PCU FED B27-197 Well Pad and the PCU FED A27-197 CDP location. Site-Specific three-dimensional lighting models were developed for each of the phases to determine their associated lighting impacts. These phases being drilling, completions, and production. The following elements were incorporated into the models: the local site topographical information, major lighting obstructions (sound walls, large equipment, etc.), individual luminaire lighting qualities, lighting mounting characteristics and surrounding building units. The lighting fixtures used in the models were selected based on currently operated representative sites and research conducted into available vendor lighting systems. The applicable regulations used for the Light Mitigation Plans are COGCC Rule 424 and Rio Blanco County Land Use Regulations Section 7-303.B.

The three-dimensional lighting model for the PCU FED A27-197 CDP location indicated that the max modeled lighting values would be 5.59 lumens per square foot (lm/ft^2) during the drilling phase and 0.62 lm/ft^2 for the completions phase. The three-dimensional lighting model for the PCU FED B27-197 pad indicated that the max modeled lighting values would be 3.98 lm/ft^2 during the drilling phase and 0.96 lm/ft^2 for the completions phase. As a result, it is expected that the temporary lighting utilized during drilling and completions phase would not exceed the maximum permissible light level of 12 lm/ft^2 of the total WPS, and there would be no cumulative light impacts on wildlife. Additionally, there are no building units with 1 mile of the location boundaries, therefore, there are no light impacts to RBUs.

The PCU FED B27-197 Well Pad and PCU FED A27-197 CDP locations will not have fixed lighting installed or utilized during the production phase. Production activities are conducted during daylight hours and do not require lighting. Therefore, light impacts to the public and wildlife resources are minimal to non-existent for the long-term production life of the wells, and adverse

lighting impacts on human or wildlife receptors are not anticipated. The implementation of the minimization and mitigation measures listed in Sections 4 and 5 would further limit the impacts of light within the CIAA.

4.0 Minimization Measures

COGCC defines "minimizing adverse impacts" as provided by § 34-60-106(2.5), C.R.S., as "providing necessary and reasonable protections to reduce the extent, severity, significance, or duration of unavoidable direct, indirect and cumulative adverse impacts to public health, safety, welfare, the environment, or wildlife resources from oil and gas operations. Minimization measures reduce impacts to the smallest amount possible and can include operational and engineering controls. Caerus has committed to the following minimization measures for resources based on the cumulative impact analysis provided in this Plan. These minimization measures are included within the operational plans submitted as attachments to Caerus' Form 2As for the proposed RNPU Phase I OGDP.

4.1 Air Quality

- Caerus will employ practices for continuous control of fugitive dust caused by operations. These practices shall include but are not limited to:
    - The use of speed restrictions.
    - Regular road maintenance.
    - Restriction of construction activity during high-wind days.
    - Caerus will provide dust control, during new location construction, around tanks and wellheads, and on lease roads if excess dust is present with a temporary suppressant such as water.
    - Automation is used on all new wells to minimize truck traffic.
- Caerus will use green completions to reduce venting of natural gas to atmosphere during new well completions.
- Caerus will not flare produced gas during normal operations.
- Caerus will use supervisory control and data acquisition (SCADA) systems to monitor well operations, which will reduce emissions from vehicle traffic due to the reduced number of vehicle trips to the site.
- Caerus has a 24/7 Field Monitoring that allows for continuous monitoring operating conditions when personnel are not on-site in order to identify and correct any improper operations as soon as possible.
- Caerus has a Preventative Maintenance (PM) program that contributes to the decrease in fugitive emissions and spills related to non-functioning or aging equipment.
- Caerus will implement a Leak Detection and Repair program (LDAR) including monthly inspections using infrared (e.g., FLIR) cameras.

- Caerus is committed to closed-loop drilling, therefore, there will be no emission-producing reserve pits.
- Caerus has volunteered to be a member of One Future and The Environmental Partnership which are voluntary programs that require a commitment to reduce methane emissions. Caerus will report reduction targets and annual metrics through the Caerus ESG Report.
- Caerus will use Project Canary for fence line air monitoring during pre-production operations on all new locations.

4.2 Public Health

- Based on the airborne HAP concentrations estimated using HAP emission rates and the box model methodology described in Section 3.1, no HAP is expected to exceed the target cancer risk or noncancer hazard index for chronic duration exposures within the well pad Locations during pre-production or production. Additionally, no HAPs exceed the residential or industrial screening levels for acute duration exposures within the well pad Locations during pre-production or production. These results support the conclusion that HAP emissions are not expected to contribute to acute or chronic risks to human health within or beyond the well pad Locations. Therefore, no additional minimization measures are required.

4.3 Water Resources

- Caerus will implement a Stormwater Management Plan (SWMP) to protect Waters of the State that could receive stormwater runoff from the Location.
- Caerus will have no staging, refueling, or chemical storage areas associated with the Project within 500 feet of the OHWM of any river, perennial or intermittent stream, lake, pond, or wetland.
- Caerus will implement an SPCC Plan to protect water resources from potential spills.
- Caerus will manage potential pollutants located onsite by sealing, wrapping, covering, or having containment/protection while not actively being used to eliminate and/or minimize contact with stormwater runoff, and prevent discharges of chemicals or other materials from the site.
- Caerus will practice proper storage, safe-handling, good housekeeping and spill prevention practices and procedures to prevent pollutants or contaminants from leaving the site.
- Energy dissipaters such as surface roughening, straw mulch/hydro mulch, or straw wattles will be installed during construction and will be left in place and maintained for the life of the project or until disturbed slopes have been revegetated and stabilized. Locations for these BMPs are dictated by the Site-specific SWMP.

- Upon surface owner authorization and per COGCC Rules 615 and 318A.e(4), Caerus will collect baseline water quality samples from an appropriate set of water wells within the vicinity of the oil and gas location. Baseline samples will be planned and collected prior to drilling (setting of conductor casing) operations for the initial site well.
- Caerus will use SCADA to allow for rapid well shutdown in the event of a potential release.
- Caerus will disinfect water suction hoses and water transportation tanks withdrawing from or discharging into surface waters used previously in another river, intermittent or perennial stream, lake, pond, or wetland and discard rinse water in an approved disposal facility. Disinfection practices will be repeated prior to completing work and before moving to the next water body. Disinfection will be performed by scrubbing and pre-rinsing equipment away from water bodies to remove all mud, plants, and organic materials and then by implementing one of the following practices:
    - Spray/soak equipment with a CPW-approved disinfectant solution capable of killing whirling disease spores and other aquatic nuisance species defined by CPW; or
    - Spray/soak equipment with water greater than 140° Fahrenheit for at least 10 minutes. All equipment and any compartments they contain will be completely drained and dried between each use.

4.4 Terrestrial and Aquatic Wildlife Resources and Ecosystems

4.4.1 General Wildlife Species

- No surface disturbing activities from December 1 through April 30 for construction will be permitted in order to reduce the disturbance of big game animals on severe winter range.
- Caerus has consulted with BLM (surface owner) on the appropriate seed mix for use during reclamation. CPW has concurred with the approved seed mix.
- Caerus will implement three-phase gathering systems to reduce onsite facilities and increase acreage put into interim reclamation.
- Caerus will use remote well control and monitoring to reduce traffic through work/project prioritization and increase emergency response efficiency.
- Caerus will utilize solar panels as an alternate energy source for on-location production equipment.
- Caerus agrees to report bear conflicts immediately to CPW staff and to will store all garbage, trash, and debris in enclosed bear-proof trash containers and transported to an approved disposal facility once per week during drilling and completions operations. No garbage, trash, and debris will be disposed of on location. The well site and access road will be kept free of trash and debris at all times.
- Only essential Caerus traffic will be permitted to access sites where active operations are occurring.

- Caerus will work with landowners to identify and protect wildlife populations and habitats.
- Caerus will not utilize reserve pits or other open pits for wastewater, which will reduce the potential impacts to bird species.
- If Caerus installs fencing, the fencing design will comply with CPW's Fencing with Wildlife in Mind guidance (CPW 2015).

4.4.2 Raptor Species

- Caerus will survey for raptors prior to new development if appropriate habitat exists per Caerus' Initial Baseline Assessment (ISA) process. Caerus will consult with and implement BLM and CPW recommendations regarding raptor protection measures including seasonal timing restrictions and recommended buffer zones.

4.4.3 Migratory Birds

- To reduce impacts to Birds of Conservation Concern (BCC), construction, drilling, or completion activities that are initiated prior to March 1st may continue through the breeding season because it is assumed loss of suitable breeding habitat occurred in the oil and gas location prior to the start of the breeding season.
- Project will apply the following step-down approach, consistent with state and federal recommendations to avoid disturbing active migratory bird nests during construction:
    - Avoidance – Conduct habitat-disturbing activities (for example, grading, scraping, mowing, and grubbing) in the nonbreeding season (September 1 to March 31) to the extent practicable.
    - Habitat Manipulation/Removal – If work activities are planned between April 1 and August 31, remove or alter vegetation within construction footprints and road rights-of-way prior to April 1 to discourage nesting within areas scheduled for summer construction.
    - Habitat Maintenance – Once vegetation has been removed or mowed, appropriate measures (that is, repeated mowing/trimming) should be implemented to assure vegetation does not grow to more than six inches high.
    - Preconstruction Clearance Surveys – If activities 1 through 3 cannot be completed, preconstruction clearance surveys should be conducted by a trained biologist during the nesting season, as described below, to identify any active nests.
- To prevent access by wildlife, including birds and bats, Caerus will fence and net or install other CPW-approved exclusion devices on conductors and general Oil and Gas Operations that are intended to contain Fluids.
    - The Director may require an operator to fence and net or install other CPW-approved exclusion devices on an existing Pit if the Director determines that the installation is necessary and reasonable to protect Wildlife Resources based on

the analysis required by Rule 909.j, or other information that demonstrates additional protections for Wildlife Resources are appropriate.

- Caerus will properly maintain and repair all fences, nets, and CPW-approved exclusion devices required by this Rule 1202.a.(4).

4.4.4 Mule Deer and Elk

- No surface disturbing activities from December 1 through April 30 for construction will be permitted in order to reduce the disturbance of big game animals on severe winter range.
- Caerus will perform completions activities remotely on the PCU FED A27-197 CDP, which is located in a valley bottom. The natural terrain features will create a buffer for associated sound.
- Caerus will conduct Stages 1 and 2 of well stimulation during the Completions operational phase during daylight hours to minimize associated sound during the night.
- Caerus has consulted with BLM (surface owner) on the appropriate seed mix for use during reclamation. CPW has concurred with the approved seed mix.
- Caerus will implement three-phase gathering systems at the PCU FED A27-197 CDP to reduce onsite facilities and increase acreage put into interim reclamation.
- Caerus will use remote well control and monitoring to reduce traffic through work/project prioritization and increase emergency response efficiency.

4.5 Soil Resources

- Caerus will implement a SWMP (attached to Form 2A). Key control measures from that document are included here:
    - All available topsoil will be removed from the well pad areas and stockpiled/stored adjacent to the well pad in order to retain indigenous seed bank and soil microbes that are fundamental to site restoration. Salvaged topsoil will be stabilized using methods outlined in Caerus Topsoil Protection Plan.
    - BMPs such as, straw mulch, hydro mulch or straw wattles, sediment basins, and perimeter berms will be used to prevent excess erosion of soils from disturbed areas. These structures will be installed during construction and left in place and maintained for the life of the project or until the disturbed slopes have been revegetated and stabilized.
    - The site will be inspected as required by CDPHE's inspection frequency by a qualified stormwater inspector. Any deficiencies noted will be brought to the attention of the operator and addressed in a timely manner.
    - In addition to installing erosion and sediment controls at the site, Caerus will utilize administrative controls during precipitation events will.

- Based on changes in physical characteristics (e.g., organic content, color, texture, density, or consistency) soil horizons will be segregated and stockpiled separately; topsoil stockpiles will be separated by compacted earthen berms, sediment control logs, straw bale barriers, etc.; and stabilizing stockpile surfaces to control for erosion and sedimentation.
- Caerus will indicate topsoil stockpiles on site with signage; stockpiles will be placed in areas away from vehicle and equipment traffic; and when stockpiling, compaction will be minimized by limiting the number of equipment passes, limiting stockpile height, and using vegetation.
- Caerus will seed topsoil stockpiles with an ecologically site-appropriate seed mix for long-term storage piles to help maintain biological activity and provide a seed bank of viable seed. If long-term stockpiling or deep stockpiling cannot be avoided, application of mycorrhizal inoculants (see section below) may also be used to help ensure the topsoil maintains optimal condition for reclamation purposes.
- Caerus will cross-rip all areas compacted by drilling and subsequent oil and gas operations which are no longer needed following completion of such operations. Ripping will be undertaken to a depth of 18 inches unless and to the extent bed rock is encountered at a shallower depth.
- Caerus will regrade cut and fill areas awaiting reclamation to match pre-existing contours to the nearest extent possible to provide long term erosion control and site stability.
- Caerus will grade the topsoil stockpile to ensure that all surfaces can be stabilized safely and effectively.
- Caerus will stabilize and maintain areas needed for production operations or for subsequent drilling operations to minimize dust and erosion to the extent possible.
- Caerus will implement an SPCC Plan to protect soil from potential spills.

4.6 Vegetation

- All seed, straw, mulch, or other vegetative material to be used on reclamation will comply with United States Department of Agriculture (USDA) state noxious weed seed requirements and must be certified by a qualified federal, state, or county office as free of noxious weeds. Any seed lot with test results showing presence of State of Colorado A or B list species will be rejected in its entirety and a new tested lot will be used instead.
- Caerus will confirm that erosion and sedimentation controls are implemented as necessary before and after seeding operations, as detailed in the Site SWMP.
- Caerus will monitor and maintain the vegetation on the topsoil stockpiles to promote native vegetation and to suppress invasive and noxious weeds.

4.7 Public Welfare – Noise, Odor, and Light

4.7.1 Public Welfare – General

- All equipment and vehicles will be confined to the access roads, pad and areas specified in the BLM APD. Caerus will be responsible for continuous inspection and maintenance of the access road and will conform to a schedule of preventive maintenance, which at a minimum, provides for the following corrective measures on a biannual basis. (Problem areas will be corrected as needed.)
    - Road surface grading.
    - Relief ditch, culvert cleaning and cattle guard cleaning.
    - Erosion control measures for cut and fill slopes and all other disturbed areas.
    - Road closures in periods of excessive soil moisture to prevent rutting caused by vehicular traffic.
    - Road and slope stabilization measures as required. The roads shall be maintained to the standards required for the construction of the road until final abandonment and rehabilitation takes place.
- To minimize the possibility of fires during the construction phase, equipment, including welding trucks, will be equipped with fire extinguishers and spark arresters.
- Vehicle use associated with the oil field will be instructed to travel at low speed and remain on existing roads and the well pad at all times.
- Caerus will limit trucking water to location for development; rather, existing water pipelines will be utilized.
- Caerus will use SCADA to reduce the frequency of vehicle trips to the Oil and gas location to monitor well operations.

4.7.2 Noise

- Caerus will site production equipment in a manner to minimize impact to the surrounding area.
- Completions activities will take place remotely, on the PCU FED A27-197 CDP, which is located in a valley bottom. The natural terrain features will create a buffer for associated sound.

4.7.3 Odor

- Oil and gas operations will be in compliance with the CDPHE, Air Pollution Control Division, Regulation No. 2 Odor Emission, 5 C.C.R. 1001-4, Regulation No. 3 (5 C.C.R. 1001-5), and Regulation No. 7 Section XVII.B.1 (a-c) and Section XII.
- Caerus will control truck loadouts, well unloads, and swabbing eliminating high pressure venting or flaring.

4.7.4 Light

Caerus will utilize BMPs to minimize light pollution which may include the following:

- During construction of all phases, only day light operations will be conducted and there will be no nighttime operations that require lighting.
- LED fixtures will be utilized to reduce skyglow.
- Working areas within the working pad surface (WPS) will be adequately lit to aid in safe working conditions during all low-light working times (e.g., night-time, dusk, dawn, overcast). Lighting shall conform with all OSHA, IESNA, and ANSI standards.
- No direct light, except those governed by Federal Aviation Administration (FAA) standards, shall shine beyond the boundaries of the WPS, especially onto public roads, adjacent properties, and/or high priority habitats. All lighting shall conform with all COGCC, county, and municipal standards.
- For work-place safety concerns, no direct or reflected direct light shall shine towards the entrance of the WPS.
- Lighting within the drilling, completion, and flowback areas has been reduced to provide a minimum acceptable value for safe operation.
- Light masts are automatically switched off/on based on lighting sensors.
- Low power (63 W) LED lights are used for the drill rig.
- All lights capable of adjustment will be angled downward and inward towards working areas on the WPS. No light should shine above the horizontal plane passing through the center point of the light source.
- Any lighting damaged and/or improperly directed or angled will be promptly fixed and/or corrected to conform to the lighting plan.
- Equipment shall be operated and/or orientated in such a manner that lights affixed to equipment do not shine above the horizontal plane passing through the center point of the light source or shine beyond the boundary of the WPS.
- For non-working or shut-down days where no personnel are on-site or in working areas, non-essential temporary lighting will be turned off. If no personnel are on-site and essential temporary lighting is needed, the essential temporary lighting will be inspected every 24 hours.
- All redundant, unused, or not-needed light will be turned off.
- Any additional light units used to address work-place safety concerns that are not shown on the lighting photometric plans will be verified by lighting engineer to ensure that the modified lighting will remain within the required lighting standards stated in this report.
- In the event of a lighting complaint, Caerus will address the complaint and work with all parties involved to ensure the complaint is resolved.

5.0 Mitigation Measures

COGCC defines “mitigating adverse impacts” as “measures that compensate for unavoidable direct, indirect, and cumulative adverse impacts and loss of such resources from oil and gas operations.” Mitigation measures are used to offset the intensity or severity of impacts and can include compensatory actions and administrative controls. Caerus has committed to the following mitigation measures for resources based on the cumulative impact analysis provided in this Plan. These mitigation measures match those listed on the Mitigation Measures tab in Form 2B.

5.1 Air Quality

- Minimization measures listed for air quality in Section 4 will address the potential impacts to air resources within the CIAA. Therefore, no additional mitigation measures for air quality are included.

5.2 Public Health

- HAP emissions are not expected to contribute to acute or chronic risks to human health within or beyond the well pad Location. Therefore, no additional mitigation measures are required.

5.3 Water Resources

- Minimization measures included in the SWMP, and other measures included in Section 4 will address the potential impacts to water resources within the CIAA. Therefore, no additional mitigation measures are required.

5.4 Terrestrial and Aquatic Wildlife Resources and Ecosystems

- Caerus will conduct regular contractor and employee training with respect to wildlife awareness. Caerus will also reinforce training at worksite tailgate meetings, monthly safety meetings, and company-side communication emails. Caerus will also employ signs in the field as needed.
- Caerus will perform biological site surveys, using the most recent data sets for wildlife and aquatic resources. Additionally, Caerus will perform pre-disturbance surveys when the on-site inspection and commencement of disturbance occur in different field seasons.
- During final reclamation, Caerus will re-contour and re-vegetate all roads and the well pad to a stable condition to restore natural habitats for wildlife species.
- Caerus has agreed to pay compensatory mitigation associated with direct and indirect impacts to elk and mule deer from the construction and long-term operation of the B27 Well Pad and the A27-197 CDP.
- Caerus and CPW have agreed to further evaluate potential mitigation projects within the northwest region of Colorado that could be used to off-set direct and indirect impacts to elk and mule deer. If Caerus and CPW agree on a compensatory mitigation project(s), Caerus will submit a sundry to their WMPs detailing the relevant plan components

described under Rule 1203.b.(1). To ensure the Director has adequate time to review the revised mitigation plan, Caerus will submit the sundry a minimum of 30 days prior to the payment due date described in COGCC Rule 1203.c., or 60 days prior to submittal of the Form 42 – Notice of Construction.

5.5 Soil Resources

- Caerus will place a sign on each topsoil stockpile designating and preserving that material for reclamation purposes throughout the lifetime of the location.

5.6 Vegetation

- Caerus will follow the respective Final Reclamation Plans for interim and final reclamation practices for the B27 Well Pad and the A27-197 CDP, including identifying appropriate seed mixes and invasive weed control measures. The seed mix to be utilized has been determined by the BLM.
- Caerus will reseed disturbed areas in the first favorable season following rig demobilization with species consistent with the plant community in the vicinity of the Location.
- Caerus will monitor the site to identify areas of poor growth or areas that fail to germinate; these areas will be reseeded as needed.
- Caerus will monitor and treat the Location for noxious weeds for the life of the project until Final Abandonment has been approved by the BLM. Monitoring will be conducted annually during the growing season to determine the presence of any State-listed noxious weeds. Noxious weeds that have been identified during monitoring will be promptly treated and controlled.
- Caerus will reseed reclamation areas at the first appropriate seeding window (September 1st – March 31st) following disturbance using with seed mixes that include species consistent with the native plant community. Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Drill seeding is the preferred method of application and drill seeding depth shall be no greater than ½ inch. If drill seeding cannot be accomplished, seed should be broadcast at double the rate used for drill seeding and harrowed or raked into the soil.

5.7 Public Welfare – Noise, Odor, and Light

5.7.1 Noise

- Minimization measures listed for noise in Section 4 will address the potential impacts from noise in the CIAA. Therefore, no additional mitigation measures for noise are included.

5.7.2 Odor

- Minimization measures listed for odor in Section 4 will address the potential impacts from odors in the CIAA. Therefore, no additional mitigation measures for odors are included.

5.7.3 Light

- Minimization measures listed for lighting in Section 4 will address the potential impacts from lighting to the CIAA. Therefore, no additional mitigation measures for lighting are included.