FORM 2B Rev 03/21

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number: 402680350

Date Received: 07/13/2021

CUMULATIVE IMPACTS DATA IDENTIFICATION

Per Rule 303, this form and all required components and attachments will be submitted for any Oil and Gas Development Plan.

Form Type: [X] **OGDP** [ ] **Partial 2B - Rule 803.b.(2).A UIC Conversion**

OPERATOR INFORMATION

OGCC Operator Number: 10633
Name of Operator: CRESTONE PEAK RESOURCES OPERATING LLC
Address: 1801 CALIFORNIA STREET #2500
City: DENVER State: CO Zip: 80202

Contact Name and Telephone:
Name: Kathy Denzer
Phone: (720) 822-8083
Email: regulatorystate@crestomepr.com

OIL & GAS DEVELOPMENT PLAN INFORMATION

Oil & Gas Development Plan Name: Cosslett East

Oil & Gas Development Plan Docket #:

Docket Number
210700115

Oil & Gas Development Plan ID #: Data not required

[ ] This OGDP is included in a Comprehensive Area Plan. CAP ID #:

OIL & GAS LOCATION DATA

1 Oil & Gas Location Name: COSSLETT B UNIT 61N68W 22SENE Number: 323151 Status: Active, built

OIL & GAS LOCATION INFORMATION

Form 2A Doc#: 402643220

Loc ID#: 323151

Oil & Gas Location: QTRQTR: SENE Sec: 22 Twp: 1N Rng: 68W Meridian: 6

Total number of wells planned: 19

Operations Duration

Estimated total number of weeks to construct this Oil & Gas Location: 6

Estimated total number of weeks to drill all planned wells for this Oil & Gas Location: 19

Number of planned drilling occupations to drill all planned wells for this Oil & Gas Location: 2

Estimated total number of weeks to complete all planned wells for this Oil & Gas Location: 17

Number of planned completions occupations to complete all planned wells for this Oil & Gas Location: 1

Will there be simultaneous drilling and completions operations occurring at this Oil & Gas Location? No

Estimated total number of months the Oil & Gas Location will be active, prior to abandonment and reclamation: 300

Noise Impacts

Provide a qualitative evaluation of the incremental adverse noise impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

Based on noise modelling and the implementation of mitigations the sound levels at this location should not increase ambient noise and should comply with noise limits for drilling and completion operations.

Provide a qualitative evaluation of the incremental adverse noise impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

Minimal noise anticipated during production stage at this locaiton. Based on modeling, noise levels indicate will remain under the current noise limits.

Light Impacts

Provide a qualitative evaluation of the incremental adverse light impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

During the constructon phase, no night work or permanent lighting will be installed on site. During drilling and completion phases temporary lighting will be used 24/7 for safe operations. The light originating from the location should reult in a minimal increase to ambient lighting in the area for both short and long term.

Provide a qualitative evaluation of the incremental adverse light impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

No night work is anticipated and no permanent lighting will be installed on the site during production activities.

Odor Impacts

Provide a qualitative evaluation of the incremental adverse odor impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

Odor impacts will be minimal and intermittent during pre-production phase due to equipment exhaust and fluid management which will be mitigated by BMP's for both long and short term impacts.

Provide a qualitative evaluation of the incremental adverse odor impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

There should rarely be any odor originating from the location during the production phase since the location will have minimal equipment and flow fluids to the Liquid Handling Hub.

WATER RESOURCES

[X] This Oil & Gas Location is listed as a sensitive area for water resources.

[X] This Oil & Gas Location is within 2,640 feet of a surface Water of the State.

Estimated depth to groundwater: 17

Estimated total planned on-location storage capacity of the Oil & Gas Location for:

	Number of Tanks	Total Volume (bbls)
Oil	0	0
Condensate	0	0
Produced Water	0	0
Other volumes of stored fluids, hydrocarbons, chemicals, or E&P Waste Fluids	6	59.5

List, with volumes, the “Other” fluids planned to be stored on the Oil & Gas Location, including, but not limited to: hydrocarbons, chemicals, or E&P Waste fluids.

1) Corrosion Inhibitor <500gal
2) Paraffin Inhibitor <500gal
3) H2S Scavenger <500gal
4) Methanol <500gal
5) Emulsion Breaker <500gal
6) Defoamer <500gal"

Potential Impacted Surface Water Resources

Provide the distance and direction of the contaminant migration pathway from the Oil & Gas Location to the nearest downstream riparian corridors, wetlands, and surface Waters of the State. Also provide an evaluation of the baseline condition of the nearest downstream riparian corridors, wetlands, and surface Waters of the State.
Enter 2,640 for distances greater than 1/2-mile. Distances are measured along the migration pathway, not a straight line from the edge of the Oil & Gas Location.

	Distance	Direction	Evaluation of Baseline Condition
Riparian Corridor	770	S	The Riparian corridor is a freshwater pond wetland that is downgradient, persistent and has vegetation that is consistent with a Riparian Corridor.
Wetland	446	NW	low area along treeline described as an intermittent ditch
Surface Waters of the State	161	NE	Ditch is typically dry in absence of precipitation events and contains similar vegetation to the surrounding landscape.

Potential Impacts to Public Water Resources
Provide the distance, direction, and evaluation of potential impacts to the nearest Public Water System Intake. Enter 5,280 for distances greater than 1-mile.

	Distance	Direction	Evaluation of Baseline Condition
Public Water System Intake	161	NE	The potential migration pathway would be from ditch along I-25 frontage road to canal (Stanley Ditch) NE to Central Weld County Water District water tower on parcel 146714322002 approx. 4000' NE of the WPS.

Estimated Water Usage
Provide the estimated total volumes of the following that are anticipated to be used during the drilling and completions stage of the Oil & Gas Location activity.

Water Source	Volume (bbls)		Volume (bbls)		Volume (bbls)		
Surface Water	0	Recycled Water (Produced Water)	380000	Unspecified Source	0	Percentage Recycled Water	5 %
Ground Water	7244173	Recycled Water (non-Produced Water)	0	Total Water Usage	7624173		

If an unspecified water source is planned to be used, provide a description of the source.

NA

Evaluate the measures being taken to reduce freshwater use, including reusing and recycling produced water.

Crestone plans to utilize as much recycled produced water as possible on this location. Primary source will be from our Erie Hub (Centralized Gathering Facility) via pipeline and the secondarily to truck produced water from nearby producing wells.

ECOSYSTEM & WILDLIFE RESOURCES

List High Priority Habitats (HPH) that occur within one mile of the Oil & Gas Location and list the distance from working pad surface. If the location is partially or entirely within a HPH list the distance as '0' and provide the estimated acreage disturbance of that HPH by the location construction.

High Priority Habitat (HPH) Name:	Distance	Estimated Acreage Disturbed
Aquatic native species conservation waters	1247	0

List total size of disturbed acreage and disturbed High Priority Habitat (HPH) area (in acres) during the Oil & Gas Location construction and after interim reclamation.

	Total Acreage (acres)	Total HPH Acreage (acres)
Construction	27.05	0
Post-interim Reclamation	10.61	0

Provide any further information regarding the location's HPH disturbance.

NA

Provide the acreage of the existing land use types that occur within one mile of the Oil & Gas Location. Note: a circle with a one mile radius is approximately 2010 acres.

		Existing Acreage		Existing Acreage		Existing Acreage		Existing Acreage
Crop Land:	Irrigated	459	Non-Irrigated	916	Conservation Reserve Program(CRP)	0		
Non-Crop Land:	Rangeland	80	Forestry	0	Recreation	0	Other	858
Subdivided:	Industrial	51	Commercial	105	Residential	170		

If any land use is industrial, provide a description of the use or operation of the industrial facilities.

Service, Petroleum, and Manufacturing/Processing

If any land use is "Other", provide a description of the land use.

Commercial, Waste Land, Exempt, Residential, Industrial, Vacant, No Designation (Hwy ROW)

If any portion of the land use for the proposed oil and gas location includes Rangeland, Forestry, or Recreation, provide a list of the plant community or communities and estimated acreage disturbed for each:

	Estimated Disturbed Acreage		Estimated Disturbed Acreage		Estimated Disturbed Acreage		Estimated Disturbed Acreage
Disturbed Grassland	1455	Shrub Land	0	Mountain Riparian	0	Wetland Aquatic	0
Native Grassland	0	Plains Riparian	0	Forest Land	0	Alpine	0

Provide a qualitative evaluation of incremental adverse impacts to ecosystems, including any plant communities, as a result of Oil and Gas Operations associated with the proposed Oil & Gas Location.

Potential adverse impacts to the ecosystem are anticipated to be minimal. (See Wildlife Protection Plan attached to Form 2A which includes a qualitative evaluation of potential adverse impacts to ecosystems, including vegetative communities, surface waters, and wildlife.)

Soil Resources

List all soil map units that occur within the Oil & Gas Location and list the estimated total area (in acres) disturbance of each soil map unit.

NRCS Map Unit Name:	Estimated Disturbed Acreage
42 - Nunn clay loam, 1 to 3 percent slopes	14.6
67 - Ulm clay loam, 3 to 5 percent slopes	5.5
79 - Weld locam, 1 to 3 percent slopes	7

PUBLIC WELFARE

☐ This Oil & Gas Location lies within a Disproportionately Impacted Community as defined in the 100-series rules.

Building Units within 1-mile	0'-2,000'	2,001'-5,280'
Total number of ResidentialBuilding Units:	2	126
Total Number of non-school AND non child care center High Occupancy Building Units:	0	0
Total number of School Facilities:	0	0
Total number of Child Care Centers:	0	0

Recreation and Scenic Value

List all State Parks, State Trust Lands, or State Wildlife Area within 1-mile of the Oil & Gas Location.

None

List all Designated Outdoor Activity Areas within 1-mile of the Oil & Gas Location.

None

List all mapped trails that support any of the following recreational activities within 1-mile of the Oil & Gas Location: Hiking, Biking, Horseback Riding, Motorcycle Riding, ATV Riding, OHV, Nordic Skiing, Snowmobiling, or Snowshoeing.

None

AIR RESOURCES

Pre-Production Emissions

Complete the following chart based on the estimated total equipment emissions (in tons) for the Oil & Gas Location during the pre-production (construction, drilling, completions) stage for Criteria Pollutants by equipment type.

	NOx	CO	VOCs	Methane	Ethane	CO2	N2O
Process Heaters or Boilers	13.84	3.46	0.14	0.04	0	0	0.18

Storage Tanks	0	0.02	0.04	0.02	0.02	9.64	0
Venting or Blowdowns	0	0	0	0	0	0	0
Combustion Control Devices	0.21	0.94	2.88	2.61	1.2	395.49	0
Non-Road Internal Combustion Engines	386.48	327.07	60.69	2.63	0	64741.86	0.53
Drill Mud	0	0	7.1	6.44	2.97	0.57	0
Flowback or Completions	0.58	2.66	32.79	29.72	13.71	1115.5	0
Loadout	0	0	0	0	0	0	0

Production Emissions
Complete the following chart based on the estimated full facility equipment emissions (in tons) for the Oil & Gas Location once the Oil & Gas Location has entered the production stage, for Criteria Pollutants. The table should be filled out based on ONE year of operation.

	NOx	CO	VOCs	Methane	Ethane	CO2	N2O
Stationary Engines or Turbines	0	0	0	0	0	0	0
Process Heaters or Boilers	1.72	1.44	0.09	0.04	0.05	2061.18	0.04
Storage Tanks	0	0	0	0	0	0	0
Dehydration Units	0	0	0	0	0	0	0
Pneumatic Pumps	0	0	0	0	0	0	0
Pneumatic Controllers	0	0	0	0	0	0	0
Separators	0	0	0	0	0	0	0
Fugitives			0.43	0.11	0.08	0.01	
Venting or Blowdowns	0	0	1	0.84	0.4	0.08	0
Combustion Control Devices	0	0	0	0	0	0	0
Loadout	0	0	0	0	0	0	0
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0
Well Bradenhead	0	0	0.26	23.53	10.85	2.09	0
Well Maintenance	0	0	3.32	3.01	1.39	26.74	0

Diesel Vehicle Road Miles
Complete the following chart for diesel vehicle road miles during each stage of oil and gas location operations.

During Construction: 12800 During Completions: 472500

During Drilling: 129052 During Interim Reclamation: 786

During Production: 85000

PUBLIC HEALTH RESOURCES

Pre-Production Emissions
Complete the following chart based on the estimated total equipment emissions (in lbs) for the Oil & Gas Location during the pre-production (construction, drilling, completions) stage for Hazardous Air Pollutants (HAP).

	BEN	TOL	ETH	XYL	NHE	TMP	H2S	FDE	MET	HAP
Process Heaters or Boilers	0	9	0	0	0	0	0	84	0	94
Storage Tanks	0	0	0	0	0	0	0	0	0	0
Venting or Blowdowns	0	0	0	0	0	0	0	0	0	0
Combustion Control Devices	13	5	0	1	69	0	0	0	0	88
Non-Road Internal Combustion Engines	621	227	0	156	0	0	0	179	0	1182
Drill Mud	31	12	1	1	170	0	0	0	0	216
Flowback or Completions	145	58	3	7	783	0	1	0	0	997
Loadout	0	0	0	0	0	0	0	0	0	0

Production Emissions
Complete the following chart based on the estimated total equipment emissions (in lbs) for the Oil & Gas Location once the Oil & Gas Location has entered the production stage, for Hazardous Air Pollutants (HAP). The table should be filled out based on ONE year of operation.

	BEN	TOL	ETH	XYL	NHE	TMP	H2S	FDE	MET	HAP
Stationary Engines or Turbines	0	0	0	0	0	0	0	0	0	0
Process Heaters or Boilers	0	0	0	0	62	0	0	3	0	65
Storage Tanks	0	0	0	0	0	0	0	0	0	0
Dehydration Units	0	0	0	0	0	0	0	0	0	0
Pneumatic Pumps	0	0	0	0	0	0	0	0	0	0
Pneumatic Controllers	0	0	0	0	0	0	0	0	0	0
Separators	0	0	0	0	0	0	0	0	0	0
Fugitives	4	2	0	1	22	0	0	0	0	30
Venting or Blowdowns	5	2	0	0	14	0	0	0	0	21
Combustion Control Devices	0	0	0	0	0	0	0	0	0	0
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0	0	0	0
Loadout	0	0	0	0	0	0	0	0	0	0
Well Bradenhead	115	46	3	5	620	0	0	0	0	789
Well Maintenance	15	6	0	1	79	0	0	0	0	101

Provide a qualitative evaluation of any potential acute or chronic, short- or long-term incremental impacts to public health as a result of the estimated total pre-production hazardous air pollutant emissions.

Crestone contracted with an independent qualified third-party consulting firm, CTEH LLC., to design and perform studies to characterize the short-term impacts on local air quality and public health from discrete operational phases at four oil and gas well pads being developed in Weld County, Colorado: Big Horn, Cosslett, Echevarria, and Kugel well pads. The specific goals of this project were to: (1) collect a high-resolution data set of chemical concentrations in air near the well pad and the surrounding communities, and (2) evaluate the impact on risks to public health, if any, from the release of oil and gas-related compounds into the air during specific operational phases of well development. The complete study has been provided as an attachment in the Public Health Resources section of this OGDP application and is titled “Community Exposure and Health Risk Assessment: Real Time Air Monitoring and Air Sampling, 12/11/2019.”

The four phases of this study included all pre-production phases; drilling, completions, and flowback. The study was performed at locations where there were numerous building units and distance to building units were similar to this OGDP application for the Cosslett East Pad. During the study, Crestone utilized the BMPs for all phases of operations similar to the BMPs in OGDP application. In some instances, the Cosslett East OGDP Application provided even more effective BMPs than the subjects of the public health study. The following BMPs were employed during the time of the study and will also be employed at the Cosslett Eat pad.
• Drilling
o Class III drilling fluid - oil based mud (odorless, no BTEX)
o Mud Chillers - used to control cuttings odor while drilling through hydrocarbon bearing zones
o Rotary steerable unit that reduces drilling time on-site
o Local electrical power for drill rig - reduces air emissions, NOx
o All equipment is on impermeable ground liners during drilling and completions
o Continuous emissions monitoring for volatile organic compounds, PM, methane. Equipped with Summa Canister sampling capabilities in the event of an emissions detection event.
• Completions
o Completions fleet fuel substitution – use compressed natural gas to reduce use of diesel fuel; up to 50% replacement when possible
o Low-noise completion fleets – utilizing insulated engine housing and hospital grade mufflers
o Continuous emissions monitoring for volatile organic compounds, PM, methane. Equipped with Summa Canister sampling capabilities in the event of an emissions detection event.
• Flowback
o Vapor Recovery Units are used during flowback operations and initial year of production
o Closed-top oil tanks - used during flowback operations and drill out
o Combustor used for tank vapors during flowback and drill out
o LDAR surveys done weekly to confirm leak tightness
o Continuous emissions monitoring for volatile organic compounds, PM, methane. Equipped with Summa Canister sampling capabilities in the event of an emissions detection event.
CTEH collected over 5,000 real-time measurements, along with 20 analytical samples, in communities around multiple well pads. Findings from this dataset indicate:
• The compounds that may be emitted during any or all operations that CTEH has studied are not expected to cause any short-term adverse health effects to nearby residents, including sensitive populations.
• Real-time data indicate no adverse health risks to nearby communities, including sensitive individuals, from exposures to VOCs, H2S or PM that may be emitted from operational phases at the various Crestone well pads. Analytical air sampling detections for each analyte were below their acute health guideline value established by the federal Agency for Toxic Substances and Disease Registry (ATSDR).
The CTEH study was conducted at operations that will be nearly identical to the Cosslett East OGDP. The conclusions above were based on a quantitative in-depth study of Crestone specific operations. Based on these measurements/conclusions and the fact that the Cosslett East OGDP has nearly identical or better BMPs in place there are no expected short- or long-term incremental impacts to public health as a result of the estimated total hazardous air pollutant emissions during the pre-production phase of this Oil and Gas Location.

Provide a qualitative evaluation of any potential acute or chronic, short- or long-term incremental impacts to public health as a result of the estimated annual production hazardous air pollutant emissions.

Crestone contracted with an independent qualified third-party consulting firm, CTEH LLC., to design and perform studies to characterize the short-term impacts on local air quality and public health from discrete operational phases at four oil and gas well pads being developed in Weld County, Colorado: Big Horn, Cosslett, Echevarria, and Kugel well pads. The specific goals of this project were to: (1) collect a high-resolution data set of chemical concentrations in air near the well pad and the surrounding communities, and (2) evaluate the impact on risks to public health, if any, from the release of oil and gas-related compounds into the air during specific operational phases of well development. The complete study has been provided as an attachment in Public Health Resources section of this OGDP application and is titled "Community Exposure and Health Risk Assessment: Real Time Air Monitoring and Air Sampling, 12/11/2019.
The phases of this study included studies of production locations that are designed very similar to the proposed application. The study was performed at locations where there were numerous building units and distance to building units were similar to this OGDP application for the Cosslett East Pad. The following BMPs were employed during the time of the study and will also be employed at the Cosslett East pad.
• Production
o Oil pipeline tank away capacity, minimizes number of tanks associated emissions
o Electric vapor recovery units
o Instrument air actuated pneumatic controls
o Vapor Recovery towers
o Combustors to capture tank vapors
o Continuous emissions monitoring for volatile organic compounds, PM, methane. Equipped with Summa Canister sampling capabilities in the event of an emissions detection event.
o Leak detection and repair program as required under Regulation 7
CTEH collected over 5,000 real-time measurements, along with 20 analytical samples, in communities around multiple well pads. Findings from this dataset indicate:
• The compounds that may be emitted during any or all operations that CTEH has studied are not expected to cause any short-term adverse health effects to nearby residents, including sensitive populations.
• Real-time data indicate no adverse health risks to nearby communities, including sensitive individuals, from exposures to VOCs, H2S or PM that may be emitted from operational phases at the various Crestone well pads. Analytical air sampling detections for each analyte were below their acute health guideline value established by the federal Agency for Toxic Substances and Disease Registry (ATSDR).
The CTEH study was conducted at operations that will be nearly identical to the Cosslett East Pad OGDP. The conclusions above were based on a quantitative in-depth study of Crestone specific operations. Based on these measurements/conclusions and the fact that the Cosslett East OGDP has nearly identical or better BMPs in place there are no expected short- or long-term incremental impacts to public health as a result of the estimated total hazardous air pollutant emissions during the pre-production phase of this Oil and Gas Location.

Dust Impacts

The following are the estimated number of truck trips traveling on or off the Oil & Gas Location.

Total	During Construction	During Drilling	During Completions	During Interim Reclamation	During Production
Monthly	427	1338	2850	72	20
Annual	640	8474	8550	72	240

Estimated total pounds (lbs) of proppant to be used during completions activities. 77000000

Provide the type of proppant(s) that are planned to be used during completions activities.

40/70 mesh, 100 mesh, 200 mesh

Provide an evaluation of the proposed proppant management system that will be used to minimize dust during completions activities, including the estimated amount of silica dust that will leave the Oil & Gas Location.

Utilize box system that has built in dust mitigation. Exposure limit testing by contractor indicates that no silica dust is expected to migrate off location during normal operations and weather conditions.

EXISTING OIL & GAS

Total number of oil & gas locations within 1-mile of the Oil & Gas Location:

	Total Number of Locations		Total Number of Wells
Active, built	44	Active, built	48
Permitted by COGCC, unbuilt	0	Permitted by COGCC, unbuilt	1
Permitted by Relevant Local Government & not COGCC, unbuilt	0	Proposed	0
Proposed	0	Plugged and Abandoned	36

Total acreage disturbance during construction of the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location: 20

Source for acreage total:

☐ Field Observation/Measurement

☒ COGCC Location Files

☐ Aerial PhotosOther

☒ Other

If "Other" is selected, please describe the source use to determine the acreage total for construction disturbance of the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location.

as-built survey data

Total permitted capacity of on-location storage (in number of pits and tanks) of the active and proposed oil & gas locations within 1-mile of the Oil & Gas Location : NOTE: providing the existing number of pits and tanks on surrounding existing locations is optional.

Source for storage totals:

☐ Field Observation/Measurement

☒ COGCC Location Files

☐ Aerial PhotosOther

☐ Other

	Permitted Onsite Storage Capacity	Existing Onsite Storage Capacity
Oil	0	30
Condensate	0	11
Produced Water	0	15
Pits	0	12

If "Other" is selected, please describe the source use to determine the tank totals for the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location.

2 Oil & Gas Location Name: Cosslett Number: 22H-B168 Status: Active, built

OIL & GAS LOCATION INFORMATION

Form 2A Doc#: 401120263

Loc ID#: 332117

Oil & Gas Location: QTRQTR: NWNE Sec: 22 Twp: 1N Rng: 68W Meridian: 6

Total number of wells planned: 0

Operations Duration

Estimated total number of weeks to construct this Oil & Gas Location: 0

Estimated total number of weeks to drill all planned wells for this Oil & Gas Location: 0

Number of planned drilling occupations to drill all planned wells for this Oil & Gas Location: 0

Estimated total number of weeks to complete all planned wells for this Oil & Gas Location: 0

Number of planned completions occupations to complete all planned wells for this Oil & Gas Location: 0

Will there be simultaneous drilling and completions operations occurring at this Oil & Gas Location? No

Estimated total number of months the Oil & Gas Location will be active, prior to abandonment and reclamation: 0

Noise Impacts

Provide a qualitative evaluation of the incremental adverse noise impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

No additional wells to be drilled on this pad.

Provide a qualitative evaluation of the incremental adverse noise impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

No additional wells to be drilled on this pad.

Light Impacts

Provide a qualitative evaluation of the incremental adverse light impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

No additional wells to be drilled on this pad.

Provide a qualitative evaluation of the incremental adverse light impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

No additional wells to be drilled on this pad.

Odor Impacts

Provide a qualitative evaluation of the incremental adverse odor impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

No additional wells to be drilled on this pad.

Provide a qualitative evaluation of the incremental adverse odor impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

No additional wells to be drilled on this pad.

WATER RESOURCES

[X] This Oil & Gas Location is listed as a sensitive area for water resources.

[X] This Oil & Gas Location is within 2,640 feet of a surface Water of the State.

Estimated depth to groundwater: 17

Estimated total planned on-location storage capacity of the Oil & Gas Location for:

	Number of Tanks	Total Volume (bbls)
Oil	0	0
Condensate	0	0
Produced Water	0	0
Other volumes of stored fluids, hydrocarbons, chemicals, or E&P Waste Fluids	0	0

List, with volumes, the “Other” fluids planned to be stored on the Oil & Gas Location, including, but not limited to: hydrocarbons, chemicals, or E&P Waste fluids.

N/A

Potential Impacted Surface Water Resources

Provide the distance and direction of the contaminant migration pathway from the Oil & Gas Location to the nearest downstream riparian corridors, wetlands, and surface Waters of the State. Also provide an evaluation of the baseline condition of the nearest downstream riparian corridors, wetlands, and surface Waters of the State.
Enter 2,640 for distances greater than 1/2-mile. Distances are measured along the migration pathway, not a straight line from the edge of the Oil & Gas Location.

	Distance	Direction	Evaluation of Baseline Condition
Riparian Corridor	2640	SE	1.2-acre Rp1FO Forested/Shrub Riparian Area does not have a clear migration pathway from location, but is closest downgradient area.
Wetland	2640	S	11.57-acre Freshwater Emergent Wetland north of location is greater than 2640’ following downgradient contours along roadside and irrigation ditches. Note: Closest Wetlands 40’ South (PEM1A Wetland) and 275’ West (Freshwater excavated pond) are both upgradient.
Surface Waters of the State	616	N	Downgradient roadside ditch 616’ North is typically dry in absence of precipitation events and contains similar grassy vegetation to the surrounding landscape.

Potential Impacts to Public Water Resources
Provide the distance, direction, and evaluation of potential impacts to the nearest Public Water System Intake. Enter 5,280 for distances greater than 1-mile.

	Distance	Direction	Evaluation of Baseline Condition
Public Water System Intake	4200	NE	There is no potential migration pathway to downgradient Central Weld County Water District water tower on parcel 146714322002 approx. 4200' NE of the WPS or to the upgradient Left Hand Storage District water storage facility on parcel 146722000024 approx. 2620' W.

Estimated Water Usage

Provide the estimated total volumes of the following that are anticipated to be used during the drilling and completions stage of the Oil & Gas Location activity.

Water Source	Volume (bbls)		Volume (bbls)		Volume (bbls)		
Surface Water	0	Recycled Water (Produced Water)	0	Unspecified Source	0	Percentage Recycled Water	0 %
Ground Water	0	Recycled Water (non-Produced Water)	0	Total Water Usage	0		

If an unspecified water source is planned to be used, provide a description of the source.

NA

Evaluate the measures being taken to reduce freshwater use, including reusing and recycling produced water.

NA

ECOSYSTEM & WILDLIFE RESOURCES

List High Priority Habitats (HPH) that occur within one mile of the Oil & Gas Location and list the distance from working pad surface. If the location is partially or entirely within a HPH list the distance as '0' and provide the estimated acreage disturbance of that HPH by the location construction.

High Priority Habitat (HPH) Name:	Distance	Estimated Acreage Disturbed
Aquatic Native Species Conservation Waters	1892	0

List total size of disturbed acreage and disturbed High Priority Habitat (HPH) area (in acres) during the Oil & Gas Location construction and after interim reclamation.

	Total Acreage (acres)	Total HPH Acreage (acres)
Construction	0	0
Post-interim Reclamation	7	0

Provide any further information regarding the location's HPH disturbance.

Provide the acreage of the existing land use types that occur within one mile of the Oil & Gas Location. Note: a circle with a one mile radius is approximately 2010 acres.

		Existing Acreage		Existing Acreage		Existing Acreage		Existing Acreage
Crop Land:	Irrigated	460	Non-Irrigated	920	Conservation Reserve Program(CRP)	0		
Non-Crop Land:	Rangeland	85	Forestry	0	Recreation	0	Other	840
Subdivided:	Industrial	20	Commercial	30	Residential	12		

If any land use is industrial, provide a description of the use or operation of the industrial facilities.

Excavation, Mineral Resources, and Manufacturing/Storage/Processing

If any land use is "Other", provide a description of the land use.

Commercial, Waste Land, Exempt, Residential, Industrial, Vacant, No Designation (Hwy ROW)

If any portion of the land use for the proposed oil and gas location includes Rangeland, Forestry, or Recreation, provide a list of the plant community or communities and estimated acreage disturbed for each:

	Estimated Disturbed Acreage		Estimated Disturbed Acreage		Estimated Disturbed Acreage		Estimated Disturbed Acreage
Disturbed Grassland	0	Shrub Land	0	Mountain Riparian	0	Wetland Aquatic	0
Native Grassland	0	Plains Riparian	0	Forest Land	0	Alpine	0

Provide a qualitative evaluation of incremental adverse impacts to ecosystems, including any plant communities, as a result of Oil and Gas Operations associated with the proposed Oil & Gas Location.

Potential adverse impact to the ecosystem are anticipated to be minimal.

Soil Resources

List all soil map units that occur within the Oil & Gas Location and list the estimated total area (in acres) disturbance of each soil map unit.

NRCS Map Unit Name:	Estimated Disturbed Acreage
40-Nunn loam, 1 to 3 percent slope	12
57-Renohill clay loam, 3 to 9 percent slope	4
79-Weld loam, 1 to 3 percent slope	2

PUBLIC WELFARE

☐ This Oil & Gas Location lies within a Disproportionately Impacted Community as defined in the 100-series rules.

Building Units within 1-mile

	0'-2,000'	2,001'-5,280'
Total number of ResidentialBuilding Units:	1	38
Total Number of non-school AND non child care center High Occupancy Building Units:	0	0
Total number of School Facilities:	0	0
Total number of Child Care Centers:	0	0

Recreation and Scenic Value

List all State Parks, State Trust Lands, or State Wildlife Area within 1-mile of the Oil & Gas Location.

None

List all Designated Outdoor Activity Areas within 1-mile of the Oil & Gas Location.

None

List all mapped trails that support any of the following recreational activities within 1-mile of the Oil & Gas Location: Hiking, Biking, Horseback Riding, Motorcycle Riding, ATV Riding, OHV, Nordic Skiing, Snowmobiling, or Snowshoeing.

None

AIR RESOURCES

Pre-Production Emissions

Complete the following chart based on the estimated total equipment emissions (in tons) for the Oil & Gas Location during the pre-production (construction, drilling, completions) stage for Criteria Pollutants by equipment type.

	NOx	CO	VOCs	Methane	Ethane	CO2	N2O
Process Heaters or Boilers	0	0	0	0	0	0	0
Storage Tanks	0	0	0	0	0	0	0
Venting or Blowdowns	0	0	0	0	0	0	0
Combustion Control Devices	0	0	0	0	0	0	0
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0
Drill Mud	0	0	0	0	0	0	0
Flowback or Completions	0	0	0	0	0	0	0
Loadout	0	0	0	0	0	0	0

Production Emissions

Complete the following chart based on the estimated full facility equipment emissions (in tons) for the Oil & Gas Location once the Oil & Gas Location has entered the production stage, for Criteria Pollutants. The table should be filled out based on ONE year of operation.

	NOx	CO	VOCs	Methane	Ethane	CO2	N2O
Stationary Engines or Turbines	0	0	0	0	0	0	0
Process Heaters or Boilers	1.93	1.62	0.11	0.04	0.06	2318.82	0.04
Storage Tanks	0	0	0	0	0	0	0
Dehydration Units	0	0	0	0	0	0	0

Pneumatic Pumps	0	0	0	0	0	0	0
Pneumatic Controllers	0	0	0	0	0	0	0
Separators	0	0	0	0	0	0	0
Fugitives			0.21	0.05	0.04	0.01	
Venting or Blowdowns	0	0	0.93	0.84	0.39	0.07	0
Combustion Control Devices	0	0	0	0	0	0	0
Loadout	0	0	0	0	0	0	0
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0
Well Bradenhead	0	0	0.12	11.15	5.14	0.99	0
Well Maintenance	0	0	2.21	2.01	0.93	17.83	0

Diesel Vehicle Road Miles
Complete the following chart for diesel vehicle road miles during each stage of oil and gas location operations.

During Construction: 0 During Completions: 0

During Drilling: 0 During Interim Reclamation: 0

During Production: 85000

PUBLIC HEALTH RESOURCES

Pre-Production Emissions
Complete the following chart based on the estimated total equipment emissions (in lbs) for the Oil & Gas Location during the pre-production (construction, drilling, completions) stage for Hazardous Air Pollutants (HAP).

	BEN	TOL	ETH	XYL	NHE	TMP	H2S	FDE	MET	HAP
Process Heaters or Boilers	0	0	0	0	0	0	0	0	0	0
Storage Tanks	0	0	0	0	0	0	0	0	0	0
Venting or Blowdowns	0	0	0	0	0	0	0	0	0	0
Combustion Control Devices	0	0	0	0	0	0	0	0	0	0
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0	0	0	0
Drill Mud	0	0	0	0	0	0	0	0	0	0
Flowback or Completions	0	0	0	0	0	0	0	0	0	0
Loadout	0	0	0	0	0	0	0	0	0	0

Production Emissions
Complete the following chart based on the estimated total equipment emissions (in lbs) for the Oil & Gas Location once the Oil & Gas Location has entered the production stage, for Hazardous Air Pollutants (HAP). The table should be filled out based on ONE year of operation.

	BEN	TOL	ETH	XYL	NHE	TMP	H2S	FDE	MET	HAP
Stationary Engines or Turbines	0	0	0	0	0	0	0	0	0	0
Process Heaters or Boilers	0	0	0	0	70	0	0	3	0	73
Storage Tanks	0	0	0	0	0	0	0	0	0	0
Dehydration Units	0	0	0	0	0	0	0	0	0	0
Pneumatic Pumps	0	0	0	0	0	0	0	0	0	0
Pneumatic Controllers	0	0	0	0	0	0	0	0	0	0
Separators	0	0	0	0	0	0	0	0	0	0
Fugitives	2	1	0	0	11	0	0	0	0	14
Venting or Blowdowns	4	2	0	0	14	0	0	0	0	20
Combustion Control Devices	0	0	0	0	0	0	0	0	0	0
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0	0	0	0
Loadout	0	0	0	0	0	0	0	0	0	0
Well Bradenhead	54	22	1	3	294	0	0	0	0	374
Well Maintenance	10	4	0	0	53	0	0	0	0	67

Provide a qualitative evaluation of any potential acute or chronic, short- or long-term incremental impacts to public health as a result of the estimated total pre-production hazardous air pollutant emissions.

NA. No additional wells will be drilled.

Provide a qualitative evaluation of any potential acute or chronic, short- or long-term incremental impacts to public health as a result of the estimated annual production hazardous air pollutant emissions.

The compounds that may be emitted during any or all operations that CTEH has studied are not expected to cause any short-term adverse health effects to nearby residents, including sensitive populations. Real-time data indicate no adverse health risks to nearby communities, including sensitive individuals, from exposures to VOCs, H2S or PM that may be emitted from operational phases at the various Crestone well pads. Analytical air sampling detections for each analyte were below their acute health guideline value established by the federal Agency for Toxic Substances and Disease Registry (ATSDR). The CTEH study was conducted at operations that will be nearly identical to the Cosslett East 22H-H168 OGDP. The conclusions above were based on a quantitative in-depth study of Crestone specific operations. Based on these measurements/conclusions and the fact
that the Cosslett East 22H-H168OGDP has nearly identical or better BMPs in place there are no expected short- or long-term incremental impacts to public health as a result of the estimated total hazardous air pollutant emissions during the pre-production phase of this Oil and Gas Location.

Dust Impacts

The following are the estimated number of truck trips traveling on or off the Oil & Gas Location.

	Total	During Construction	During Drilling	During Completions	During Interim Reclamation	During Production
Monthly	0	0	0	0	0	20
Annual	0	0	0	0	0	240

Estimated total pounds (lbs) of proppant to be used during completions activities. 0

Provide the type of proppant(s) that are planned to be used during completions activities.

NA

Provide an evaluation of the proposed proppant management system that will be used to minimize dust during completions activities, including the estimated amount of silica dust that will leave the Oil & Gas Location.

NA

EXISTING OIL & GAS

Total number of oil & gas locations within 1-mile of the Oil & Gas Location:

	Total Number of Locations		Total Number of Wells
Active, built	38	Active, built	37
Permitted by COGCC, unbuilt	0	Permitted by COGCC, unbuilt	1
Permitted by Relevant Local Government & not COGCC, unbuilt	1	Proposed	19
Proposed	0	Plugged and Abandoned	33

Total acreage disturbance during construction of the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location: 42.7

Source for acreage total:

- ☐ Field Observation/Measurement
- ☒ COGCC Location Files
- ☐ Aerial PhotosOther
- ☐ Other

If “Other” is selected, please describe the source use to determine the acreage total for construction disturbance of the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location.

Total permitted capacity of on-location storage (in number of pits and tanks) of the active and proposed oil & gas locations within 1-mile of the Oil & Gas Location : NOTE: providing the existing number of pits and tanks on surrounding existing locations is optional.

Source for storage totals:

- [ ] Field Observation/Measurement
- [x] COGCC Location Files
- [ ] Aerial PhotosOther
- [ ] Other

	Permitted Onsite Storage Capacity	Existing Onsite Storage Capacity
Oil	0	20
Condensate	0	11
Produced Water	0	10
Pits	0	11

If "Other" is selected, please describe the source use to determine the tank totals for the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location.

OIL & GAS DEVELOPMENT PLAN-SCALE DATA

List High Priority Habitats (HPH) that are estimated be disturbed by the construction of new roads, including access roads, pipelines, and utilities for this OGDP, along with the estimated disturbed acreage of each HPH.

No HPH Identified

List the total estimated of disturbed acreage and the total disturbed High Priority Habitat (HPH) area (in acres) during construction and the acreage that will remain disturbed after interim reclamation of the following for the entire OGDP:

	Construction		Post-interim Reclamation	
	Total Acreage (acres)	Total HPH Acreage (acres)	Total Acreage (acres)	Total HPH Acreage (acres)
New roads, including access roads	0	0	0	0
Pipelines	0	0	0.2	0
Utilities	0	0	0.05	0

Provide any further information regarding the HPH disturbance from the construction of new roads, including access roads, pipelines, and utilities for this OGDP.

Disturbed acreage post interim reclamation are best estimates. No exact drawings of the pipelines and utilities have been created at this point.
Existing roads will be used at this location.

Number of miles of the existing lease road that are planned to be used to access these location(s): 0.02

BENEFICIAL IMPACT INFORMATION

Equipment and Facility Removal

Total number of existing wells that are planned to be plugged and abandoned as part of this OGDP: 2

Total number of existing locations that are planned to be closed and undergo final reclamation as part of this OGDP: 0

Total number of acres that are planned to be reclaimed through the closing of existing locations: 0

Total number of existing pits that are planned to be closed and undergo final reclamation as part of this OGDP: 0

Estimated number of vehicle trips that are planned to be prevented from the above mentioned facility closures and equipment upgrades (on an annual basis): 0

Total number of tanks planned to be removed from existing locations through the approval of this OGDP:

Oil Tanks: 4

Condensate Tanks: 0

Produced Water Tanks: 1

Provide a qualitative evaluation of any incremental beneficial impacts to the surrounding community directly and indirectly from this OGDP.

A benefit of this location is that fluids produced from this location will be piped to the "Hub" facility. This will remove truck traffic from the roads once this pad is in production.

Provide a qualitative evaluation of any incremental beneficial impacts to the surrounding wildlife and ecosystems directly and indirectly from this OGDP.

There will be no beneficial impacts to the surrounding wildlife and ecosystems directly or indirectly from this OGDP. Entire Biological Assessment and Wildlife Plan is attached to the 2A as "Other."

MITIGATION INFORMATION

Item	Impacted Resource	Mitigation Description
1	Water Resources	Specifically, the location selection will utilize existing haul road and pad infrastructure, eliminating the potential for new construction nearer or within a riparian corridor or wetland.
2	Water Resources	It is anticipated that Crestone will utilize approximately 96,600 bbls of water per day during the completions phase. Four to six percent of water used during the completions phase will be recycled water, totaling approximately 380,000 bbls. The produced water will be treated at the Well Site using an approach to remove solids, iron, and bacteria during hydraulic fracturing operations.
3	Air Resources	Crestone monitors wells during each operational phase through its FLIR camera program to verify that sites are operating correctly and in compliance with regulations. Additionally, Crestone adopted a real-time, continuous air quality monitoring program using technology from Project Canary at its horizontal well sites, representing about 80% of total production. Crestone will implement continuous monitoring at the Cosslett East facility per CDPHE Regulation 7. The monitoring will follow all CDPHE requirements. There will be three continuous air quality monitors at the Cosslett East facility. These monitors will be located based on the prevailing winds determined during the baseline monitoring period as well as to avoid sounds walls and equipment. They will continuously monitor for methane, total VOCs, particulate matter, and meteorological conditions.
4	Public Welfare	The location selection included eliminating construction of a pad and haul road in an otherwise undeveloped area. The location of this pad near the Liquids Handling HUB and planned construction greatly reduced the Cumulative Impacts, particularly during production as stationary and non-road internal combustion engines, storage tanks, separators, combustion control devices, and loadouts. have been eliminated in the operation of wells at the pad.

OPERATOR COMMENTS AND SUBMITTAL

Print Name: Toby Sachen Title: Contract Reg Specialist

Email: tsachen@civiresources.com Date: 07/13/2021

Based on the information provided herein, this Cumulative Impacts Data Identification Form 2B complies with COGCC Rules and is hereby accepted into the Cumulative Impacts Data Evaluation Repository (CIDER database).
Contact OGLA Staff for consultation.

COGCC Approved: **Director of COGCC** Date:

Attachment Check List

Att Doc Num	Name

Total Attach: 0 Files

General Comments

User Group	Comment	Comment Date
OGLA	Returned to DRAFT at operator's request.	01/18/2022

Total: 1 comment(s)