

St. Croix Operating, Inc.
Dune #1
SENE Section 28, T1N R50W
Washington County, Colorado

CUMULATIVE IMPACTS PLAN

St. Croix Operating, Inc. (St. Croix) has drafted this Cumulative Impacts Plan in accordance with Rules 304.c.(19) and 303.a.(5).

This location was chosen because it is close to existing county roads and surrounded by agricultural operations. This location is not located within High Priority Habitat. The location measures over 2,000' from any building or residence.

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
Air Resources	This location was chosen because it is close to existing production. Acute air impacts are negligible due to the remoteness of the chosen location. Long-term air impacts should also be minimal. This location is anticipated to produce a de minimis amount of natural gas or other emissions.			Any emissions that may occur above the thresholds established by Colorado Department of Public Health and Environment for uncontrolled locations will be routed to a combustor with a minimum manufacturer's efficiency of 98%.
Air Resources	Vehicle Emissions – traffic to the area will be temporarily increased due to the construction and drilling activity		The impacts will be brief – approximately 1 week for construction and 1 week for drilling. Once the well is on production, all products will be piped to the proposed Dune Production Facility location. By pipping all fluids to the production facility location, there will be consolidation of traffic and leveraging the same well site visit to support all the proposed wells in this project.	

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
Public Health	This location was chosen due to its proximity to existing roads and the minimal long-term disturbance that would be required for its production phase. It is over 2,000' from the nearest building. There should be no short- or long-term incremental impacts to public health as a result of proposed activities.	None currently anticipated due to the distance from Washington County residents.		
Surface Water Resources	This location is located approximately 409 feet away from a freshwater emergent wetland.	This location will utilize freshwater only for dust mitigation purposes to prevent potential particulates from entering surface waterways.	All fluids will be stored greater than 500 feet from the Ordinary High Water Mark from the nearby surface water resources.	All fluids will be stored in lined, secondary containment with a 150% capacity. Tertiary containment will be around the location when fluids are stored onsite.

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
Groundwater Resources			This well will use produced water for drilling activities to minimize freshwater impacts in the area.	<p>All newly installed tanks will be set on an impervious liner within steel containment that will be calculated to contain 150% of the largest tank within the containment.</p> <p>All load lines shall be bull plugged or capped.</p>
Terrestrial and Aquatic Wildlife Resources and Ecosystems	This proposed oil and gas location is not located within any designated High Priority Habitat or other designated habitat as defined by the COGCC 1200 Series Rules.	This proposed oil and gas location is not located within any designated High Priority Habitat or other designated habitat as defined by the COGCC 1200 Series Rules.		<p>St. Croix will utilize a pit-less, closed loop system for drilling. The proposed well shall be drilled, completed, and operated using closed loop pit-less systems for containment and/or recycling of all drilling, completion, flowback and produced fluids.</p> <p>All separators and heater-treater equipment will be outfitted with bird cones.</p> <p>St. Croix proposes a very brief increase of activity during construction and drilling (1 week each). Then the area will return to its normal cadence.</p>

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
				<p>The wellhead is located within rangeland. Once it is on production, the location will undergo interim reclamation to bring it down to 0.01 acres around the wellhead. All produced fluids will be piped to the existing location so that there is minimal habitat disturbance and fragmentation.</p> <p>There should be no noticeable change to the ambient sound levels in the area once the well is on production.</p>

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
Soil Resources	Soil resources could potentially be impacted by the stockpiling of topsoil during construction or spills that may occur on location.			<p>Topsoil will be stockpiled until it is redistributed during interim reclamation. The topsoil will be protected from migrating away from location by structural best management practices to help anchor it in place.</p> <p>During interim reclamation, as much topsoil as possible will be redistributed to insure the continued viability of the microbial ecosystem within by reseeding.</p> <p>Areas of concern for potential spillage such as truck loadouts, will be placed on lined areas within secondary containment to protect soils from potential pollution.</p> <p>Pollution control containers (spill boxes) will be used on truck loading lines within the limits of the secondary containment systems.</p>

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
Public Welfare – Noise	<p>Drilling this proposed well is anticipated to take approximately one week. During the construction and drilling phase, noise may be slightly increased. Once the well is drilled, it will not undergo hydraulic fracturing. A swabbing unit will be onsite to clean out the well after drilling. The well will then be turned on to production.</p> <p>Once the well is on production, noise and activity will return to the levels before the well was drilled. All fluids will be piped to the Dune Production Facility location.</p>			<p>Due to the remote nature of the oil and gas location, minimal noise impacts to Washington County Residents are anticipated. The construction and drilling phase will be the most noticeable acute increase in noise. Both phases are expected to take approximately one week each. Once the well goes into production, noise will return to pre-drilling levels. Production facilities will be co-located at the Dune Production Facility location to consolidate traffic activity.</p>
Public Welfare – Light	<p>Light is proposed to be utilized for drilling operations only. Drilling is anticipated to take one week. This location is not located within High Priority Habitat. The nearest building is 2,017' to the northeast.</p>			<p>During drilling activities, lights will be onsite for safety and 24-hour operations. These temporary lights will be downward facing as much as possible to minimize the distance that it will be visible.</p>

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Public Welfare – Odor	This location measures 2,017' from the nearest building. Winds in the area generally blow west to east throughout the colder months (November-March) and along a north/south axis throughout the warmer months (March-October). The nearest Building Unit is to the northeast.			Odors should not be a concern for any residents of Washington County.
Public Welfare – Dust	A proposed dirt road across private surface will access the location. Dust could occur with dry weather, especially during construction and drilling operations when traffic to location will be more frequent.			St. Croix will employ practices for control of fugitive dust caused by their operations. Such practices shall include but are not limited to the use of speed restrictions, regular road maintenance, restriction of construction activity during high-wind days.
Public Welfare – Recreation and Scenic Values	<p>The proposed well is located within rangeland. Once the well has been drilled and put onto production, the location will undergo interim reclamation, leaving the wellhead in the field.</p> <p>Production equipment will be located at the Dune</p>			None currently anticipated due to the minimal impacts to the surrounding viewshed.

Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
	Production Facility location. Since the Dune Production Facility is proposed next to an existing county road in an area of agricultural development, there will be minimal impacts to the area.			