



Denova Stratigraphic Test Well #1

**Denova Sequestration, LLC
a Carbon America subsidiary**

**Cumulative Impacts Plan
RULES 304.C.(19) AND 303.A.(5)**

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Denova Sequestration, LLC, a wholly owned subsidiary of Carbon America (CA), has drafted this Cumulative Impacts Assessment in accordance with Rules 304.c.(19) and 303.a.(5).

The cumulative impacts addressed by this document are limited to those pertaining to the drilling and maintenance of the stratigraphic test well and its plugging and reclamation in the event the well does not confirm the predicted geology. If the well does confirm geologic suitability for carbon sequestration and a storage project follows, the well is expected to be part of a program regulated by the Environmental Protection Agency (EPA) that will inject and permanently store approximately 3.6 million metric tons of carbon dioxide, creating substantial benefits to public health and welfare and the environment.

CA's proposed Stratigraphic Test Well #1 (Strat Well) is located in Section 28, Township 1 North, Range 49 West, Washington County. Ground disturbance associated with the Project will largely consist of temporary access roadbed preparation and construction, temporary workspace for well pad construction, and staging/laydown areas. Carbon America estimates that the Project may include up to 12.03 acres of temporary ground disturbing activity. Within the Project area, the proposed ground disturbance at either the preferred or alternative Project location for the well pad is approximately 2.31 acres. The proposed access road will be approximately 0.89 mile long and will have a 20-foot-wide corridor (approximately 4.47 acres). The proposed access road will connect to an existing two-track dirt road (approximately 1.36 miles in length). Improvements to the existing access road are included in the proposed disturbance area. No pipeline or utility corridors are being proposed for this location.

The road and pad construction and subsequent Strat Well activities are anticipated to take approximately 6 weeks. Sufficient access and exploration agreements are in place. Construction will begin after all the necessary regulatory approvals are obtained. The precise timing of construction will be dictated by agency permit conditions, environmental restrictions, and available workforce and materials.

Once the well proposed for the location has been drilled, Carbon America will perform interim reclamation on the location. This will allow for continued safe operations around the wellhead while maximizing the interim reclamation efforts of areas unnecessary for future operations, as required by Rule 1003.

This location was chosen because of its remote nature, more than two miles from the nearest residence or public road and the location will not be visible from any inhabited structures or public roads during pad construction or drilling.

Please note the implementation of SB 19-181 rules include avoidance, minimization, and mitigation measures that are required to be implemented, and are some of the best standardly used tools in avoiding and reducing adverse direct and indirect impacts, in the short- and long-term development of the proposed project.

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Resource	Anticipated Impact	Avoidance Measures	Minimization Measures	Mitigation Measures
Air Resources	<p>This location was chosen due its remoteness, more than two miles away from inhabited structures and public roads. Acute air impacts are negligible due to the remoteness of the chosen location. Long-term air impacts are anticipated to be minimal. This location is anticipated to produce a de minimis amount of VOC emissions.</p> <p>Vehicle Emissions – traffic to the area will be temporarily increased due to the construction and drilling activity.</p>	<p>This location was chosen due its remoteness, more than two miles away from inhabited structures and public roads. Acute air impacts are negligible due to the remoteness of the chosen location. No hydraulic fracturing nor flowback will occur at this location. The Strat Well may be a CO2 injection well under EPA jurisdiction. Once the well pad and road are established, reoccurring emissions are expected to be negligible due to the lack of production facilities and associated vehicle traffic necessary to offtake produced fluids.</p>	<p>Tier II diesel engines / generators would be used during drilling.</p> <p>A closed loop drilling system will be used.</p> <p>CA will conduct overbalanced drilling so there will be no flaring of gas.</p> <p>Development is anticipated to take approximately 2 weeks for pad construction and 3 weeks for drilling of the Strat Well. Once the well is drilled, traffic levels will decrease.</p>	<p>Remote shut in of operations is an option for emergency situations, which allows CA staff to respond in a timely manner.</p> <p>Speed limits will be reduced to 15-20 MPH to reduce dust particulate matter.</p> <p>Watering and treatment of the dirt/gravel road will occur as necessary to reduce particulate matter.</p> <p>Soil stabilization would occur as soon as practicable to avoid particulates carried by wind.</p>
Public Health	<p>The site is remote, and emissions are low and of short duration. No sensitive receptors are located within 8 miles of the well. The closest residence is 2.25 miles to the southeast of the well. Public health impacts will be negligible.</p>	<p>Avoidance measures discussed above are applicable to public health as well.</p>	<p>The existing location is 2.25 miles from the nearest residence. The residence is located to the southeast of the location. Acute air impacts are negligible due to the remoteness of the chosen location.</p>	<p>CA staff, and their contractors regularly receive training to prevent and respond to emergencies.</p> <p>Additionally, CA has a 24-hour emergency response contactor, Ambipar, assigned to this project who will deploy appropriate resources quickly and efficiently 24 hours, 7 days a week. The CA team and Ambipar will collaborate with local emergency response teams prior to commencement of field activities to make sure everyone is educated on the project and knows how to proceed during an emergency event.</p>

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Surface Water Resources	There are no mapped wetlands or waterbodies within the 12-digit HUC watershed (HUC #: 10 25 00 02 06 08; North Fork Republican). The nearest mapped feature is a National Wetland Inventory (NWI) mapped freshwater pond located approximately 2.5 miles southeast of the Project Area. It is assumed most stormwater runoff infiltrates into the sandy soil base. Long- and short-term impacts associated with sediment discharge and spills are mitigated by implementation of control measures and best management practices outlined in the Interim Reclamation Plan and Stormwater Management Plan. These practices will reduce any potential impacts to the drainage.	No drainages would be crossed as part of construction of the location. No riparian areas would be directly or indirectly impacted as a result of development of the proposed project.	Impacts to surface water resources are minimized by avoidance of surface water resources, implementation of design features, best management practices, control measures, and agency mitigation measures. The Interim Reclamation Plan and the Stormwater Management Plan lists measures to reduce impacts from sediment transport.	<p>The location will have tertiary containment and a silt fence will be installed along the downslope perimeter of the project.</p> <p>Many of the same minimization measures will reduce potential impacts to surface water resources.</p>
Groundwater Resources	No impacts to groundwater resources are anticipated.	<p>The proposed location was chosen to avoid impacts to groundwater resources.</p> <p>No groundwater will be used for drilling activities. Freshwater will be sourced from surrounding municipalities (City of Yuma and City of Akron).</p>	These wells will use municipality water (City of Yuma and City of Akron) for construction and drilling activities to minimize freshwater impacts in the area.	<p>All equipment will be spotted on a liner during drilling operations and chemicals will be stored in containment.</p> <p>The surface casing will be set at 600 feet, covering currently identified freshwater aquifers.</p> <p>Mitigation measures discussed above in Surface Water Resources are applicable in also mitigating impacts to groundwater resources.</p>

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Terrestrial and Aquatic Wildlife Resources and Ecosystems	Based on desktop analysis of land cover data, aerial imagery, range maps, and a site visit, no suitable habitat was present for the federally listed and state Special Concern (SC) species in the Project Area. CA and its contractor, Tetra Tech, observed no raptor nests located within 1 mile of the Project Area. No critical habitats were identified within the Project Area. There are no CPW-mapped High Priority Habitats located within 1 mile of the Project Area; the nearest High Priority Habitat is a CPW mapped greater prairie chicken (<i>Tympanuchus cupido</i>) lek site approximately 16 miles east of the Project Area. No impacts are anticipated to aquatic resources or other ecosystems as none of these sensitive habitats will be disturbed.	CA and its contractor, Tetra Tech, conducted a desktop review and a subsequent site visit on January 6, 2022, to assess the potential for federally and state-listed threatened and endangered species and their associated habitats, raptor nests within 0.5 mile of the Project Area, and potential wetlands and other waters of the U.S. (WOTUS) features to occur within the Project Area. No terrestrial or aquatic sensitive ecosystems will be impacted as a result of the proposed Project.	CA will use a closed-loop drilling systems which reduces the risk to wildlife and replaces the “reserve pit” with a drill cuttings storage pit, minimizing wildlife exposure to drilling fluids. The closed-loop system also greatly reduces the number of truck visits to the location after drilling is complete for the purpose of removing standing liquids from the pit. Please refer to the Wildlife Mitigation Plan for additional BMPs.	CA will utilize a pit-less, closed loop system for drilling. The proposed well shall be drilled, completed, and operated using closed-loop pitless systems for containment and/or recycling of all drilling, completion, and flowback fluids. CA proposes a very brief increase of activity during construction (3 weeks) and drilling (3 weeks). Then the area will return to its normal cadence. Additional mitigation measures are discussed in the Wildlife Mitigation Plan.
Soil Resources	Soil resources could potentially be impacted by the stockpiling of topsoil during construction or spills that may occur on location. Additional impacts could occur as a result of wind and water erosion. These impacts are expected to be minimal and only in the short-term during construction and drilling.	CA is avoiding siting the location within sensitive soil resources such as biological crusting, and steep slopes.	Topsoil will be segregated in non-impervious areas or where the Contractor deems appropriate. Upon completion of excavation activities, the area will be backfilled and a minimum of 6 inches of topsoil will be replaced, or added if deemed necessary, prior to final stabilization. Topsoil segregation and replacement does not apply to the work within the roadways or impervious areas because the ground disturbing activities within these areas will be resurfaced to pre-existing conditions.	Topsoil will be stockpiled until it is redistributed during interim and/or final reclamation. The topsoil will be protected from migrating away from location by structural and non-structural best management practices to help anchor it in place. Please refer to the SWMP for additional BMPs.

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Public Welfare – Noise	An onsite survey and a review of available map data indicated the closest building unit is over 2.5 miles from the edge of the Project location so noise increases during drilling should not affect the public. Additionally, there are no High Priority Habitats within one mile of the location and an on-site visit conducted by a qualified Tetra Tech biologist determined there are no species of concern within the Project Area so CA does not anticipate wildlife impacts from noise.	An onsite survey and a review of available map data indicated the closest building unit is over 2.5 miles from the edge of the Project location. Additionally, there are no High Priority Habitats within one mile of the location and an on-site visit conducted by a qualified Tetra Tech biologist, determined there are no species of concern within the Project Area. The impacted resource is not present.	Equipment, as practicable, during construction and drilling will be anchored as to minimize transmission of vibration through the ground.	Mitigation measures are the same as minimization measures. Please refer to the Lesser Impact Area Exemption Request.
Public Welfare – Light	An onsite survey and a review of available map data indicated the closest building unit is over 2.5 miles from the edge of the Project location. Additionally, there are no High Priority Habitats within one mile of the location and an on-site visit conducted by a qualified Tetra Tech biologist, determined there are no species of concern within the Project Area.	An onsite survey and a review of available map data indicated the closest building unit is over 2.5 miles from the edge of the Project location. Additionally, there are no High Priority Habitats within one mile of the location and an on-site visit conducted by a qualified Tetra Tech biologist, determined there are no species of concern within the Project Area. The impacted resource is not present.	All outdoor lighting with an initial output of more than 2,000 lumens will have full cutoff fixtures. The fixture will be designed to shield the source of illumination from the view above or from the adjacent property, and to not cast significant light other than straight down from the source.	During drilling activities, lights will be onsite for safety and 24-hour operations. These temporary lights will be downward inward and shielded as much as possible to minimize the distance that it will be visible. Please refer to the Lesser Impact Area Exemption Request.

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Public Welfare – Odor	An onsite survey and a review of available map data indicated the closest building unit is over 2.5 miles from the edge of the Project location. Additionally, there are no High Priority Habitats within one mile of the location and an on-site visit conducted by a qualified Tetra Tech biologist, determined there are no species of concern within the Project Area.	This location was chosen due its remoteness, more than 2.5 miles away from inhabited structures and public roads. Acute odor impacts are negligible due to the remoteness of the chosen location.	Odor is not anticipated to be of concern. However, odor-preventing/mitigation measures will be implemented as needed.	Odors should not be a concern for any residents of Washington County as chemicals associated with hydraulic fracturing will be absent from the location.
Public Welfare – Dust	Short term direct impacts are not expected to impact nearby residences due to the distance from the wellsite (+2.5 miles). Dust could occur with dry weather, especially during construction and drilling operations when traffic to location will be more frequent.	CA and their contractors will avoid impacts from dust by the implementation of Minimization and Mitigation Measures.	During construction and through the life of this location, CA will utilize watering, via water trucks to control fugitive dust. Regular road maintenance will prevent dust impacts. CA will prevent construction activity during high wind days. Speed limits of 20 mph will aid in reduction of dust particulates.	CA 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. Please refer to the Dust Mitigation Plan for additional BMPs.
Public Welfare – Recreation and Scenic Values	Minimal, short-term impacts are anticipated to the landscape. The proposed location is on State Trust Land (STL). Recreational hunting is allowed on STL. Once the well has been drilled, the location will undergo interim reclamation, reducing the pad footprint to what is required for safe injection operations.	CA and their contractors will avoid impacts to Recreation and Scenic Values by the implementation of Minimization and Mitigation Measures.	CA will coordinate with the surface owner and CPW to use recommended and approved seed mixes for reclamation. CA will minimize the amount of traffic on access roads and adjacent county roads within 3 hours of sunrise and sunset as much as possible	Carbon America will coordinate with the surface owner and CPW to use recommended and approved seed mixes for reclamation. Please refer to the Wildlife Mitigation plan for additional BMPs.