

U.S. Department of the Interior
Bureau of Land Management

Sweetwater Carbon Storage Hub CO₂ Sequestration

DOI-BLM-WY-D090-2023-0018-EA

Location: Wyoming – High Desert District – Kemmerer Field Office

Environmental Assessment

May 2025



It is the mission of the Bureau of Land Management (BLM) to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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1.0 Background

Pond Field, LLC (Pond) has submitted an application for a right-of-way (ROW) for the use of BLM-administered pore space for injection and permanent geologic sequestration of carbon dioxide in Lincoln, Uinta, and Sweetwater counties in southwest Wyoming. Pond is an affiliated company of Frontier Carbon Solutions LLC which holds record title to all of Frontier's real property interests, whereas Frontier Carbon Solutions acts as the project operator.

The current ROW application does not include any proposed surface infrastructure on BLM-administered public lands, such as injection wells or related infrastructure. Total federally managed BLM lands requested for the ROW is 44,347 pore space acres. The project area includes a mix of federal and non-federal lands. The legal land description of the project is shown in Appendix 3, and a map of the area is shown as Map 1 on page 10.

Geologic Sequestration of Carbon Dioxide

Carbon Capture, Utilization & Storage (CCUS) refers to the process in which carbon is captured from industrial processes or the atmosphere and either utilized by turning the carbon into a new product or stored by injecting the carbon into a storage site, usually underground in a geologic formation.

The U.S. Environmental Protection Agency (EPA) is authorized by the Safe Drinking Water Act (SDWA) to develop requirements and provisions for the Underground Injection Control (UIC) Well Program. [Underground Injection Control Well Classes | US EPA](#) This program regulates the injection of fluids (such as water, wastewater, brines from oil and gas production, and CO₂) into the subsurface for the purposes of storage or disposal. The main goal of the UIC Program is the protection of Underground Sources of Drinking Water such as aquifers or parts of aquifers that supply a public water system or contain a sufficient quantity of groundwater to supply a public water system now or in the future. Primary enforcement authority, often called primacy, refers to state, territory or tribal responsibilities associated with implementing EPA approved UIC programs. Primacy programs are established under Section 1422 and 1425 of the SDWA. Wyoming received primacy over Class I through V in 1983. The Wyoming Department of Environmental Quality (WDEQ) received primacy over Class VI wells on September 3, 2020. Wyoming is one of four states to have received primacy for implementing the Class VI program; the others are North Dakota, West Virginia, and Louisiana.¹

Prior to constructing or operating a Class VI well, a party must first obtain a well-specific permit from the WDEQ. Information about the WDEQ Class VI well permit application process can be found at <https://deq.wyoming.gov/water-quality/groundwater/uic/class-vi/>. Class VI wells are used to inject carbon dioxide (CO₂) into deep rock formations. Class VI wells are used to inject carbon dioxide (CO₂) into deep rock formations. This long-term underground storage is called geologic sequestration. (GS). Geologic sequestration, as part of carbon capture and storage (CCS), is a technology used to reduce CO₂ emissions to the atmosphere. Possible sources of CO₂ captured from point source emissions, such as from an industrial facility (e.g. steel and cement

¹ On October 9, 2020, the State of Wyoming was granted primacy by the Environmental Protection Agency to administer the Class VI Underground Injection Control program in Wyoming, other than within Indian lands (see 85 FR 64053-64056, October 9, 2020).

production) or energy production (e.g., ethanol, hydrogen production, or power plants), as well as CO₂ captured directly from the atmosphere.

This long-term underground storage is called geologic sequestration. Geologic sequestration, as part of CCUS, is a technology that can be used to reduce CO₂ concentrations in the atmosphere and mitigate climate impacts. Possible sources of CO₂ for geologic sequestration include CO₂ captured from point source emissions, such as from an industrial facility or energy production, as well as CO₂ captured directly from the atmosphere.

The Class VI well requirements are designed to protect public health and underground sources of drinking water from the unique nature of CO₂ injection for geologic sequestration, including the:

- Relative buoyancy of CO₂
- Subsurface mobility
- Corrosivity in the presence of water
- Large injection volumes

Requirements include:

- Site characterization requirements to ensure the geology in the project area can receive and contain the CO₂ within the zone where it will be injected, including that the area is free of faults and fractures and that induced seismicity is not a concern.
- Requirements to predict the extent of the injected CO₂ plume and associated pressure front for the project using computational modeling, and to identify and address any deficiencies of existing wells within the Area of Review (AoR) through corrective action. The Area of Review includes the area where the injected plume and its associated pressure front may impact pore fluids.
- Well construction requirements ensure that the Class VI injection well is constructed in a manner that will prevent any CO₂ from leaking outside of the injection zone. Class VI injection wells and in-zone monitoring wells are designed for the life of the project. Owners or operators must demonstrate that the well materials, including casing and cement, are corrosion resistant and compatible with the conditions and fluids to which they may be exposed.
- Testing and monitoring requirements to monitor the integrity of the injection well, groundwater quality, and the movement of the CO₂ plume and pressure front throughout the life of the project, including after CO₂ injection has ended, until the permitting authority determines no additional monitoring is needed to ensure that the project does not pose an endangerment to USDWs.
- Operating requirements to ensure the injection activity is appropriate to the well's construction and geologic characteristics so that it will not endanger USDWs or human health.
- Requirements to plug the injection well in a manner that will not allow fluid movement that endangers USDWs.
- Requirements for the operator to establish and maintain bonding sufficient to cover the cost of corrective action, plugging the injection well, post-injection site care, and emergency and remedial response for the project (i.e., financial responsibility).
- Requirements to develop and maintain a site-specific emergency and remedial response plan.

- Requirements for the Class VI well owner or operator to report all testing and monitoring results to the permitting authority to ensure the project is operating in compliance with all permit and regulatory requirements.

The issuance of a Class VI Permit to Construct authorizes an applicant to construct a Class VI injection well. Wyoming Water Quality Rules, Chapter 24, requires that an applicant submit all well construction and pre-injection testing results for WDEQ's review as part of the authorization to inject, or permit modification, process. The applicant must provide WDEQ the opportunity to inspect and witness construction and pre-injection testing activities and submit all results to WDEQ for review. Based on WDEQ's review, and authorization to inject may be approved, approved with conditions, or denied. Likewise, the public and the BLM will have the opportunity to review the permits for each Class VI well through the WDEQ comment process. The BLM will provide comments on a Class VI well application if there is a possibility of the injected CO₂ affecting subsurface pore space of public lands. This administrative process ensures a careful review of the proposed CO₂ sequestration project by the WDEQ and a thorough vetting by the stakeholders and the public.

Currently, Frontier Carbon Solutions Holdings, LLC (Frontier) holds three approved Class VI injection well permits located on non-federal lands (Wyoming Department of Environmental Quality facility numbers WYS-037-00262, WYS-037-00263, and WYS-023-00205). There is no BLM approval needed for these permits.

1.1 Purpose and Need

The purpose for the federal action is for the BLM to respond to an application for a pore space ROW by Pond on behalf of the Project Operator (Frontier) that would be eventually used by Frontier to store of carbon dioxide in the federal pore space under BLM administered surface, while minimizing disturbance and utilizing existing ROWs, where applicable.

The need for the federal action is established by the BLM's responsibility under Title V of the Federal Land Policy and Management Act (FLPMA) of October 21, 1976, 43 CFR 2800- Rights-of-Way under the Federal Land Policy and Management Act, and the Kemmerer Resource Management Plan and Record of Decision, May 24, 2010, (as amended).

Decision to be Made

The BLM's authorized officer will decide whether or not to grant the ROW to Pond and if so, under what terms and conditions. Stipulations, other restrictions and required mitigation would be administered once the ROW grant approval has been determined.

1.2 Conformance

Resource management planning regulations mandate that all actions approved or authorized by the BLM be reviewed for conformance with existing land use plans. (43 CFR 1610.5-3). A proposed action and alternatives must either be consistent with applicable land use plans and clearly in agreement with the terms, conditions, and decision of the approved plans, or a plan amendment must be completed in order for the Proposed Action to be approved.

The Proposed Action is in conformance with the Final Environmental Impact Statement (FEIS) for the KFO Planning Area (August 2008; BLM 2008a) and the Kemmerer Resource Management Plan/Record of Decision (KRMP/ROD) approved on May 24, 2010 (BLM 2010a).

- The Proposed Action is in conformance with the RMP as amended and the land use direction pertaining to Land Resources (LR); Goal LR: 3; Manage public lands to meet access and (or) right-of-way needs. The site-specific analysis in this EA tiers to and incorporates by reference the information and analysis contained in these documents.

Record of Decision and Approved Resource Management Plan Amendments for the Rocky Mountain Region including the Greater Sage-Grouse Sub-Regions of: Lewiston, North Dakota, Northwest Colorado and Wyoming and the Approved Resource Management Plans for Billings, Buffalo, Cody, HiLine, Miles City, Pompeys Pillar National Monument, South Dakota and Worland (Approved: September 21, 2015) (ARMPA) (2015a)

- In November 2021, the BLM published a Notice of Intent in the Federal Register to amend land use plans regarding Greater Sage-grouse conservation in a number of Western states, including Wyoming. Because this RMP amendment is ongoing, conformance is assessed against the existing 2015 ARMPA.

1.3 Relationship to Laws, Statutes, and Regulations

- American Indian Religious Freedom Act – 42 USC § 1996
- Archaeological Resources Protection Act - 16 USC § 470aa et seq.
- Clean Air Act – 42 U.S.C. § 7401, et seq.
- Clean Water Act - 33 U.S.C. § 1251 et seq.
- Endangered Species Act (ESA) - 16 U.S.C. § 1531 et seq.
- Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761)
- Migratory Bird Treaty Act (16 U.S.C. § 703-7120) (MBTA).
- National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. § 4321 et seq.
- National Historic Preservation Act (NHPA, Section 106) Title 54 U.S.C. § 306108
- Native American Graves Protection and Repatriation Act - 25 USC § 3001

1.4 Scoping, Public Involvement and Issues

Scoping and Public Involvement

BLM held a zoom meeting on May 9, 2024, to introduce the project to Cooperating Agencies. BLM invited Native American Tribes, Conservation Districts, County Commissioners, neighboring communities, and State of Wyoming agencies to the meeting. Meeting attendance included county representatives from Lincoln and Sweetwater Counties and the State of Wyoming.

The BLM formulated potential issues (see Appendix 1) for analysis during internal scoping and public scoping which began on August 1, 2023, for a total of 30 days. The project was posted to

the BLM's National NEPA Register at <https://eplanning.blm.gov/eplanning-ui/project/2024943/510>. Press releases were sent to statewide media, posted online and on the BLM's social media. The BLM sent informational letters about the project to 53 various state and local governments, interested parties and Native American Tribes requesting input. The BLM received 9 comment letters. The scoping comments can be reviewed in Appendix 5.

Identification of Issues

For each resource identified in Appendix 1, the rationale for determination to analyze the resource is described. Resources which may be affected by the Proposed Action or other alternatives, which are carried forward throughout this analysis are briefly explained as follows:

- **Lands/Realty**
 - **Issue 1:** How would granting the ROW for underground pore space impact other existing or proposed ROWs near or adjacent to the proposed project area? Section 3.1
- **Minerals**
 - **Issue 2:** How would granting the ROW for underground pore space impact other existing or proposed authorizations for minerals near or adjacent to the proposed project area? Section 3.2

2.0 Proposed Action and Alternatives

No Action

Under the No Action alternative, the BLM would reject the proposal as submitted by Pond therefore denying Pond's proposal to use BLM-administered federal pore space for permanent geologic sequestration. Pond would be unable to capture, transport, and permanently sequester significant quantities of carbon dioxide in the BLM-administered federal pore space, though they could potentially use the non-federal pore space in the project area or resubmit the ROW application to the BLM.

Proposed Action

The proposed ROW would be authorized in Lincoln, Uinta and Sweetwater counties in southwest Wyoming for permanent geologic sequestration of carbon dioxide.² The BLM's ROW authorization would only provide for use of the subsurface BLM-administered federal pore space within the project area and not State of Wyoming or private lands. The BLM's pore space ROW grant would not authorize surface-disturbing activities or surface occupancy of BLM-administered public lands.

A portion of the BLM-administered federal pore space is located within the Sweetwater Carbon Storage Hub (SCS Hub), a carbon capture and sequestration project developed and operated by

² The BLM has issued policy on the use of ROWs for carbon capture, utilization, and storage projects located on BLM-administered public lands (see BLM Instruction Memorandum 2022-041, "National Policy for the Right-of-Way Authorizations Necessary for Site Characterization, Capture, Transportation, Injection, and Permanent Geologic Sequestration of Carbon Dioxide in Connection with Carbon Sequestration Projects," June 8, 2022). Available at: <https://www.blm.gov/policy/im-2022-041>

Frontier Carbon Solutions LLC (Frontier), an affiliate of Pond. Pore space within the SCS Hub was formally unitized by the Wyoming Oil and Gas Conservation Commission on October 8, 2024.

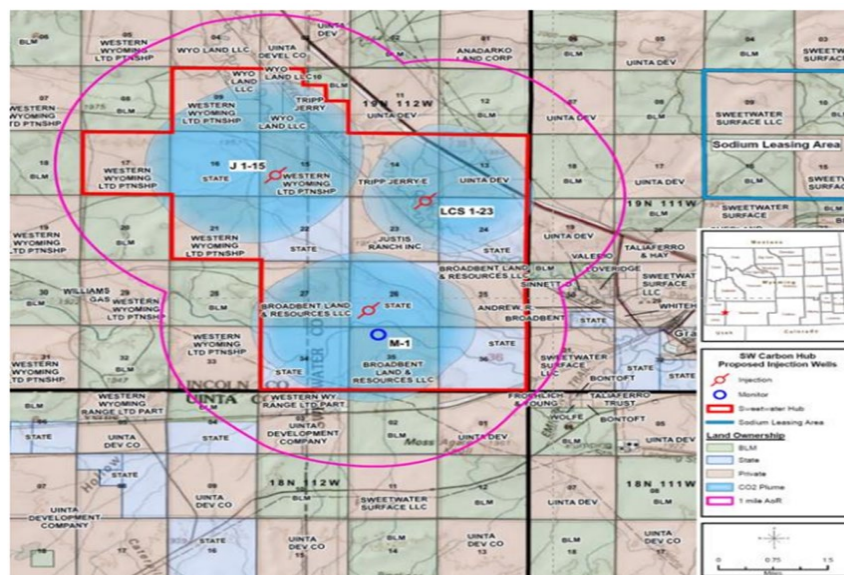


Figure 12. Surface/Pore Space Owners in the SCS Hub and CO₂ plume boundary plus an adjacent 1-mile area indicated by the magenta polygon.

This unitization was reviewed by BLM’s Reservoir Management Group on July 9, 2024, and no protest was made by the BLM to the State’s unitization proceedings. However, the BLM explained that Frontier must first obtain a pore space ROW grant from the BLM prior to using or occupying the BLM-administered federal pore space. Additionally, Frontier obtained three (3) Class VI UIC injection wells permits from the Wyoming Department of Environmental Quality (WDEQ) in December 2023. As the WDEQ’s authorization explains: “Following construction and pre-injection testing activities, Frontier Carbon Solutions, LLC shall apply for a permit modification for authorization to inject and operate Frontier LCS 1-23.” (WDEQ permit authorizations, December 14, 2023). If the permit modifications for the authorization to inject and operate are approved by the WDEQ, the injection wells may be permitted to inject into the Nugget formation, which the BLM has determined is not likely to be a mineral-producing reservoir within the project area. Accordingly, the proposed action does not include any use of BLM-administered public lands for related surface infrastructure (such as access roads, well pads, pipelines, etc.). These types of surface infrastructure are not currently proposed on BLM-administered public lands. The three Class VI UIC injection wells will be new wells constructed on private lands. The land pattern allows for all associated linear features, i.e. access roads and pipelines to be constructed on private and state lands. Approval of these wells is under the jurisdiction of the WDEQ. The surface locations for the Class VI wells have been constructed in accordance with the surface agreements executed with the respective fee landowners. Each site consists of approximately 5 acres; The locations approved by WDEQ are Frontier J 1-5: SWNW, Section 15, T.19 N., R. 112 W; Frontier AN 1-26: SWSW, Section 26, T19N, R112W, as permitted, modified to NESE, Section 27, T19N, R112W; and Frontier LCS 1-23: NENE, Section 23, T19N, R112W. The sites will host the drilling rig for well construction as well as

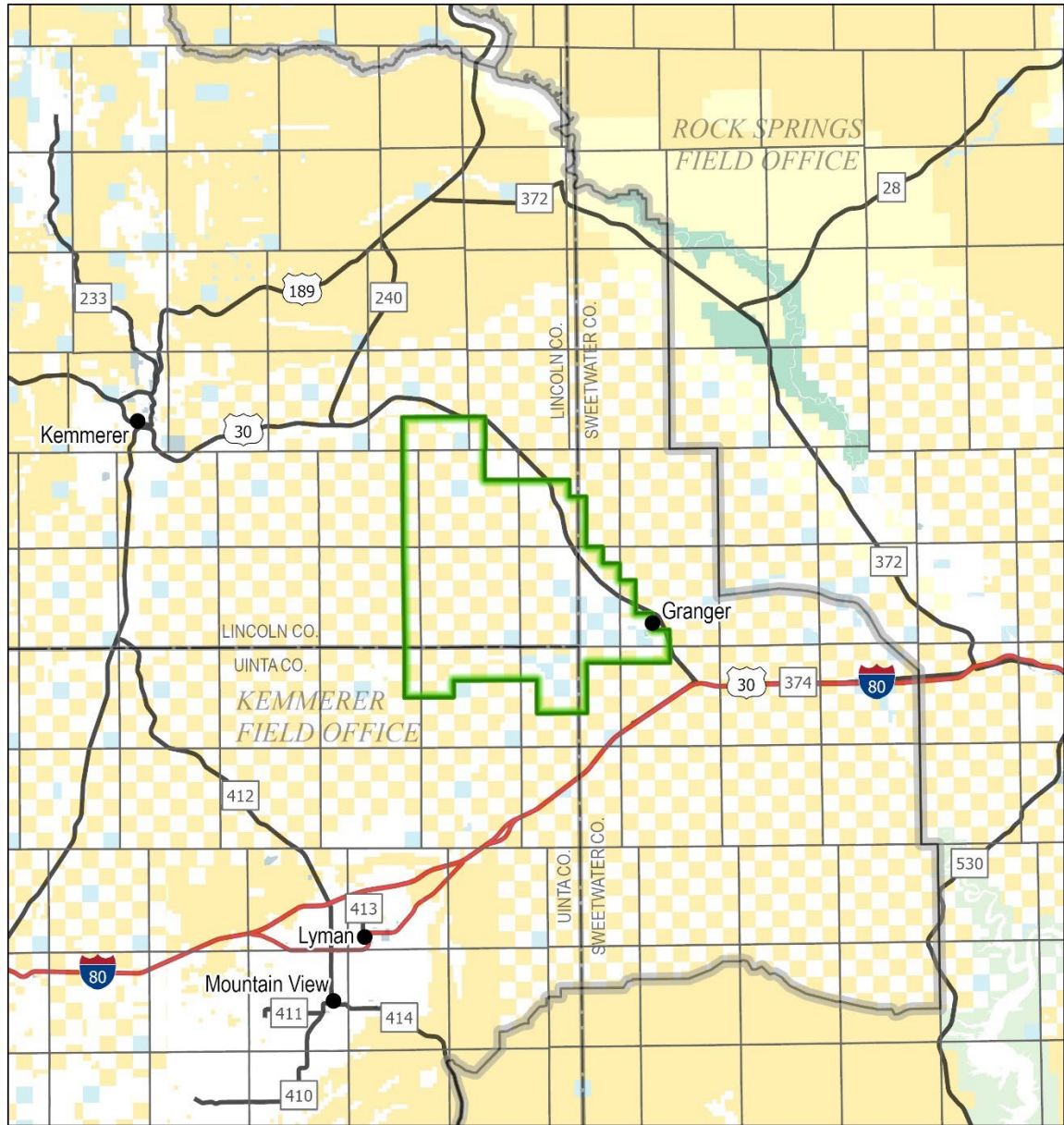
affiliated equipment and surface facilities. Operator will use existing roadways, which they have obtained permission to use from the respective surface owners.

The BLM does not authorize or regulate use of non-federal lands, and the BLM's ROW grant would not authorize or restrict use of the non-federal lands in the project area by the non-federal landowners (or anyone granted the lawful right by the landowner to use their lands).

While the use of Class VI wells for permanent geologic sequestration is relatively new in Wyoming, operations involving the subsurface injection of CO₂ to deep geologic formations is not novel, and the nature of operations is expected to be similar to oil & gas exploration and production operations in many regards, particularly those associated with injection of CO₂ for enhanced oil recovery (EOR).

Alternatives Considered but not Analyzed in Detail

Project location was determined on proximity to the trona operators and geologic reservoir characterization. Because certain subsurface geological conditions must be met for the safe containment and confinement of CO₂, project location options were limited to the Moxa Arch subbasin of the Greater Green River Basin situated in Southwestern Wyoming. As a result, locations outside of this area were not considered.



Sweetwater Carbon Storage Hub Carbon Dioxide Sequestration

- | | | | | | |
|--|---|--|--------------------------------|--|-----------------------|
| | Sweetwater Carbon Storage Hub Sequestration | | Bureau of Land Management | | Bureau of Reclamation |
| | BLM Wyoming Field Offices | | U.S. Forest Service | | State Government |
| | Wyoming Counties | | U.S. Fish and Wildlife Service | | Local Government |



1:500,000 || 1 inch equals 8 miles || NAD 1983 UTM Zone 12N || 4/27/2023

0 10 20 Miles

No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

Proposed Action Area

3.0 Affected Environment/Environmental Effects

This chapter describes the existing environment that would be affected by the No Action Alternative or the Proposed Action and discloses the potential impacts of these alternatives. Resources which are not present or are not affected by the Proposed Action or alternatives are documented on the IDT checklist (Appendix 1) and resource issues carried forward are identified in Section 1.2. The elimination of non-relevant resources is consistent with NEPA, Departmental regulations and policy.

The Environmental Consequences (direct/indirect effects analysis) means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

A “but for” causal relationship is insufficient to make an agency responsible for a particular effect under NEPA. Effects should generally not be considered if they are remote in time, geographically remote, or the product of a lengthy causal chain. Effects do not include those effects that the agency has no ability to prevent due to its limited statutory authority or would occur regardless of the proposed action.

Reasonably foreseeable future actions (RFFAs) as defined in 43 CFR 46.30 include those federal and non-federal activities not yet undertaken, but sufficiently likely to occur. These include those actions for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends. RFFAs do not include those actions that are highly speculative or indefinite.

The surface locations for the three approved Class VI wells have been constructed in accordance with the surface agreements executed with the respective fee landowners. Each site consists of approximately 5 acres; the Frontier J 1-5: SWNW, Section 15, T.19 N., R. 112 W; Frontier AN 1-26: SWSW, Section 26, T. 19 N, R. 112 W., as permitted, modified to NESE, Section 27, T. 19 N., R. 112 W.; and Frontier LCS 1-23: NENE, Section 23, T. 19 N ., R. 112 W.. The sites will host the drilling rig for well construction as well as affiliated equipment and surface facilities. Operator will use existing roadways, which they have obtained permission to use from the respective surface owners

Frontier Carbon Solutions Holdings, LLC has submitted an application to WYDEQ for seven additional injection wells and five monitoring wells, identified as Project Speed Goat. The wells are located within the requested project area but are located within the checkerboard land pattern which will require federal ROWs for access and other linear features. The wells are speculative at this time and no further information has been submitted to WYDEQ or the BLM. Link to WYDEQ application: [2025-0210 UIC WYS-023-00212_Frontier-Carbon-Solutions-LLC_Project-Speed-Goat_Project-Application.pdf](#)

A ROW application, from Moxa Carbon Storage, LLC, for the use of the subsurface BLM-administered federal pore space has been received. This ROW application is for 605,091 acres, and includes the area requested in the Pond application. Pore space ROWs are not exclusive. The owner/operator of the Moxa Carbon Storage, LLC project has not contacted WDEQ regarding the project and no UIC Class VI permit applications have been received or discussed with WDEQ to date. The BLM cannot predict with reasonable certainty how many Class VI wells will be constructed, where exactly they will be constructed, or the timing and duration of associated operations. To the extent additional BLM authorizations are necessary to allow for use of the BLM-administered federal pore space, the BLM will ensure NEPA compliance by screening the actions in accordance with the applicable law and regulations, BLM policies, and providing for future public participation.

There are two carbon disposal wells under development, which are affiliated with the ExxonMobil Shute Creek facility. These wells are for carbon disposal and are not accepting outside source carbon. Injection is from production captured from their own wells.

Current activities within the project area include oil and gas wells with associated production facilities, and linear features, i.e. pipelines, access roads, etc., livestock grazing, range improvement projects and recreation. The area is leased for oil and gas so further oil and gas development could occur.

The BLM cannot reasonably determine at the pore space ROW stage: whether actual injection operations to use the pore space will eventually be authorized, or the exact location and nature of such operations. As a result, this EA discloses the general effects and potential mitigation that could be applied by the BLM, acknowledging that actual injection operations (if authorized) would result in potential effects to the resources described below. Disclosing the anticipated impacts of issuing a pore space ROW grant (even the uncertain future effects associated with potential injection operations), serves NEPA's twin aims to ensure that agencies consider the environmental consequences of proposed actions and inform the public about agency decision making. Additional NEPA compliance documentation will be completed by the BLM (including public participation) if additional, related proposals for use of public lands are submitted to the BLM. See Background section of this EA for more information about the geologic sequestration of carbon process.

3.1 Lands and Realty

Issue Statement: How would granting the ROW for underground pore space impact other existing or proposed ROWs near or adjacent to the proposed project area?

Affected Environment

The proposed project area is near hundreds of existing linear ROWs including access roads, buried pipelines, overhead transmission lines, monitoring wells, railroad lines, and buried fiber lines, as well as nonlinear ROW that include cathodic protection sites and well pads. These linear and nonlinear ROWs transect the entirety of the 44,347-acre proposed project area and are

scattered throughout the project area. There is a major pipeline corridor that traverses from East to West in the Southern part of the project area.

Under applicable BLM regulations, the BLM must notify other ROW grant holders “near or adjacent to” a proposed ROW (43 CFR 2807.14). The BLM does not anticipate a deep, subsurface pore space ROW to affect other ROW grant holders. For this reason, the BLM will solely use the public participation process for this EA for compliance with this regulation.

Environmental Consequences (direct/indirect effects)

No Action

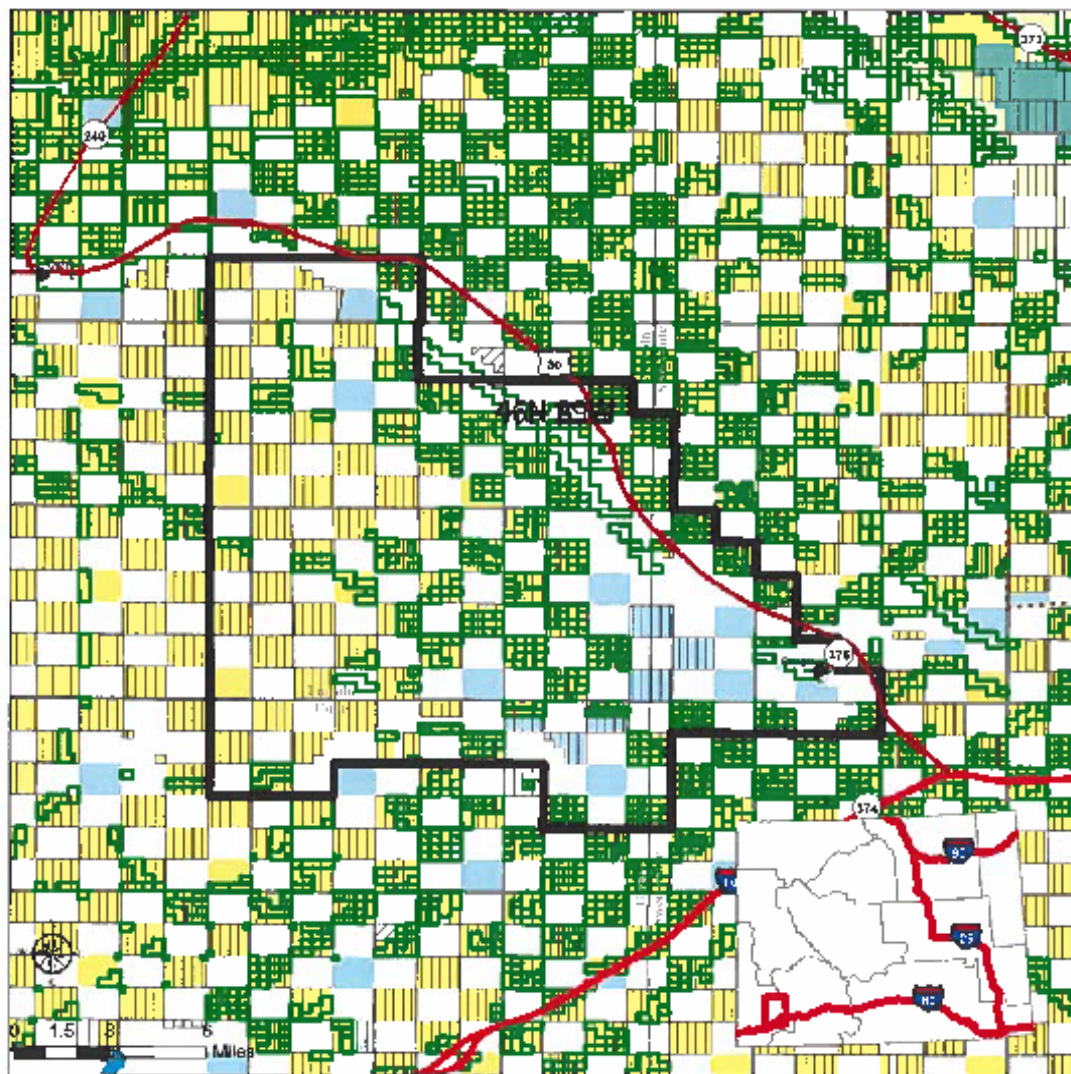
Under the No Action Alternative, BLM would not authorize or issue an ROW. Existing ROW grants would not be impacted.

Proposed Action

Per 43 CFR 2800, a ROW grant authorizes a holder to use or occupy BLM-administered public lands for a specific use or purpose. The grant conveys the use of the described lands to construct, operate, maintain, and terminate systems and facilities within the ROW in compliance with any terms, conditions, and stipulations deemed to be in the public interest by the BLM. All existing ROW holders are granted a right in time, right in space. Grants are also issued subject to valid existing rights of others, including those holders with property interests granted by previous ROWs. This does not exclude the BLM from allowing common use of the ROW or from authorizing the ROW for compatible uses.

The proposed ROW for 44,347 acres of pore space underneath federally managed lands would be non-exclusive, meaning that it would convey rights to use and access the described pore space, but is still subject to the prior valid existing rights of others and the BLM could grant access to these public lands (including the pore space) in future authorizations, to the extent compatible and when in the public’s interest. In addition, the authorization would not include any surface disturbance. Therefore, there would be no impacts to the existing ROWs in the project area. The impacts to existing ROWs from any potential infrastructure proposed by Pond would be analyzed separately if the proponent should submit any future applications to the BLM. In accordance with BLM Instruction Memorandum 2022-041 (National Policy for the Right-of-Way Authorizations necessary for Site Characterization, Capture, Transportation, Injection, and Permanent Geologic Sequestration of Carbon Dioxide in Connection with Carbon Sequestration Projects), the BLM would continue to authorize other uses of the proposed project area as long as these other uses would not unreasonably interfere with previously authorized CO₂ sequestration projects. Surface ROW applications will be assessed on a case-by-case basis, but on the whole should not interfere with pore space sequestration.

The BLM's issuance of a pore space ROW grant would not authorize use of the ROW, which would be contingent upon the BLM's issuance of a Notice to Proceed (NTP); see Appendix 4 for applicable stipulations, including the NTP stipulation. The BLM would not issue a NTP until or unless the State of Wyoming issues the necessary permits and orders to allow actual injection and operation under a Class VI UIC well permit. The State's statutes and administrative rules governing CO₂ injection under a Class VI UIC well permit will help prevent the interference or impairment of other authorized uses of pore space within the project area.



NAD 1983 UTM Zone 12N

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Right-of-Way Authorizations

- Soudan/Carbon Storage Hub CO2 Sequestration Project
- Authorized Right of Way

Surface Management Agency

- Bureau of Land Management
- Private
- State

Federal Mineral Estate

- All
- Coal
- Oil, Gas
- Other

Right-of-Way Authorizations

3.2 Minerals

Issue Statement: How will the BLM ensure operations following from the proposed action do not impair or otherwise conflict with existing and authorized mineral leases and operations?

Affected Environment

There are active oil and gas leases within the project area, eighteen of which have producing wells. Most of the active wells are located in the eastern portion of the project area, near Granger, WY. Portions of the requested project area in the eastern side are also located within the known sodium leasing area (KSLA).

Environmental Consequences

Frontier intends to dispose of CO₂ in the Mesozoic Nugget Sandstone and the Paleozoic Madison Limestone. Oil and gas production along the Moxa arch is predominately from Mesozoic age Frontier and Dakota formations (64 MMBO & 3.7 TCF combined). The southern part of the Moxa arch has Paleozoic production from the Morgan Formation at the Bruff Unit, the Church Buttes Unit, and the Butcher Knife Springs Unit where there are structural 4-way closures present. Currently, all Morgan producing wells have been shut-in and are no longer producing oil from the Morgan Formation. Injecting CO₂ in the overlying Mesozoic (Jurassic) age Nugget Sandstone could present a conflict if oil and gas operators intend to develop underlying oil accumulations located in the Morgan Formation. There is currently no Madison Limestone production within Frontier's Hub or along the southern Moxa arch.

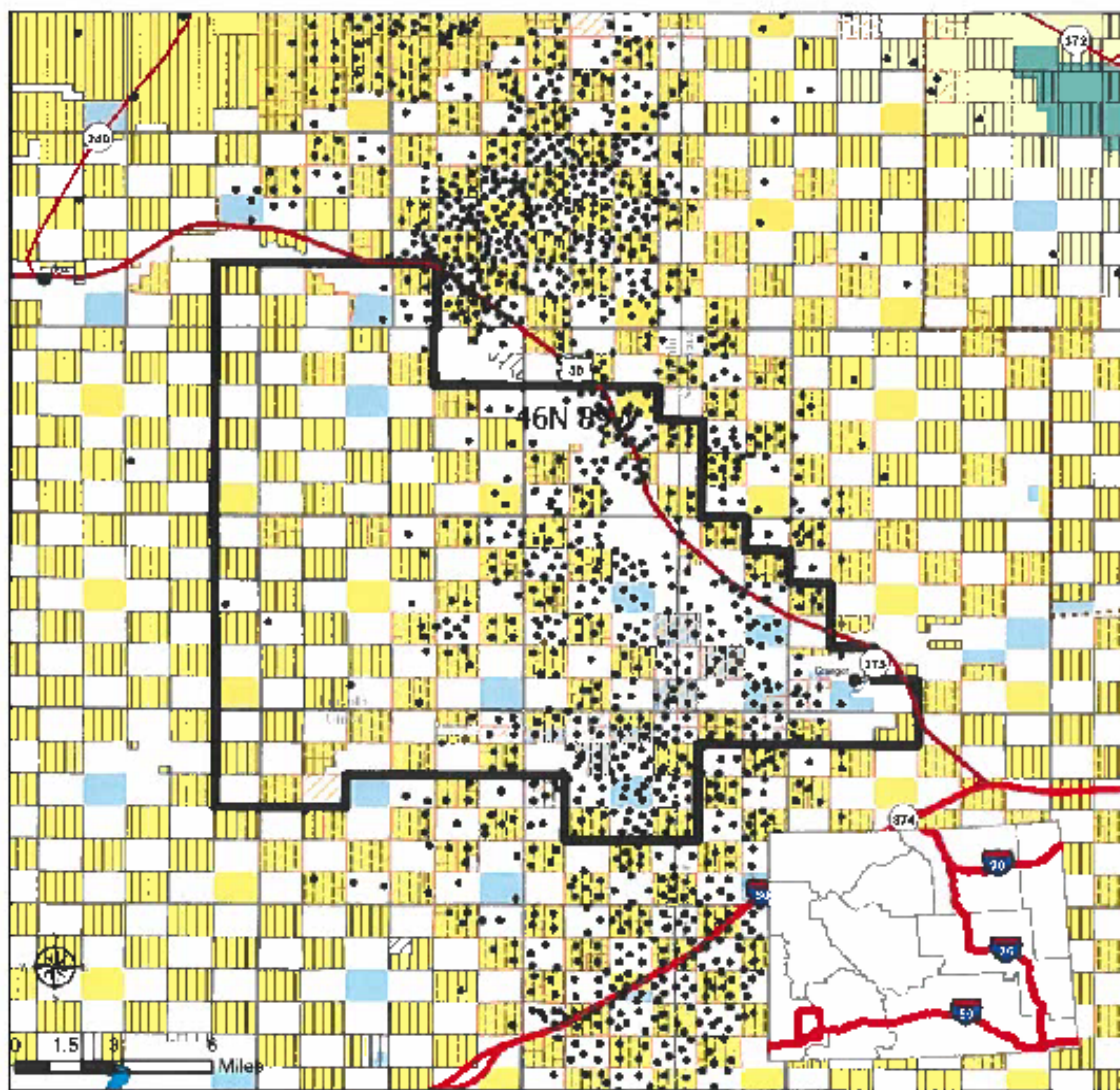
Within Frontier's SCS Hub Unit, a formation test (drill stem test) was conducted on the Nugget Sandstone and Madison Limestone in the Bruff Unit 1 well. 86 and 69 MCFD of gas was tested, respectively. An analysis of this gas from the Madison Limestone showed between 0.27 and 1.52% helium. No subsequent production tests were conducted in the Bruff Unit 1 well in the Nugget Sandstone and Madison Limestone. Petrophysical analysis of these zones did not calculate net pay. No mud logs were available. Typical economic daily rates of gas production exceed 10 MMCFPD from the Madison Limestone along the northern Moxa Arch (La Barge platform), which is an order of magnitude greater than the formation test results in the Nugget and Madison in the Bruff Unit 1 well.

Part of the difficulty with analyzing potential producible fluid mineral zones in the Madison Limestone and Nugget Sandstone in the SCS Hub Unit is the lack of digital curves, core, and other geochemical and geological data typically utilized to estimate net pay within reservoir rocks. Absent this data and information, results of any log analysis will be uncertain and possibly misleading.

Given the current non-production from any reservoirs beneath the Nugget Sandstone in the Frontier SCS Hub Unit, conflict is unlikely but possible in the Frontier's SCS Hub Unit area. CO₂ disposal intervals and zones are typically deep enough to not conflict with oil and gas operations. Remaining reserves in the Morgan Formation and possibly the Madison Limestone have not been estimated in Frontier's SCS Hub Unit area. The potential economic loss to the public in producible fluid minerals in the Morgan Formation and Madison Limestone because of CO₂ sequestration in the overlying Nugget Sandstone has not been evaluated. The following stipulations would assist in avoiding conflict:

Stipulations

1. The Holder must avoid unreasonable interference with operations on existing mineral leases authorized under the Mineral Leasing Act of 1920 (MLA), as amended, by preventing unnecessary or unreasonable damage or material interference to surface and subsurface authorized uses and economically recoverable mineral resources.
2. Locations of CO₂ sequestration wells located on or affecting federal lands that penetrate structural closure along the Moxa arch or within the WY Thrust Belt should be evaluated for the presence of hydrocarbons and helium within the targeted injection formation(s) before injection of CO₂ begins. The BLM AO may request results of the evaluations for each well prior to drilling.



NAD 1983 UTM Zone 12N

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Oil and Gas Leases Existing Development

- Sevier Plateau CO₂ Sequestration Project
- Oil and Gas Wells
- Anticipated Oil & Gas Leases

Surface Management Agency

- Bureau of Land Management
- Private
- State

Federal Mineral Estate

- All
- Coal
- Oil, Gas
- Oil, Gas, Trail
- Other

Oil and Gas Leases Existing Development

4.0 Tribes, Individuals, Organizations, or Agencies Consulted

There were 54 public scoping comment letters sent out to tribes, individuals, organizations and other local, state and federal agencies in August 2023 for a 30-day comment period. A meeting between the BLM and Cooperating Agencies was held on May9, 2024. Details about the public scoping and comment process can be found in Section 1.2 of this document.

Certain sites that are culturally sensitive to regional Native American tribes are known to be present in the area. Should the proponent apply for additional ROW in the future, the BLM would initiate Tribal consultation as appropriate.

5.0 List of Preparers

Name	Title	Responsibility
Richard Jacoby	Physical Scientist (Air Quality)	Air Resources: Ozone – Non-attainment, Air Resources: other than ozone, Climate Change and Green House Gases
Abigail Stemmler	Forester	Woodland/Forestry
Kaisa McKenna	Realty Specialist	Land Resources/Access
Mariah Gaston	Wildlife Biologist	Migratory Birds, Threatened, Endangered, Sensitive or Candidate Animal Species, Wildlife/Fisheries, Threatened, Endangered, Sensitive or Candidate Plant Species, Areas of Critical Environmental Concern – Plants
Christina Handy	Rangeland Management Specialist	Range/Livestock Management,
Linda Naoi Goetz	Archaeologist	National Historic Trails/Cultural Resources
Ben Molitor	Natural Resource Specialist	Soils, Vegetation, Weeds - Invasive, Non-native Species, Climate Change
Jason Dabling	Archaeologist	Paleontology
Alex Gardiner	Fisheries Biologist	Water Quality (drinking/ground), Wetlands/Riparian/ Floodplains
Ben Molitor	Natural Resource Specialist	Wastes (hazardous or solid)
Jerry Frimml	Outdoor Recreation Planner	Lands with Wilderness Characteristics, Recreation, Special Designations, Travel Management, Wild and Scenic Rivers, Wilderness

Name	Title	Responsibility
		Study Areas, Visual Resources Management
Phil Lockwood	Fire Management Specialist	Fuels/Fire Management
Karsyn Lamb	Economist	Environmental Justice and Socioeconomics
Louis Niglio	Geologist	Fluid Mineral Resources/Energy Production/Reservoir Management
Ben Molitor Kelly Lamborn	Project Manager Project Manager	Project Leads

6.0 References

- 2008a. Bureau of Land Management (BLM) 2008. Proposed Resource Management Plan and Final Environmental Impact Statement for the Kemmerer Field Office Planning Area. On file at the BLM KFO.
- 2010a. Bureau of Land Management Record of Decision and Approved Kemmerer Resource Management Plan, Kemmerer Field Office, Kemmerer, WY, as amended. Approved: May 24, 2010 (RMP).
- 2015a. Bureau of Land Management Record of Decision and Approved Resource Management Plan Amendments for the Rocky Mountain Region including the Greater Sage-Grouse Sub-Regions of: Lewiston, North Dakota, Northwest Colorado and Wyoming and the Approved Resource Management Plans for Billings, Buffalo, Cody, HiLine, Miles City, Pompeys Pillar National Monument, South Dakota and Worland, as amended. (ARMPAs) Approved: September 21, 2015.
- 2023g. Bureau of Land Management. 2023. Confidential Report: Pore space determination for geologic sequestration of CO₂ within Nugget and Madison formations SW Wyoming: Uinta, Lincoln and Sweetwater Counties. United States Department of the Interior, Bureau of Land Management, Reservoir Management Group.

Appendix 1 – Project Scoping Worksheet

NEPA Interdisciplinary Team SCOPING WORKSHEET Kemmerer Field Office

<i>Project Title: Sweetwater Carbon Storage Hub Sequestration Project</i>	<i>Case/Lease: WYW-192113</i>
<i>Project Lead: Kelly Lamborn</i>	<i>Project Initiation Date: 01/27/2023</i>
<i>Applicant: Pond Field, LLC</i>	<i>ID Team assignment date: 10/07/2024</i>
<i>Descriptive file Location:</i>	

DETERMINATION: (Choose one of the following abbreviated options for the left column) NP = Not present in the area impacted by the proposed or alternative actions.

NI = Present, but not affected or effects cannot be meaningfully analyzed.

PI = Present with potential for impact analyzed in detail in the NEPA document or identified in a DNA as requiring further analysis.

When making your determination, consider the effects of the different alternatives including the reasonably foreseeable environmental trends and planned actions in the area. Determination includes effects to or from connected action(s).

Deter- mination	Element	Rationale for Determination NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document	Initials	Date
NI	Air Quality (Clean Air Act) (NRS)	<i>This resource will not be further analyzed.</i> There is not a plan of development for emission generating activities. Subsequent activities that occur resulting from this project will include an analysis of air impacts and air conformity review where in the non-attainment area. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	RJJ	11/15/2024
NP	Areas of Critical Environmental Concern (ACEC) (Wildlife)	None in project area.	MRG	10/22/2024
NI	Climate Change (NRS)	<i>This resource will not be further analyzed.</i> In order to assess the potential for climate change, and the resultant effects of climate change, the standard approach is to measure and predict emissions of greenhouse gases (GHGs) measured in terms of global warming potentials (GWPs) and as carbon dioxide equivalents (CO ₂ e), with some gases like methane demonstrating much higher GWPs (28-36X	BJM	12/5/2024

Deter- mination	Element	Rationale for Determination NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document	Initials	Date
		<p>greater than CO₂). The GWP provides a method to quantify the cumulative effects of multiple GHGs released into atmosphere using a standard “currency” at local, regional, national, and global scales. The proposed action would not produce or contribute to the environment hydrocarbons or other potential “downstream” sources of GHGs.</p> <p><i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>		
NI	Cultural Resources Native American Religious Concerns Traditional Cultural Properties (National Historic Preservation Act) (American Indian Religious Freedom Act)	<p><i>This resource will not be further analyzed.</i></p> <p>The APE is located within the Green River Basin Subregion, which contains the greatest concentration of cultural resources in the BLM KFO. National Historic Trails (NHT) within the requested ROW include NRHP-Eligible/contributing NHT Class 1, NHT Class 2, and NHT Class 3 segments, as well as unevaluated segments of the Blacks Fork Cutoff, the Hams Fork Cutoff, the Emigrant NHT, and the Pony Express NHT. The viewshed of Class 1 and 2 NHT segments, located within the checkerboard, are managed to protect the character of setting within the federal sections in which they occur, and Class 3 segments viewshed are managed according to the appropriate VRM class for the area.</p> <p>Several NRHP-Eligible or unevaluated historic roads are located within the APE, including the Green River to Granger Road and the Lincoln Highway. In addition, the APE includes one known Tribally sensitive site on Federal land.</p> <p>Potential future project elements described in the SF299 Project Description include test wells, injection wells, monitor wells, CO₂ transportation pipelines, compression equipment, and power transmission lines. If proposed and determined to be a federal undertaking, these elements and any associated connected actions will need to be analyzed under NHPA Section 106 and the BLM/SHPO Protocol Agreement, including BLM Consultation with Tribes and NHT groups.</p> <p><i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	LNG	11/15/2024
NP	Farmlands, Prime and Unique (ESM 94-7) (P&EC)	<p><i>This resource will not be further analyzed.</i> According to the NRCS, GIS review of Acres of Prime Farmland, there are none located within the KFO. No lands within the KFO meet the 7 CFR 657.5 definitions of Prime or Unique. Also see KFO Proposed RMP, pg. 1-25.</p>	KL	11/5/2024
NI	Fish Habitat (Fisheries)	<p><i>This resource will not be further analyzed.</i></p> <p>Perennial and fish bearing waters exist in the project area. Granting of a ROW to access pore space will not impact the resources as no surface disturbing activities are proposed with this action. Future ground disturbing activities may potentially impact the resource. Restrictive protective measures exist through RMP Goals and Objectives, ACOE permitting regulations, and WYDEQ permitting regulations.</p>	TAG	11/18/2024

Deter- mination	Element	<p>Rationale for Determination</p> <p>NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document</p>	Initials	Date
		<i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>		
NI	Floodplains (E.O. 11988) (Fisheries)	<p><i>This resource will not be further analyzed.</i></p> <p>There are no facilities or structures proposed in floodplains. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	TAG	11/18/2024
NI	Forests and Rangelands (Healthy Forest Restoration Act) (Forester)	<p><i>This resource will not be further analyzed.</i></p> <p>There are no forest resources within the project area.</p> <p>Woodland resources are comprised of 10 or fewer trees per acre and may contain limber pine (<i>pinus flexilis</i>), juniper species or old growth of either.</p> <p>The current proposed action will not impact these resources. Future construction could impact these resources but will be analyzed after a plan of development has been submitted. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	ALS	10/21/24
NI	Fuels / Fire Management (Fuels)	<p><i>This resource will not be further analyzed.</i> The project area overlaps with planned fuels treatments and fire management units. There will be no impacts from a sub-surface right-of-way. Once surface disturbance occurs or when surface infrastructure is in place fire management priorities will need to be updated and hazardous fuels reduction treatments may be reprioritized or relocated. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	PL	11/5/2024
NI	Geology / Mineral Resources/Energy Production(Geologist)	<p><i>This resource will not be further analyzed.</i></p> <p>RSFO: The proposed project area pore space edge overlaps the edge of the Known Sodium Leasing Area (KSLA) and the Mechanically Mineable Trona Area (MMTA). While CO2 laterally entering the trona beds associated with the KSLA or MMTA is not a foreseeable issue due to the proposed deep depth of the target formations, there still exists a concern that CO2 may travel laterally and/or vertically along unmapped faults into existing mine workings posing a safety risk to the underground miners. Consequently, a complete reservoir characterization, including but not limited to confining zone characteristics and faulting or fracturing are necessary to ensure the proposed CO2 injection zone(s) are not breached. Should the applicant receive the Wyoming Class VI Wyoming Department of Environmental Quality permit (which is a prerequisite to use of the BLM-administered federal pore space), these concerns would be mitigated. Additional analysis may be required if the applicant applies for surface disturbing activity. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	HG	11/5/2024
PI	Land Resources / Access (Lands)	<p>Other rights-of-way grants have been identified in the area and will not be affected. May need a road use agreement for maintenance. Any proposed surface disturbance will require a separate application.</p>	KM	11/5/2024

Determination	Element	<p align="center">Rationale for Determination</p> <p align="center">NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document</p>	Initials	Date
		See Section 3.19.		
NI	Livestock Grazing / Range Management (Range)	<p><i>This resource will not be further analyzed.</i></p> <p>The proposed action involves issuing a sub-surface right-of-way, with no surface disturbance proposed at this time. Because of this, there are no expected impacts to livestock operations from this action. If actions are proposed that involve surface disturbing activities, the BLM would consider potential impacts to livestock grazing in future NEPA analyses. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	CMH	10/22/2024
NI	Migratory Birds (Migratory Bird Treaty Act, E.O. 13186)(Wildlife)	<p><i>This resource will not be further analyzed.</i></p> <p>Project is within raptor habitat resulting in potential displacement and abandonment of active nests through entire project area. If surface disturbing activities were to occur, timing stipulations will apply, and species-specific surveys will be required where habitat is present. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	MRG	10/22/2024
NI	Paleontology (Geologist)	<p><i>This resource will not be further analyzed.</i></p> <p>The proposed ROW does not authorize any surface disturbance, thus there is no possibility of affecting the paleontological resources at this time. However, the potential for impacts to paleontological resources from future disturbance is determined to be high in areas that are classified as PYFC 5. These include the Tipton and Luman Tongue of the Green River Formation, various members of the Bridger Formation as well as the Niland Tongue of the Wasatch Formation. Total acreage of PFYC 3 is 840 acres, Total PFYC 4 is 13 acres, PYFC 5 is 739, 464 acres. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	JRD	11/13/2024
NI	Public Health and Safety (P&EC)	<p><i>This resource will not be further analyzed.</i></p> <p>At this level of development, there would be no impacts to public health and safety. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	KL	11/5/2024
NI	Recreation (Recreation)	<p><i>This resource will not be further analyzed.</i> Recreation would not require further analysis to issue a sub-surface right-of-way. Additional analysis will be required if the applicant applies for surface disturbing activity in the future.</p> <p>Portions of the project area fall within the Oregon Trail Special Recreation Management Area which has the management objective to provide visitors the opportunity to visit and learn about trail history and use while maintaining the setting, character, and present condition of trails and associated historical sites.</p> <p>The remainder of the project area falls within the KFO Extensive Recreation Management Area where Recreation is to be managed in a custodial manner for compatibility with other uses. <i>As there is no</i></p>	JLF	12/05/2024

Deter- mination	Element	Rationale for Determination NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document	Initials	Date
		<i>surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>		
NI	Socio-economics (P&EC)	<i>This resource will not be further analyzed.</i> The Proposed Action and No Action alternative will have minimal differences in effect on the local economies because the no action is only a small decrease in pore space for the project and will likely not amount to less injection wells and infrastructure. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	CT	11/14/2024
NI	Soils (NRS/RMS)	<i>This resource will not be further analyzed.</i> Erodible soils are within the project area Development could negatively impact soils due to erosion and compaction. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	BJM	2/18/2025
NI	T&E Species (ESA) (Wildlife)	<i>This resource will not be further analyzed.</i> Ute Ladies Tresses habitat along the riparian areas. T&E Colorado River Fishes (Bonytail, Colorado Pikeminnow, Humpback Chub, and Razorback Sucker) may require consultation if new water uses exceed 0.10-acre feet. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	MRG TAG	10/22/2024 11/18/2024
NI	Vegetation (RMS/NRS)	<i>This resource will not be further analyzed.</i> The proposed action involves issuing a sub-surface right-of-way, with no surface disturbance proposed at this time. Because of this, there are no expected impacts to vegetation from this action. Once specific actions are proposed that involve surface disturbing activities, the BLM will consider potential impacts to vegetation in future NEPA analyses. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	BJM	11/15/2024
NI	Visual Resource Management (Recreation)	<i>This resource will not be further analyzed.</i> VRM would not require further analysis to issue a sub-surface right-of-way. Additional analysis will be required if the applicant applies for surface disturbing activity in the future. Portions of the project area fall within the Oregon Trail Special Recreation Management Area classed as VRM II with the objective to: “retain the existing character of the landscape”. The level of change to the characteristic landscape can be low. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	JLF	12/05/24
NI	Wastes (hazardous or solid) (Resource Conservation and Recovery Act Comprehensive	<i>This resource will not be further analyzed.</i> Without further context of a Plan of development it is impossible to meaningfully analyze or predict what hazardous wastes would be involved. In the event of further project development Hazardous or solid wastes will be managed and responded to per BLM Manual 1703-Hazard	BJM	11/15/2024

Deter- mination	Element	Rationale for Determination NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document	Initials	Date
	Environmental Response Compensation and Liability Act) (NRS)	Management and Resource Restoration in accordance with procedures outlined in the National Contingency Plan (40 CFR 300). The operator is responsible for safe use, storage and containment of hazardous materials or waste, biological and/or solid waste. The release of any hazardous materials/ waste, in reportable quantities, must be immediately reported to NRC and BLM. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>		
NI	Water Quality (drinking/ground) (Safe Drinking Water Act, Clean Water Act) (Fisheries)	<i>This resource will not be further analyzed.</i> There are 17 domestic and 8 miscellaneous water wells within the proposed area. All are less than 125 feet deep. Class VI Injection wells would be completed in deep pore space in the Nugget Formations at depths greater than 13,000 below ground surface, far below the aquifer used for drinking wells and completed according to WDEQ specifications under permits issued on 12/14/2023. Therefore, no impacts to drinking water would occur. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	JPB	11/12/2024
NP	Water Rights(Fisheries)	<i>This resource will not be further analyzed.</i> No water use or changes to water rights are proposed. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	TAG	11/18/2024
NI	Wetlands/Riparian Zones (E.O. 11990) (Fisheries)	<i>This resource will not be further analyzed.</i> Wetlands and riparian habitat exist in the project area. See Riparian section 3.16. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	TAG	11/18/2024
NP	Wild and Scenic Rivers (Wild and Scenic Rivers Act)(Recreation)	<i>This resource will not be further analyzed.</i> There are no wild and scenic rivers within or adjacent to the project area. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	JLF	12/05/24
NP	Wilderness (Wilderness Act, Federal Land Policy and Management Act) (Recreation)	<i>This resource will not be further analyzed.</i> There are No WSA's or Wilderness Areas within or adjacent to the project area.	JLF	12/05/24
NI	Weeds - Invasive, Non-native Species (Federal Noxious Weed Control Act, E.O. 13112) (RMS/NRS)	<i>This resource will not be further analyzed.</i> While actual construction and development could lead to noxious weeds being established. It is impossible to predict at what scale or meaningfully analyze the impacts without a plan of development. The operator will need to implement a weed monitoring and control plan. Per BLM Handbook H-9011-1, submission of a Pesticide Use Permit (PUP), and annual Pesticide Application Report (PAR) will be required. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i>	BJM	11/15/2024
PI	Fluid Mineral Resources/ Energy Production/ Reservoir Management	Based on pore space determination report from Reservoir Management Group (RMG), no economically producible hydrocarbons or helium were identified in the Madison and Nugget	NL	12/10/2024

Determination	Element	<p align="center">Rationale for Determination</p> <p align="center">NOTE: Giving adequate reasoning for an NI will be used to document why this element is not included in analysis; Similarly, indication of PI will be a determination that this element will be carried forward into the NEPA document</p>	Initials	Date
		formations. See Section 3.20		
NI	Wildlife – including Special Status Species List of surveys required (Wildlife)	<p><i>This resource will not be further analyzed.</i></p> <p>Project area is within general habitat for greater sage grouse. There are leks surrounding the project area that will be impacted unless timing stipulations are followed. There are also two leks within the project area that may be permanently displaced depending on the POD. Timing stipulations for noise during lek season, and nesting and brood rearing could potentially lessen the likelihood. These BLM sensitive status species habitat occurs within the project area: Pygmy Rabbit, white-tailed prairie dogs, sagebrush obligates, mountain plover, great basin spadefoot, northern leopard frog, Townsend's Big-eared bat, spotted bat, and the long-eared myotis. The project area is also within Pronghorn big game crucial winter range. <i>As there is no surface disturbance planned for this phase of the project, there are no impacts, and this element will not be addressed in the EA.</i></p>	MRG	11/07/2024

Appendix 2 – Legal Land Description of the Proposed Project

Sixth Principal Meridian, Wyoming

T. 18 N., R. 111 W.,

sec. 4, lots 1 and 2, S $\frac{1}{2}$ NE $\frac{1}{4}$, and S $\frac{1}{2}$;

sec. 6, lots 5 thru 7, S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$.

T. 19 N., R. 111 W.,

sec. 18, all;

sec. 30, lot 1, N $\frac{1}{2}$ NE $\frac{1}{4}$, and NE $\frac{1}{4}$ NW $\frac{1}{4}$.

T. 18 N., R. 112 W.,

sec. 2, all;

sec. 4, lots 1 thru 4, S $\frac{1}{2}$ NE $\frac{1}{4}$ and S $\frac{1}{2}$ NW $\frac{1}{4}$;

sec. 6, lots 1 thru 5, S $\frac{1}{2}$ NE $\frac{1}{4}$, and SE $\frac{1}{4}$ NW $\frac{1}{4}$;

sec. 10, all;

sec. 20, all;

sec. 22, all.

T. 19 N., R. 112 W.,

sec. 2, all;

sec. 6, all;

sec. 8, all;

sec. 10, N $\frac{1}{2}$ NE $\frac{1}{4}$ and SE $\frac{1}{4}$ N $\frac{1}{4}$;

sec. 12, all;

sec. 18, all;

sec. 20, all;

sec. 28, all;

sec. 30, all;

sec. 32, all.

T. 20 N., R. 112 W.,

sec. 16, all;

sec. 20, SE $\frac{1}{4}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$, and NE $\frac{1}{4}$ SE $\frac{1}{4}$;

sec. 22, all;

sec. 28, N $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, and E $\frac{1}{2}$ SE $\frac{1}{4}$;

sec. 30, all;

sec. 32, W $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$, and W $\frac{1}{2}$ SE $\frac{1}{4}$;

sec. 34, all.

T. 21 N., R. 112 W.,

sec. 30, all.

T. 18 N., R. 113 W.,
sec. 2, lots 1 thru 4, S $\frac{1}{2}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$, and S $\frac{1}{2}$ SE $\frac{1}{4}$;
sec. 4, all;
sec. 6, all;
sec. 8, N $\frac{1}{2}$ NE $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$;
sec. 10, all;
sec. 12, all;
sec. 18, all.

T. 19 N., R. 113 W.,
sec. 2, all;
sec. 4, all;
sec. 6, all;
sec. 8, all;
sec. 10, all;
sec. 12, all;
sec. 14, all;
sec. 16, all;
sec. 18, all;
sec. 20, all;
sec. 22, all;
sec. 24, all;
sec. 26, all;
sec. 28, all;
sec. 30, all;
sec. 32, all;
sec. 34, all.

T. 20 N., R. 113 W.,
sec. 4, all;
sec. 6, all;
sec. 8, all;
sec. 10, all;
sec. 14, all;
sec. 18, all;
sec. 20, all;
sec. 22, all;
sec. 24, all;
sec. 26, all;
sec. 28, all;
sec. 30, all;
sec. 32, all;
sec. 34, all;
sec. 36, all.

T. 21 N., R. 113 W.,
sec. 26, lots 3 thru 6, NW $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$, and SE $\frac{1}{4}$ SW $\frac{1}{4}$;
sec. 28, all;
sec. 34, all;
sec. 36, lots 5 thru 7.

T. 18 N., R. 114 W.,
sec. 12, all.

T. 19 N., R. 114 W.,
sec. 12, all;
sec. 24, all;
sec. 36, all.

T. 20 N., R. 114 W.,
sec. 12, all;
sec. 24, all;
sec. 36, all.

Appendix 3 – Proposed Right-of Way-Stipulations

Standard

1. The Holder(s) shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the Holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) In excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
2. The Holder is responsible for informing all persons associated with this project that they shall be subject to prosecution for intentionally damaging, altering, excavating, or removing any archeological, historical, or vertebrate fossil objects or sites. If archeological, historical, or vertebrate fossil materials are discovered, the Holder is to suspend all operations that further disturb such materials immediately and contact the Authorized Officer. Operations are not to resume until written authorization to proceed is issued by the Authorized Officer (BLM 8100.02.E; Title 16 U.S.C. § 470aa-470mm).
3. The Holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the plan of development which was approved and made part of the grant on (add date). Any relocation, additional construction, or use that is not in accord with the approved plan of development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plan of development, shall be on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.

Pore Space Stipulations

3. The Holder must avoid unreasonable interference with operations on existing mineral leases authorized under the Mineral Leasing Act of 1920 (MLA), as amended, by preventing unnecessary or unreasonable damage or material interference to surface and subsurface authorized uses and economically recoverable mineral resources.
4. Locations of CO₂ sequestration wells located on or affecting federal lands that penetrate structural closure along the Moxa arch or within the WY Thrust Belt should be evaluated for the presence of hydrocarbons and helium within the targeted injection formation(s) before injection of CO₂ begins. The BLM AO may request results of the evaluations for each well prior to drilling.

Notice to Proceed (NTP)

1. The Holder shall not initiate any injection activities under the right-of-way grant without the prior written authorization of the BLM authorized officer. Such authorization shall be a written notice to proceed issued by the BLM authorized officer. Any notice to proceed shall authorize injection or use of the BLM-administered federal pore space only as therein expressly stated and only for the particular location or use therein described.
 - i. The Holder must submit the Class VI well authorization(s) to inject and operate from the Wyoming Department of Environmental Quality – Water Quality Division to the BLM authorized officer with their request for BLM approval of the NTP.
2. The authorized officer may suspend or terminate in whole, or in part, any notice to proceed which has been issued when, in his judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

Bonding

1. A bond, acceptable to the authorized officer, shall be furnished by the Holder before a notice to proceed is issued or at such earlier date as may be specified by the authorized officer.

Appendix 4 – Public Scoping Comments

Submission ID	Comment Title	Comment	Attachment(s)
SweetwaterCarbonStorageHubCO2-1-500341829	Undefined	I am a concerned citizen that lives in Green River Wyoming. First, our landscape is cluttered with wind turbines and then solar panels all for electricity to be sent out of state. The fragments of wind turbine blades are being buried at Casper Regional Landfill in Wyoming. They are contaminating our land. They kill hundreds if not thousands of birds. Solar panels made by China are cluttering up our land in Wyoming. Wildlife migrations are in jeopardy from fencing off sections of solar panels. We still don't know how many wildlife animals are killed on a regular basis. The stress alone will kill these animals. Now we have come to Carbon Dioxide Sequestration which is still very dangerous to us and wildlife. The chance of potential leaks can kill, poison, contaminate our drinking water and cause seismic activity that is created by injection into the earth. This threat never will diminish. Generations to come will have to live with the mistakes made today. Pond Fields on 44,347 acres in three counties Uinta, Sweetwater, and Lincoln are too close to the most populated areas. Yes, there are miles of land in Wyoming, but Climate Change Environmentalists are destroying our great wide-open State. I am one person, but I totally am against this process. Next will be the Nuclear Power Plant in Kemmerer with all of its hazardous development. Can you deny any of these concerns? If you destroy our water supply and the land this State will continue to die.	
SweetwaterCarbonStorageHubCO2-1-500347075	Undefined	WYDOT comment letter provided.	20230811_Sweetwater Carbon Storage Hub CO2 Sequestration_WYDOT comments.pdf
SweetwaterCarbonStorageHubCO2-1-500348923	Undefined	<p>The project area is shown on a map that can be downloaded from the ePlanning website. A generalized overlay of the map (unfortunately no spatial files were provided) yields two comments.</p> <p>Comment #1. The project area is generally on the southern part of the Moxa Arch, a basement-involved anticline that plunges south in this area. Data on the structure of the Moxa Arch are sparse and based on a handful of wells; information on faults at these depths is nearly non-existent. Future (pre-injection) geologic modeling on the transport and storage of CO2 in this region will be simplified by necessity yet may not provide an accurate model of this real-world system.</p> <p>Comment #2. Helium is a known and documented potential resource in the Madison Limestone on the crest of the Moxa Arch, in the project area. A well in Bruff Field, which has significant overlap with the project area, was sampled twice for helium, yielding concentrations of 0.27 and 1.52% helium. In the Church Buttes Field, which is adjacent to the project area, a Madison well yielded a concentration of 0.35%, high enough for DeBruin (1995) to say that the Madison Limestone reservoir in the Church Buttes Field "contains significant helium resources." While the helium data are limited, permanent sequestration of CO2 in a reservoir known for helium may yield a future conflict.</p>	

SweetwaterCarbonStorageHubCO2-1-500349015	Undefined	I support the storage of carbon to help fight climate change. But this storage must be safe, secure, and reliable. Any leaks could be a serious public health and environmental catastrophe. BLM should proceed with caution to make sure that leaks could not occur. Thank you.	
SweetwaterCarbonStorageHubCO2-1-500349033	Undefined	The Wyoming Department of Environmental Quality, Water Quality Division is providing comments and requests to participate as a cooperating agency for the Sweetwater Carbon Storage Hub CO2 Sequestration project. Please see the attached document.	Approved_08142023_DOI_BLM_WY_D090 - 2023_0018_EA_WDE Q_Comments.pdf
SweetwaterCarbonStorageHubCO2-1-500349173	Undefined	Scoping Comments on the Proposed Sweetwater County Storage Hub CO2 Sequestration Project	Comments on Pond Field LLC CO2 Sequestration Project_090123.pdf
	Mail	Wyoming Game & Fish Comments	WGFD letter.pdf
	Mail	The more I read I am convinced that recapturing CO2 is a move in the right direction.	
	Mail	I support the Sweetwater Carbon Storage Hub in considering an application for right-of-way on federal lands. Read the article in the Billings Gazette of 8/16/23, page A-11. Mahalo for all you do!	

Appendix 5 –Draft EA Public Comments

Submission #	Issue/Action	Comment Text	Comment Response
#001	110-001 Decision Process	The BLM has approved the Southwestern Wyoming CO2 Sequestration Project EA and has the opportunity to tier the current EA to that environmental analysis. This would help to address many gaps that currently exist in the EA, including the lack of any discussion on possible direct and cumulative impacts to water resources, mineral resources, soils, and wildlife habitat. The EA currently only addresses potential impacts to lands/realty and oil and gas development which is severely limited considering the other CO2 sequestration projects occurring in the project area as well as the reasonably foreseeable construction of injection wells and other supporting infrastructure required to support those projects.	A determination was made to not pursue tiering to the SW Wyoming CO2 due to review timeframes. As stated in the Proposed Action and Alternatives (Section 2.0 of the EA), the current application does not include any related surface infrastructure or disturbance, or well development. If surface disturbance or disruptive activities were to be proposed under further ROWs with the BLM, appropriate analysis would take place at that time.
#001	132-001 Water, Watershed Mgmt	The BLM must discuss the potential impacts CO2 sequestration may have on groundwater and overall water quality. The BLM concluded in Appendix 1: “Class VI injection wells would be completed in deep pore space in the Nugget Formations at depths greater than 13,000 [feet] below ground surface, far below the aquifer used for drinking wells and completed according to WDEQ specifications under permits issued on 12/14/22023. Therefore, no impacts to drinking water would occur.” EA at Appendix1, p. vii. However, CO2 injection has the potential to cause impacts to water resources through vertical migration of deep subsurface brines to shallower aquifers. The Environmental Protection Agency noted this concern in its comments on the Southwest Wyoming CO2 Sequestration EA and the same comment is applicable to this EA. The Coalition appreciates the additional background information on WDEQ’s Class VI permit	As stated in the Proposed Action and Alternatives (Section 2.0 of the EA), the current application does not include any related surface infrastructure or disturbance, or well development. The BLM's pore space ROW grant would not authorize surface-disturbing activities, surface occupancy of BLM-administered public lands, or well development. Any future ROW actions are dependent on the proponent’s ability to successfully obtain Class VI well permits from the WY DEQ (see background section of EA). Water quality and water resources will be evaluated at the time, based on the specifics of the application for the well and injection procedures proposed to WY DEQ thru the Class VI application process. There are no potential impacts to water quality or

		requirements, which includes testing and monitoring to ensure the integrity of the injection well throughout the life of the project. EA at 1-3. But there is still potential, even if reduced due to WDEQ's requirements, that impacts to groundwater could occur and this should be addressed in the environmental impact section of the EA.	water resources from the application on file for a pore space ROW.
#001	135-001	The BLM acknowledges in Appendix 1 that the proposed project area pore space overlaps the edge of the Known Sodium Leasing Area and the Mechanically Mineable Trona Area. EA Appendix 1, p. iv. It also acknowledges that there is a concern that CO2 may travel laterally and/or vertically along unmapped faults into existing mine workings and pose a safety risk. ID. And further that additional analysis may be required if surface disturbing activities occur. ID. However, the potential impacts are not addressed in the EA because the BLM concludes that Class VI permits would require certain mitigation to address these concerns. But like the water quality issue, just because the WDEQ Class VI permit requirements may help to mitigate these concerns, it does not excuse the BLM from addressing the potential impact that could occur within this EA. The BLM must address these potential impacts as it has addressed potential impacts to fluid mineral leasing. The BLM must not defer the analysis to an outside future WDEQ permitting process.	As stated in the Proposed Action and Alternatives (Section 2.0 of the EA), the current application does not include any related surface infrastructure or disturbance, or well development. The BLM's pore space ROW grant would not authorize surface-disturbing activities, surface occupancy of BLM-administered public lands, or well development. As wells are not part of the proposed action, it is speculative to attempt to determine impacts to the Known Sodium Leasing Area or the Mechanically Mineable Trona Areas without specifics of the drilling and injection program.