

**BEFORE THE
SURFACE TRANSPORTATION BOARD**

Finance Docket No. 36284

**SEVEN COUNTY INFRASTRUCTURE COALITION—
CONSTRUCTION AND OPERATION—IN UTAH, CARBON,
DUCHESNE, AND UINTAH COUNTIES, UT.**

ENTERED
Office of Proceedings
October 18, 2021
Part of
Public Record

**PETITION FOR LEAVE TO FILE SUPPLEMENTAL COMMENTS AND
OBJECTIONS TO FINAL ENVIRONMENTAL IMPACT STATEMENT, BIOLOGICAL
OPINION, AND PROPOSED EXEMPTION FOR THE UINTA BASIN RAILWAY**

Center for Biological Diversity (“Center”) respectfully requests that the Surface Transportation Board (STB) accept the attached Supplemental Comments and Objections to the final Environmental Impact Statement (EIS), Biological Opinion (“BiOp”), and Proposed Exemption for the Uinta Basin Railway (“project”) (“Supplemental Comments”), and the references cited therein¹ into the administrative record. The Board has a compelling interest in accepting the Supplemental Comments to establish a complete record that allows it to fully consider the impacts of the project, the project’s compliance with the National Environmental Policy Act and the Endangered Species Act, the project’s transportation merits, and potential environmental conditions. *See Alaska R.R. Corp.—Construction and Operation Exemption—Rail Line Between North Pole and Delta Junction, AK*, STB Finance Docket No. 34658, slip op. at 6 (Service Date Jan. 6, 2010) (accepting late-filed comments subsequent to publication of a final EIS in the interest of creating a complete record).

On August 6, 2021, the STB’s Office of Environmental Analysis issued a final EIS in this proceeding, but the STB has yet to issue a final decision on the project. Accordingly,

¹ A flash drive containing electronic copies of all references cited in the Supplemental Comments will be filed via U.S. mail shortly.

consideration of these comments will not unduly prolong this proceeding. The Supplemental Comments address issues regarding the EIS that our organizations have raised previously but that the OEA's final EIS still does not adequately address. All parties have had an opportunity to comment on these issues, and consideration of these additional comments will not prejudice any other party.

In addition, now that the EIS has been finalized, the project's *full* transportation merits are now ripe for review. On January 4, 2021, the STB preliminarily granted the Seven County Infrastructure Coalition's Petition for Exemption, but it deferred considering the public health and safety and safe working conditions aspects of the rail transportation policy until after the final EIS was completed. STB Preliminary Exemption Decision at 9-10 (Jan. 4, 2021); *see also* STB Order Denying Mot. to Reconsider Preliminary Exemption at 7 (Sept. 30, 2021). Accordingly, no party has yet had the opportunity to fully address the merits of the SCIC's petition for exemption in light of the final EIS.

The Supplemental Comments also raise deficiencies in the BiOp, which U.S. Fish and Wildlife Service issued on September 20, 2021, and the STB made publicly available on its website on September 21. The Center therefore did not previously have the opportunity to review and comment on the BiOp during the STB's formal comment period for the draft EIS, even though the draft EIS referenced the then non-existent BiOp for proposed environmental conditions. *See, e.g.*, DEIS at 3.4-40, 4-6, 4-11.

Accordingly, the Center respectfully requests that the Board accept their Supplemental Comments and references cited therein into the record.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on this 18th day of October 2021, I caused a copy of the following documents to be served on all parties of record by email:

(1) Petition for Leave to File Supplemental Comments and Objections to the Final Environmental Impact Statement, Biological Opinion, and Proposed Exemption for the Uinta Basin Railway;

(2) Supplemental Comments and Objections to the Final Environmental Impact Statement, Biological Opinion, and Proposed Exemption for the Uinta Basin Railway;

(3) Attachments A–D thereto.

/s/ Elise Ferguson
Elise Ferguson

October 18, 2021

Via STB E-file

Surface Transportation Board
Attention: Environmental filing, Docket No. FD 36284

Re: Supplemental Comments and Objections to the Final EIS, Biological Opinion, and Proposed Exemption for the Uinta Basin Railway

Dear Surface Transportation Board:

We write to submit our objections to the Surface Transportation Board's (STB or "Board") proposed approval of construction and operation of the Uinta Basin Railway and the associated Final Environmental Impact Statement (EIS or FEIS). The following letter is submitted on behalf of the members and staff of the Center for Biological Diversity, Grand Canyon Trust, Western Resource Advocates, Living Rivers, Mountain Lion Foundation, Voices of Wildlife, Friends of Browns Canyon, American Whitewater, Utah Tar Sands Resistance, Sierra Club, No Coal in Oakland, Southern Utah Wilderness Alliance, Green Action for Health and Environmental Justice, Utah Physicians for a Healthy Environment, Utah Citizens Advocating Renewable Energy, and Former Salt Lake City Major Jackie Biskupski.

The Seven County Infrastructure Coalition's ("SCIC" or "Coalition") proposed crude oil railway is the first new freight railway construction of its kind and sweeping geographic scope in the U.S. in several decades. The preferred alternative, known as the Whitmore Park alignment ("project" or "railway"), would cut through 88 miles of rugged terrain in the Uinta Basin ("Basin"), including Indian Canyon and inventoried roadless areas of the Ashley National Forest. Construction of this route would involve paving 423 stream crossings and rerouting 55 streams; destroying and fragmenting thousands of acres of sensitive habitat for the highly imperiled Greater sage-grouse, migratory big game species, and several listed plants; and disrupting and displacing communities in Argyle Canyon.

The final EIS prepared by the Office of Environmental Analysis (OEA) fails to fulfill the EIS's purpose to inform the public and decisionmakers of the project's environmental consequences by ignoring reasonably foreseeable environmental effects of rail construction and operations or minimizing effects as "insignificant" without evidentiary basis, in violation of the National Environmental Policy Act (NEPA). In addition, the biological opinion issued by Fish and Wildlife Service ("BiOp") does not comport with Section 7 of the Endangered Species Act (ESA) and its implementing regulations. The Board therefore cannot "insure" that the project is not likely to jeopardize the continued existence of several listed plant species and the four Colorado River endangered fish, in violation of its duty under Section 7. 16 U.S.C. § 1536(a)(2).

Moreover, the Board should not issue the proposed exemption because formal licensing proceedings are necessary to determine whether the project can carry out 49 U.S.C. § 10101(8)'s transportation policy "to operate transportation facilities and equipment without detriment to the

public health and safety.” See 49 U.S.C. § 10502. Even on the merits, the exemption should be denied, because the project’s environmental harms outweigh its transportation merits.

Accordingly, we respectfully request that the Board deny approval of the exemption, because it would violate NEPA and the ESA; formal licensing proceedings are necessary to carry out the rail transportation policy under 49 U.S.C. § 10101(8); and the project’s transportation merits do not outweigh the project’s many environmental harms.

I. Executive Summary

The following executive summary outlines the deficiencies in the final EIS, biological opinion, and proposed exemption under 49 U.S.C. § 10502. Sections II through IV of this letter discuss these deficiencies in greater detail.

A. The Final EIS Fails to Inform the Public of Significant Environmental Consequences

NEPA’s “twin aims” are to ensure that the agency (1) “consider[s] every significant aspect of the environmental impact of a proposed action, and to consider reasonable alternatives that could mitigate those impacts”; and (2) “inform the public that it has indeed considered environmental concerns in its decisionmaking process.” *Balt. Gas & Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 97 (1983) (citation omitted). “By focusing both agency and public attention on the environmental effects of proposed actions, NEPA facilitates informed decision-making by agencies. . . .” and “public involvement” in those decisions. *N.M. ex rel. Richardson v. BLM*, 565 F.3d 683, 703 (10th Cir. 2009).

The final EIS prepared by OEA falls short of these aims in multiple respects:

(1) The EIS Fails to Disclose the Project’s Purpose and Effect of Increasing Crude Oil Production. The EIS fails to acknowledge the very purpose of the project, which is to ramp up crude oil production in the Uinta Basin, by providing a new and cheaper means of transporting crude oil outside the Basin. As a result, the EIS fails to acknowledge the reasonably foreseeable effects of accelerated oil drilling and production throughout the Basin, while at the same time stating that up to 350,000 barrels of oil per day could be exported via the new rail to out-of-state refineries, an amount far in excess of current production levels, and which, according to the SCIC, is not economically possible without the rail. By ignoring this reasonably foreseeable consequence of allowing a new crude oil transportation route, the EIS masks the air pollution, climate, and road safety impacts from increased oil drilling, production, and burning.

(2) The EIS Improperly Curtails the Downline Impacts Analysis. The EIS arbitrarily confines its analysis of downline impacts to only as far as the Denver Metro area, although crude oil would be destined for refineries many hundreds of miles further east, including Gulf Coast refineries. The EIS excludes the vast majority of the downline route and the crude export destinations from its analysis of the project’s impacts on the grounds that the Board’s thresholds for analyzing downline local air quality impacts—i.e., an increase in traffic of eight trains per day, or three trains per day in areas designated “non-attainment” under the Clean Air Act—would not be triggered on any segment of the line east of Denver.

The EIS fails to explain why the Board's thresholds for analyzing impacts to local air quality in downline communities should apply to the analysis of crude oil train accident risks when these thresholds were not devised with the unique hazards of crude oil transport in mind. Similarly, the thresholds for analyzing downline *rail operation* impacts on local air quality have no rational connection to determining whether air quality and environmental justice impacts of *refining crude oil* in Gulf Coast communities are potentially significant. And applying these same thresholds to decide whether the EIS should quantify downline greenhouse gas emissions misunderstands the nature of the climate change problem, which arises from cumulative emissions of greenhouse gases from innumerable dispersed sources, not from locally concentrated emissions.

As a result, the EIS arbitrarily fails to analyze the overall increased risk of crude oil train derailments and spills along the entire rail route, including all downline routes in the aggregate; fails to analyze the impacts of refining tens of millions of barrels of oil annually on air quality and environmental justice communities in the Gulf Coast; and irrationally curtails its greenhouse gas emissions analysis, by ignoring emissions from rail operations along the vast majority of the downline route and from refining crude oil transported by the rail.

(3) *The Downline Analysis Excludes the Tennessee Pass Line.* The EIS fails to adequately justify excluding analysis of potential impacts along the Tennessee Pass Line in Colorado, which Colorado, Midland & Pacific Railway Company—a wholly owned subsidiary of Rio Grande Pacific, the proposed operator of the Uinta Basin Railway—proposed to reactivate last year. The construction of the Uinta Basin Railway and reopening of the Tennessee Pass Line could result in crude trains traversing the Arkansas River Valley and Browns Canyon National Monument, threatening significant harm to these sensitive resources and recreational tourism.

(4) *Train Derailment and Spill Risks Are Underestimated.* The EIS's analysis of train derailments and spills does not consider the higher derailment and spill risks posed by heavy, long unit trains made of tank cars that would exclusively transport crude oil. The EIS's explanation that the EIS only predicts "relative" accident risks among alternatives and not absolute risks contradicts the EIS's own portrayal of its analysis. Regardless, a "relative comparison" approach does not comport with NEPA's requirement to analyze the significance or severity of a project's effects.

(5) *The EIS Does Not Fully Disclose Air Quality Impacts.* The EIS improperly relies on the air quality impacts analysis for the Monument Butte project to conclude that the project's cumulative emissions, including emissions from future oil development to support the railway's operations, would not result in any new exceedances of the ozone National Ambient Air Quality Standard (NAAQS). The EIS reasons that because the Monument Butte project (1) involves the development of more oil and gas wells than the future oil development scenario needed to support the rail project's maximum oil export operations, and (2) would not result in any new exceedances of the ozone standard, so, too, would cumulative ozone pollution from the instant project not result in any new exceedances of the ozone standard.

However, the Monument Butte project EIS is not a reliable predictor of the air quality impacts of future oil and gas development in the Uinta Basin. The Monument Butte project EIS (1) assumes the application of significant operator-committed emissions reductions that only apply to the Monument Butte project and do not apply generally to oil and gas wells in the Uinta

Basin; (2) relies on outdated emissions data that significantly underestimate volatile organic compounds (a precursor to ozone formation); and (3) is confined to analyzing emissions within a small area of the Uinta Basin, when cumulative emissions from the instant project and future oil development would occur throughout the Uinta Basin. Thus, the EIS's conclusion that the project's cumulative emissions would not result in any new exceedances of the ozone NAAQS is unsupported.

Further, despite that the Uinta Basin is on the verge of not attaining the ozone NAAQS by the 2021 deadline and will almost certainly be downgraded from "marginal" to "moderate" nonattainment for ozone, the EIS fails to acknowledge that the project in connection with cumulative emissions from future oil and gas development would frustrate attainment of the ozone NAAQS. *See* 40 C.F.R. § 1502.2(d) (EIS "shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of . . . other environmental laws and policies").

(6) *Meaningful Discussion of Climate Change Impacts Is Lacking.* The EIS fails to evaluate the significance of the project's direct, indirect, and cumulative greenhouse gas emissions on climate change. The EIS merely concludes that because these emissions make up a relatively small percentage of statewide, national, and global emissions, the project's climate change impacts are not significant. But dismissing climate change impacts on this basis disregards the fundamental problem behind climate change—that it arises from cumulative emissions from countless sources. Instead, the EIS should have analyzed the project's compatibility with carbon budgets to avoid a 1.5°C temperature rise and quantified the socioeconomic impacts of climate change in monetary terms using the "social cost of carbon" tool. Moreover, the EIS only quantifies the project's socioeconomic benefits (e.g., increased tax revenues generated by the project) while ignoring its socioeconomic costs, including social costs of carbon. The skewed analysis of the project's socioeconomic costs and benefits runs afoul of NEPA. *See, e.g., Utah Physicians for a Healthy Env't v. United States BLM*, No. 2:19-cv-00256-DBB, 2021 U.S. Dist. LEXIS 57756, at *17 (D. Utah Mar. 24, 2021).

In addition, the EIS fails to address the project's incompatibility with President Biden's recent executive orders on climate change. For example, Executive Order 14008 sets forth a policy to "organize and deploy *the full capacity* of its agencies to combat the climate crisis to implement a Government-wide approach that *reduces climate pollution in every sector of the economy.*" EO 14008, section 201 (emphases added). The project would facilitate increased oil and gas development contrary to this policy, but the EIS fails to acknowledge this conflict.

(7) *The EIS Improperly Defers Investigating Baseline Geological Hazards.* The EIS fails to adequately identify baseline conditions for geological hazards within the project's footprint to inform the EIS's analysis of potential construction and operations hazards. Instead, the EIS proposes "mitigation" to collect on-the-ground data as to baseline conditions *after* project approval and after final engineering plans have been completed. Investigation of baseline geotechnical conditions as post-approval mitigation measures (1) presupposes that the results of these investigations will not result in the discovery of significant and unmitigable impacts, which must be disclosed in the EIS and (2) prevents meaningful comparison among all alternatives to inform the selection of an alternative, contrary to NEPA's informed decisionmaking purpose.

(8) *The Greater Sage-Grouse Noise Impacts Analysis Is Unreliable.* The EIS fails to conduct baseline analysis of ambient noise conditions near critical mating, nesting, and brood-rearing grounds for Greater sage-grouse in Emma Park. Instead, it arbitrarily assumes that noise levels in residential areas many miles away accurately represent current ambient noise conditions in the noise-sensitive species' habitat. Accordingly, the EIS's projections of potential noise increases in sage-grouse habitat from train operations are unreliable.

The EIS further fails to address how increased noise levels would affect the viability of the Emma Park sage-grouse meta-population, which occupy federally-designated "priority" habitat—habitat with the "highest conservation value" to maintaining sage-grouse populations—but whose numbers have long been in steady decline. Instead, the EIS assumes that proposed habitat restoration to mitigate population losses would effectively restore populations without any evidentiary basis.

(9) *Big Game Migration Routes Are Left Unprotected.* The EIS assumes that SCIC's plans to limit fencing and preserve big game migration corridors would allow unimpeded big game migration despite that the plans have not yet been formulated or specific mitigation measures identified. The proposed "plans to plan" fail to specify objective performance standards or otherwise establish that future planning efforts would effectively prevent barriers to migration.

(10) *The Analysis of Impacts on ESA-Listed Plants Is Flawed.* ESA-listed plant species Barneby ridge-cress, Ute ladies'-tresses, Uinta hookless cactus, and Pariette cactus ("listed plants") occupy the project area, but the EIS fails to conduct baseline surveys to determine population numbers and locations, again thwarting meaningful comparison among all alternatives of the project's harms to listed plants. Further, the EIS arbitrarily assumes that 300-foot buffers would avoid harm to listed plants, but no evidence or reasoned analysis supports this assumption.

(11) *The EIS Fails to Consider a Reasonable Range of Alternatives.* Conservation groups suggested alternatives to avoid or reduce impacts on highly sensitive resources, including Greater sage-grouse, wetlands, and climate change, but the EIS cursorily rejects them. The EIS does not adequately justify eliminating from analysis an alternative that would protect sage-grouse mating grounds or "leks" within a 3.1 mile buffer, avoid harm to wetlands, and require rail electrification. None of the alternatives analyzed in the EIS are "significantly distinguishable" with respect to effects on these resources, as NEPA requires.

(12) *Mitigation Measures Are Not Analyzed.* Throughout the document, the EIS repeatedly fails to specifically identify possible mitigation measures and analyze their effectiveness. Instead, it defers the formulation of mitigation measures until after the project is approved, depriving the public of essential information regarding the feasibility and effectiveness of possible measure to reduce or avoid impacts, and denying the public the opportunity to weigh in on these issues. Accordingly, the EIS lacks any factual basis for its conclusions that proposed commitments to merely develop mitigation plans (without committing to any specific measures or minimum performance standard), would reduce adverse effects to "minor" or "insignificant" levels.

In light of these serious deficiencies, the Board should direct OEA to prepare a revised EIS fully addressing the issues raised in this letter and recirculate the revised EIS for public comment.

B. The Biological Opinion Is Flawed

Under Section 7 of the ESA, federal agencies must “insure” that any action it authorizes “is not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of [the species’ critical] habitat.” 16 U.S.C. § 1536(a)(2). Pursuant to Section 7, the STB formally consulted with Fish and Wildlife Service to analyze the rail’s effects on listed species, including the listed plants and the four Colorado River endangered fish—Colorado pikeminnow, humpback chub, razorback sucker, and bonytail (“endangered fish”). Consultation concluded with Fish and Wildlife Service issuing a biological opinion (“BiOp”), which determined that the action is not likely to jeopardize the continued existence of the listed plants or endangered fish or result in the adverse modification of the endangered fish’s habitat.

Like the EIS, the BiOp does not rely on current and complete field surveys to determine the extent to which the listed plants would be destroyed or harmed by the project; arbitrarily confines the “action area,” i.e., the area that it assumes listed plants would be impacted, to areas within 300 feet of ground disturbing activities; and fails to consider the effects of oil and gas development spurred by the rail on listed plant species. The failure to use the “best scientific and commercial data available” to inform the BiOp renders the BiOp legally flawed. 16 U.S.C. § 1536(a)(2).

Moreover, the BiOp’s “no jeopardy” finding is unsupported. Habitat conservation and restoration plans to offset the destruction of listed plants are undefined and uncertain to occur, and no evidence shows that they would successfully offset population losses. The BiOp must also consider the project’s effects on not just the Barneby ridge-cress’s survival, but also its *recovery*, but fails to do so. *See Defs. of Wildlife v. United States DOI*, 931 F.3d 339, 354 (4th Cir. 2019).

Finally, with respect to the endangered fish the BiOp fails to analyze effects on these species and their critical habitat from increased train operations along the downline route between Utah and Colorado. The BiOp also entirely fails to consider the effects of increased oil and gas development and fracking spurred by the rail, including water contamination and water depletions, and ignores climate change effects on stream flows within endangered fish habitat.

C. The Project Should Not Be Approved through an Exemption Under 49 U.S.C. § 10052

If the STB still proceeds with considering the SCIC’s petition for exemption from formal licensing proceedings, the petition should be denied. The rail’s many significant environmental impacts, the undefined nature of numerous mitigation measures proposed in the EIS and BiOp, and questions about the project’s financial viability militate for formal proceedings to determine whether the project is financially able to avoid and/or mitigate the project’s environmental effects and “operate . . . without detriment to the public health and safety.” 49 U.S.C. § 10101(8).

Many of the mitigation measures proposed in the EIS and BiOp would not be formulated or decided until after project approval. Indeed, the EIS proposes that the Board could excuse compliance with certain mitigation measures if it determines *post-project* approval that mitigation would be “impracticable” or “unreasonable,” presumably for financial reasons. Formal licensing proceedings are necessary to decide mitigation conditions upfront and to determine whether the rail would have the financial ability to pay for mitigation to address the project’s environmental impacts, including the rail’s public health and safety risks.

Otherwise, mitigation conditions decided behind closed doors may not be meaningful or may not be fully implemented, to the detriment of public health and safety, in contravention of the STB’s policy “to operate transportation facilities and equipment without detriment to the public health and safety.” 49 U.S.C. § 10101(8). The risk of the SCIC skirting meaningful mitigation due to financial constraints is a real possibility, in light of questions about the project’s viability. Indeed, so far, the project has relied exclusively on public subsidies totaling nearly \$28 million to fund the private project despite that private entities would exclusively own, commercialize, and operate the project.

Even if the Board were to consider granting the exemption on the merits and on the inadequate environmental record, the exemption should be denied, because the project’s harms to the Uinta Basin’s air quality, environmental justice communities, public safety, wildlife habitat, endangered and threatened plant species, and inventoried roadless areas in the Ashley National Forest, greatly outweigh its transportation merits.

Alternatively, if the Board grants the exemption, it should impose conditions on the rail approval to avoid and/or mitigate significant environmental effects. This letter details various environmental permit conditions that the STB should incorporate into the record of decision (ROD), including specific conditions for the protection of communities along the rail corridor, the reduction of greenhouse gas emissions, and mitigation of adverse effects on plant and wildlife habitat.

[end of Executive Summary]

II. The Board Should Not Approve the Project Because the EIS Is Fundamentally Flawed

NEPA requires “responsible [federal] officials” to prepare an environmental impact statement to consider the effects of each “major Federal action[] significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(2)(C)(i). An EIS must detail, among other things, “the environmental impact of the proposed action,” “any adverse environmental effects which cannot be avoided,” and any reasonable alternatives. 42 U.S.C. § 4332(2)(C). It must analyze not only the direct impacts of a proposed action, but also its indirect and cumulative impacts. 40 C.F.R. §§ 1502.16, 1508.7, 1508.8. “[A]ssessment of a given environmental impact must occur as soon as that impact is ‘reasonably foreseeable.’” *Richardson*, 565 F.3d at 716 (citing 40 C.F.R. § 1502.22); *see also Kern v. BLM*, 284 F.3d 1062, 1072 (9th Cir. 2002) (“NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather, it is designed to require such analysis as soon as it can reasonably be done.”). This ensures “environmental information is available to public officials and citizens before decisions are made and before actions are taken.” 40 C.F.R. § 1500.1(b). The information

presented “must be of high quality.” *Id.* “Accurate scientific analysis . . . and public scrutiny are essential to implementing NEPA.” *Id.*

The EIS fails in multiple respects to analyze the reasonably foreseeable environmental consequences of the proposed oil railway, fails to consider a reasonable range of alternatives, and assumes without evidentiary basis that mitigation measures would reduce adverse effects to “minor” or “insignificant” levels. Accordingly, approval of the project without significant revisions to the EIS would violate NEPA and the Administrative Procedure Act.

A. The EIS Fails to Acknowledge the Railway’s Impacts of Increasing Crude Production in the Uinta Basin

The EIS fails to acknowledge that the purpose of the rail is to increase crude oil production in the Basin by providing a cheaper alternative to shipping Uinta crude oil outside the Basin, and thereby increasing crude oil demand and production in the Basin. As a result, the EIS does not acknowledge various indirect impacts, including air pollution, water depletion and contamination, and wildlife habitat degradation from increased oil drilling, fracking, and oil production.

“Indirect effects” are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 C.F.R. § 1508.8.¹ “Indirect effects may include *growth inducing effects* and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” 40 C.F.R. § 1508.8(b) (emphasis added). Courts have found that fossil fuel extraction and consumption induced by a federal action are reasonably foreseeable, indirect effects. *See, e.g., N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1081-82 (9th Cir. 2011) (finding that NEPA review must consider induced coal production at mines, which was a reasonably foreseeable effect of a project to expand a railway line that would carry coal, especially where company proposing the railway line anticipated induced coal production in justifying its proposal); *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (environmental effects of increased coal consumption due to construction of a new rail line to reach coal mines was reasonably foreseeable and required evaluation under NEPA).

Here, it is reasonably foreseeable that the railway will lead to increased oil production in the Uinta Basin. The SCIC pitched the project to Uinta Basin communities and Utah state agencies based on the economic gains that could be realized from increased oil production. For example, in its grant application to the Utah Permanent Community Impact Board (CIB) for funds to pay for the environmental review and permitting process, the SCIC stated that “[a]ccess to alternate markets will raise the price paid for the Uinta Basin waxy crude and allow significant

¹ This action is governed by the Council on Environmental Quality’s 1978 regulations, as amended and as in force in 2019, and so all references herein are to those rules. Although CEQ issued a final rulemaking in July 2020 fundamentally rewriting those regulations, the new rules apply only “to any NEPA process begun after September 14, 2020,” or where the agency has chosen to “apply the regulations in this subchapter to ongoing activities.” 40 C.F.R. § 1506.13 (2020). The Uinta Basin Railway NEPA process was begun before September 2020, and the EIS nowhere indicates that it has chosen to apply the 2020 rules to this project. In addition, the changes made to the rules are unlawful, and the current administration is now reviewing the illegitimacy of the 2020 regulations.

increases in oil production;” that “oil production would double, at a minimum” with access to markets outside Utah; and that “[a]ccess to multiple markets is the best market force to reduce or eliminate the loss/discount on the Uinta crude.”²

In an updated grant application to the same agency, the SCIC provided findings from a study it commissioned by R.L. Banks & Associates (“R.L. Banks Study”),³ touting that:

The RL Banks report believes that rail would *facilitate increased oil production* in the Uinta Basin increasing from approximately 80,000 to 90,000 bopd to 225,000 to 350,000 Bopd (Bopd = barrels of oil per day) [current production for Salt Lake City (SLC) refineries is capped near 80,000 to 90,000 Bopd]⁴

In a May 2020 filing with the STB, the SCIC’s Executive Director submitted written testimony highlighting the economic benefits of increased oil production from developing the rail:

The Uinta Basin Railway also could increase royalties and tax revenues. Royalties and tax revenues are received by state, local and tribal sovereign governments. The Coalition’s consultants estimate that, between 2007 and 2016, the lack of adequate transportation infrastructure in the Basin resulted in a discount paid for oil produced in the Uinta Basin compared to the standard of West Texas Intermediate oil, which discount resulted in hundreds of millions of dollars of lost taxes and royalties to state and local governments. The development of the Uinta Basin Railway would give oil producers the opportunity to access new markets and *expand production* depending on adequate market conditions. Such *oil production expansion* would generate greater royalties and tax revenue.⁵

This statement strongly suggests that without the rail, Uinta oil prices and production have been suppressed due to local producers’ lack of adequate access to alternative markets, but that with the rail, oil production would no longer be capped and would increase. Local oil operators in the Uinta Basin supported the Project on the same grounds. For example, one of the Basin’s largest producers Newfield Exploration Company urged the Utah Permanent Community Impact Board to subsidize the Project, because it was needed to spur Uinta crude production:

Numerous studies have shown transportation to be an issue with major consequences even before production volumes exceed local refinery capacity.

² Seven County Infrastructure Coalition, Feb. 2018 Grant Application Submitted to the Utah Permanent Community Impact Fund Board, at 9-10 of 20 (unnumbered pages).

³ R.L. Banks & Associates, Inc., Pre-Feasibility Study of a Prospective Railroad Connecting the Uinta Basin to the National Rail Network (August 9, 2018) (“R.L. Banks Study”).

⁴ Seven County Infrastructure Coalition, Sept. 2018 Grant Application Submitted to the Utah Permanent Community Impact Fund Board, Attachment A at 3 of 10 (emphasis added).

⁵ SCIC, Petition for Exemption at 39-40 (May 29, 2020). *See also id.* at 41 (“The Uinta Basin Railway will provide a connection to the interstate rail network, giving shippers within the region an alternative to trucking. This rail option will provide these industries with the ability to access new markets and expand production...”)

Today, a number of operators in the Basin have reduced their drilling plans because of this challenge. . . .

Although several large operators have intentions to increase production significantly in the Basin, based on the current transportation constraints, these plans are not likely to be realized. The proposed railroad would . . . provide access to alternative refining markets and increase competition for this historically discounted crude⁶

Indeed, the economic viability of the project depends on the railway spurring increased oil production in the Basin. In 2018, the applicant commissioned a study by R.L. Banks & Associates analyzing the feasibility of an oil railway in the Uinta Basin (“R.L. Banks Study”).⁷ According to the study, the “viability and competitiveness of the prospective railroad is directly related to the volumes of traffic which would be shipped over the line.”⁸ Further, “Basin oil producers will be able and motivated to extract, and market conditions *will encourage the extraction of, no less 225,000 bpd on a consistent basis if the railroad is built and operated as presently envisioned.*”⁹ This increase would be “almost a tripling of recent production volumes.”¹⁰ Under the R.L. Banks Study’s “Higher” production forecast, Basin oil producers are projected to produce 350,000 barrels of oil per day in the Basin—quadruple current production volumes.¹¹ As STB Board chair Martin Oberman noted in his dissent from the Board’s decision preliminarily granting the SCIC’s petition for exemption: “[T]here can be no doubt that the singular rationale for constructing the proposed railroad is to provide rail transportation to stimulate an increase in oil production in the Basin. It is beyond contradiction that without the hoped-for increase in oil production, there is virtually no possibility the railroad would be financially viable.”¹² Likewise, in state court proceedings challenging the legality of public funding for the rail, the court found that “a driving purpose behind the construction of the

⁶ SCIC, Industry Letters of Support for Uinta Basin Railway (2018). *See also id.* (Finley Resources: “Producers have few options beyond the five Salt Lake City area refineries because there are no pipelines or railroads to move this oil, and heated oil in insulated trucks cannot be hauled much farther than Salt Lake City. Uinta Basin waxy oil production has long been subject to significant discounts compared to other US oil. This issue is compounded by the fact that we are currently producing more oil than the Salt Lake refineries can process. And many of us would like to produce more. We need a permanent solution to our transportation problems that will allow access to alternate markets”); *id.* (Crescent Point Energy: “The SCIC’s effort to bring a viable rail system to the Basin will . . . create opportunities for the Basin to reach oil and gas markets that the Basin has not had the opportunity to reach in the past. . . . The successful completion of a Rail system in the Basin will continue to grow the opportunities of growth for the Vernal, Roosevelt and surrounding areas.”); *id.* (Enefit: “The transport of goods and commodities into and out of the Uinta Basin is severely limited by existing infrastructure. The Uinta Basin Rail Line would provide access for oil and gas producers - both conventional and unconventional - to markets outside of the region, increasing competition and raising market prices for the Basin’s high-quality products.”).

⁷ R.L. Banks Study *at* xiv.

⁸ *Id.* *at* xiv.

⁹ *Id.* *at* 15.

¹⁰ *Id.*

¹¹ *Id.* *at* vi.

¹² Surface Transportation Board, Docket No. FD 36284S, Preliminary Exemption Decision *at* 14 (Jan 4, 2020).

proposed railway is the increase in oil production in the region,” and that “the proposed railway would only prove viable if oil production were to increase in the area.”¹³

The EIS evades analysis of the increase in oil production facilitated by the rail by suggesting that increased production would depend solely on “global crude oil and capacity at oil refineries” and not on development of the railway:

The actual volumes of oil that would move over the proposed rail line would depend on the *demand for crude oil from the Basin, which is determined by global crude oil prices and capacity at oil refineries.*

FEIS at 2-35. However, the EIS fails to acknowledge that demand for crude oil from the Basin would also be determined by the price of *Uinta* crude, which is influenced in part by the costs of transporting it outside the Basin. The SCIC attributes the current Uinta crude price “discount” to the existing “lack of adequate transportation in the Basin,” and has claimed that development of the rail would lead to expansion of production by eliminating this price discount.¹⁴ Thus, the EIS must acknowledge that developing the rail would enable the desired price increase and demand and increased production of Uinta crude. However, the EIS’s response to comments fail to reconcile the SCIC’s claim that the rail will lead to increased oil production with the EIS’s claim that any additional production “would depend on future market conditions, not the construction and operation of the proposed rail line.” *See Motor Vehicles Manufacturers Ass’n v. State Farm Mutual Automobile Ins. Co.*, 463 U.S. 29, 42-43 (1983) (agency action is arbitrary and capricious action if the agency has “offered an explanation for its decision that runs counter to the evidence before the agency”).

In addition, even if oil and gas development were to increase with or without the project, the EIS fails to consider whether construction and operation of the rail could increase the *rate* of oil and gas development. For example, in *Davis v. Mineta*, 302 F.3d 1104, 1123 (10th Cir.2002), the court invalidated an agency’s finding under NEPA that economic development “will occur with or without [the highway project],” and that the project’s impacts were not significant, because it failed to consider the potential that “enhanced transportation facilities will generate or enhance economic activity and development.” *Id.* (“Defendants’ refusal to study the possibility that the relatively unspoiled nature of this local area might be due, *at least in part*, to the present lack of a major roadway through it is arbitrary and capricious.”).¹⁵

The failure to acknowledge this indirect effect infects the entire EIS, by masking significant impacts associated with expanded oil production in the Basin, which would be enabled by development of the rail. For example, the EIS’s discussion of air quality impacts fails to analyze the exhaust emissions from increased local truck traffic between oil fields and the rail

¹³ *Living Rivers v. Utah Permanent Community Impact Fund Board*, No. 200904912, Ruling & Order Denying Motion for Summary Judgment at 32-33 (Salt Lake County Dist. Sept. 28, 2021); *see also id.* at 4-5, 7-8, 12 (undisputed facts in support of these findings).

¹⁴ SCIC Petition for Exemption at 39-40.

¹⁵ No evidence in the EIS or record supports OEA’s claim that Salt Lake refineries could increase refinery capacity in the future. *Cf.* FEIS, Appendix T at T-44. In fact, it is difficult to see how additional capacity could be authorized in the Salt Lake region when ozone pollution already plagues this region and prevents it from meeting current air quality standards.

terminal, even while admitting that increased truck traffic would result from construction of the rail. Further, it illogically claims that an increase in exhaust emissions would only be caused by an increase in oil production and would be entirely independent of the rail:

Depending on market conditions, including the price of crude oil, the production of crude oil in the Basin could increase significantly in the future. *If the proposed rail line were constructed, trucks would likely transport much of the additional crude oil to the rail terminals near Myton and Leland Bench. This would increase local truck traffic and truck exhaust emissions.* Because increased crude oil production in the Basin is not part of the Coalition’s proposed action and because the Board has no jurisdiction over and no way to predict future oil development in the Basin, an assessment of increased exhaust emissions from local truck traffic in the Basin would not be appropriate in this section.

FEIS 3.7-14 (emphasis added).

Oddly, however, in analyzing the project’s rail traffic and operations, the EIS assumes that the rail would transport anywhere from 130,000 barrels and 350,000 barrels of oil per day—an amount that far exceeds existing production levels by roughly 30% to four times existing levels—and would entail “a daily average of 3.68 to 9.92 and loaded and empty oil trains on the proposed rail line.” FEIS at 2-35. These forecasts are inconsistent with the EIS’s statement that the Board has “no way to predict future oil development in the Basin.”

Moreover, for purposes of analyzing rail traffic, the EIS states that rail construction would result in up to 10 trains of oil train traffic along the rail each day, which necessarily assumes “increased crude oil production” in the Basin. *See id.* On the other hand, for purposes of analyzing air quality impacts, the EIS illogically assumes that any increases in local truck traffic to transport crude oil from oil fields to the rail terminal would not result from rail construction but from “increased oil production,” which “is not part of the Coalition’s proposed action.” But increased oil production would be an *indirect effect* of the Coalition’s proposed action, which in turn would generate *both* the truck traffic to the railway and the resulting oil train traffic out of the Basin. The EIS must be revised to correct its inconsistent assumptions and flawed reasoning.

The EIS’s cumulative impacts analysis, which discusses the impacts of higher levels of oil and gas development associated with transporting greater amounts of oil outside the Basin, does not cure the flawed analysis. This discussion treats the impacts from increased oil and gas development as if they would occur regardless of the project, especially with respect to air quality impacts as noted above.¹⁶ With respect to socioeconomic impacts, however, the EIS

¹⁶ For example, the EIS uses data from the Monument Butte project to calculate oil and gas emissions for the “reasonably foreseeable development” scenario that would be associated with transporting higher amounts of oil outside the Basin with the rail project—but then discounts the Monument Butte project itself from the reasonably foreseeable development scenario in the cumulative impacts analysis without reasoned explanation. *See* FEIS at 3.15-32 (“To assess cumulative impacts on air quality and greenhouse gases, OEA added the estimated emissions from operation of the proposed rail line to estimated emissions from other reasonably foreseeable projects, including the oil and gas development that would be needed to meet the oil production scenarios, and compared those combined emissions to the emissions for the maximum emissions year from the Monument Butte EIS. *OEA did not add the maximum emissions year*

suggests that the project would generate increased oil and gas development and increased tax revenues and economic activity.¹⁷ The failure to clearly disclose the causal relationship between the project and increased oil and gas development fails to accurately inform the public of its full costs and benefits. *Cf. High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014) (ignoring project’s costs while touting its benefits is arbitrary).

OEA’s reliance on *DOT v. Public Citizen*, 541 U.S. 752 (2004), in its response to comments is misplaced. See FEIS, Appendix T at T-43-55. Unlike in that case, where the agency did not have the ability to countermand the President’s action lifting a moratorium on Mexican trucks from operating within the U.S. or prevent the effects of such operations, the STB has the authority to prevent the effects at issue here—increased oil and gas development—by denying the proposed exemption or permit for the project or imposing conditions to address certain effects.¹⁸ See *Sierra Club v. FERC*, 867 F.3d 1357, 1373 (D.C. Cir. 2017) (because FERC “could deny a pipeline certificate on the ground that the pipeline would be too harmful to the environment,” the pipeline was a “legally relevant” cause of emissions from power plants that it would supply with gas).

Likewise, here, the Board has the authority to “approve the proposed rail line, *deny* it, or approve it with mitigating conditions, including environmental conditions.” FEIS, Dear Reader Letter at 2 (emphasis added); see also *Exemption of Out of Service Rail Lines*, 366 I.C.C. 885, 890, 1983 ICC LEXIS 37, *14 (“[U]se of this notice procedure may at times be conditioned upon compliance with environmental conditions.”). And, where the project proponent’s explicit purpose and intent of the railway is to increase oil production in the Uinta Basin, it would be arbitrary for the STB to find that the railway does not have a close causal relationship to spurring oil and gas development. *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983) (bulk cargo activities a “selling point” for oil project, so EIS must consider them); *City of Davis v. Coleman*, 521 F.2d 661, 676-77 (9th Cir. 1975) (EIS must include consideration of “growth-inducing effects” of proposed highway construction project, where those effects are the project’s “raison d’être”); *Sierra Club v. Marsh*, 769 F.2d 868, 879 (1st Cir. 1985) (where project proponents anticipated that development of causeway would stimulate industrial development, agency should have considered the potential growth in industrial development).

emissions from the Monument Butte EIS to the cumulative emissions from the proposed rail line and reasonably foreseeable future projects because doing so would unreasonably overestimate potential future emissions from oil and gas development and cumulative air quality impacts in the study area.”).

¹⁷ FEIS at 3.15-51 (“Construction of the proposed rail line would increase transportation capacity to ship an additional 130,000 to 350,000 barrels of oil on average each day from existing oil fields in the study area (Figure 3.15-1). To produce a steady state volume of oil to meet the planned transportation capacity of the proposed rail line, OEA estimates that oil and gas companies would need to drill between 49 and 131 new wells annually and would need to construct ancillary facilities for oil field development . . . This estimated increase in annual oil production would generate long-term employment, labor income, and increased direct, indirect, and induced spending on goods and services in the cumulative impacts study area and would generate increased state and local revenue through income taxes and sales and use taxes. New wells drilled on state land or accessing state minerals would also generate additional revenue for the state through royalties and lease payments.”).

¹⁸ For example, with respect to downstream greenhouse gas emissions, the STB could require conditions that would offset those emissions.

In sum, the EIS arbitrarily fails to disclose that the railway is intended to facilitate increased oil production and that its construction and operation could lead to quadrupling of oil production in the Uinta Basin. Consequently, the EIS fails to disclose the reasonable foreseeably effects of this expansion in oil production, including increased

- drilling and fracking of new wells;
- water pollution from runoff, sedimentation, leaks, and spills;
- water depletions for drilling and fracking of new wells;
- hazardous waste disposal (e.g., wastewater and drill cuttings);
- truck traffic on local roadways to transport oil to the railway;
- air pollution from construction, drilling, production, and trucking;
- greenhouse gas emissions from construction, drilling, and production, as well as downstream emissions from transporting, refining, and burning the extracted oil; and
- habitat destruction and fragmentation from development of new oil wells and related infrastructure.

Approval of the project without disclosing the relationship between the rail and oil and gas production in the Uinta Basin and these indirect effects would run afoul of NEPA.

B. The EIS Improperly Limits the Downline Analysis Area

The EIS confines the “downline study area” to “segments of existing rail lines outside of the Basin that could experience an increase in rail traffic above OEA’s thresholds at 49 C.F.R. § 1105.7(e)(5) if the proposed rail line were constructed.” FEIS at 3.2-1. This area “extends from the proposed connection near Kyune to the northern, eastern, and southern edges of the Denver Metro/North Front Range air quality nonattainment area (Appendix C, *Downline Analysis Study Area and Train Characteristics*, Figure C-1).” *Id.*

The thresholds that OEA applies under 49 C.F.R. § 1105.7(e)(5), however, only apply to *air quality impacts from rail operations*. See 49 C.F.R. § 1105(e)(5)(i) (noting that where there is “[a]n increase in rail traffic of at least 100 percent,” “an increase of at least eight trains a day on any segment of rail line affected by the proposal,” or “[a]n increase in rail yard activity of at least 100 percent,” the applicant shall “quantify the anticipated effect on air emissions”). The regulation is not intended to limit the STB’s review of (1) downline public safety impacts or (2) air quality, environmental justice, and other impacts from the *processing* (rather than transport) of products transported along the rail line, despite the OEA’s reliance on it for this purpose.

OEA appears to also rely on 49 C.F.R. § 1105.7(e)(11)(v) to limit its analysis of downline and indirect effects. This regulation provides that an applicant shall “Describe the effects, including indirect or down-line impacts, of the new or diverted traffic over the line if the thresholds governing energy, noise and air impacts in §§ 1105.7(e)(4), (5), or (6) are met. While the regulation may prescribe the minimum daily train operations that *necessarily* trigger analysis of indirect or down-line impacts, it does not follow that the agency is excused from analyzing indirect or downline impacts if neither of these thresholds is met, but where other factors point to reasonably foreseeable adverse effects (including heavier two-mile long unit trains which are at higher risk of derailment, the hazardous nature of the transported product, or the highly polluting effects of refining crude oil). To the extent the regulation is inconsistent with NEPA’s mandate

that an agency disclose “the environmental impact of the proposed action” and “any adverse environmental effects which cannot be avoided should the proposal be implemented,” 42 U.S.C.S. § 4332(2)(C)(i), (ii), NEPA’s requirements prevail. *See United States v. Vogel Fertilizer Co.*, 455 U.S. 16, 26 (rejecting “suggestion that a regulation is to be sustained simply because it is not ‘technically inconsistent’ with the statutory language, when that regulation is fundamentally at odds with the manifest congressional design”); *see also Grand Canyon Tr. v. FAA*, 290 F.3d 339, 342 (2002) (courts “owe[] no deference to the [agency’s] interpretation of NEPA or the CEQ regulations because NEPA is addressed to all federal agencies and Congress did not entrust administration of NEPA to [any agency] alone”).

Three examples where the EIS improperly limits the analysis of downline and/or indirect effects based on this flawed reasoning are its discussion of public safety impacts, greenhouse gas emissions, and environmental justice consequences, which are addressed below.

1. Public Safety Impacts

With respect to downline public safety impacts, the EIS merely states in conclusory fashion: “Based on its experience applying the thresholds for air and noise on freight rail construction and operation projects, OEA has determined that these thresholds should also apply to freight rail safety and grade-crossing safety and delay.” FEIS, Appendix C at C-1. It is unclear why this should be the case. OEA cannot limit NEPA review in this manner where NEPA requires the disclosure of indirect effects of a proposed action so long as they are caused by the action and reasonably foreseeable. 40 C.F.R. § 1508.8(b).

The EIS arbitrarily limits the downline study area for operational impacts to only those particular segments where train traffic is likely to increase by eight trains per day, or three trains per day in nonattainment areas, without reasoned explanation. There is no rational basis for why *two different thresholds* should apply for the analysis of public safety impacts, or why a lower threshold should apply in air quality nonattainment areas, when air quality does not affect train accident risk. At a minimum, the EIS should analyze the overall risk of an accident along the entire route between the Uinta Basin and eastern refineries. Focusing on limited segments of the rail between and within the Uinta Basin and the Denver nonattainment area ignores the vast majority of the downline rail route along which accidents, derailments, or other public health and safety risks could occur. And the greater number of miles traveled, the greater potential for accidents. *See* FEIS at 3.2-7 (noting that Wells Draw alternative “would have the highest chance of accidents,” because it is “the longest of the Action Alternatives”). Further, the EIS’s approach is contrary to 49 C.F.R. § 1105.7(e)(5), which requires analysis of “*any* effects of the proposed action on public health and safety” without limitation or exclusion of downline effects; *see also* 40 C.F.R. § 1502.16(a)(1) (EIS’s discussion shall include “environmental impacts of the proposed action and . . . the significance of those impacts”).

2. Environmental Justice Consequences

OEA also arbitrarily limits the area of analysis for environmental justice consequences, despite having information that suggests significant environmental justice effects. OEA estimates that, as a result of the proposed railway, up to 175,000 barrels of oil per day will be delivered to the refineries in Houston/Port Arthur and 122,500 barrels per day will be transported to refineries on the Louisiana Gulf Coast for processing. FEIS, Appendix T at T-37 (“Based on the existing

capacity of those geographic refining market centers and data trends in crude oil movements from the Energy Information Administration (EIA), OEA estimated that approximately 50 percent of crude oil would move to the Houston/Port Arthur market center, 35 percent would move to the Louisiana Gulf Coast, 10 percent would move to Puget Sound, and 5 percent would move to PADD 2 refineries.”).

Further, as we made clear in our comments, it is common knowledge that the areas around the Gulf Coast oil refineries are some of the most polluted in the nation and that nearby low income and minority communities are already disproportionately plagued by high levels of toxic and criteria pollutants.

For example, many Louisiana refineries, including those referenced specifically by the feasibility study,¹⁹ are located along the Mississippi River and the areas around them are some of the poorest, slowest-growing sections of the state. This area of Louisiana is consistently ranked highest in the nation in toxic environmental releases and waste generation. Many communities of African Americans and other people of color are hemmed in by these oil refineries petrochemical plants and experience significantly higher adverse health impacts than the U.S. population as a whole.²⁰

Port Arthur, Texas, another destination for the Uinta Basin crude²¹ is a Gulf Coast city of 55,000 and home to a high number of industrial polluters and the largest oil refinery in the country. The area around Port Arthur hosts one of the highest concentrations of facilities in Texas that must report toxics release inventory (TRI) data. The city is predominantly inhabited by people of color. People living in this area are disproportionately impacted by industrial pollution:

The heavy presence of industry—a common theme among poor and mostly black and brown communities across the country—may be one reason residents of Port Arthur, in a region once dubbed “the cancer belt,” have higher rates of cancer, asthma and cardiovascular disease when compared to state averages, according to a 2016 report from Southeast Nonprofit Development Center.²²

Thus, OEA’s own numbers indicate that by virtue of transporting significant amounts of Uinta waxy crude oil to these already burdened communities, the proposed railway will have substantial direct, indirect and cumulative adverse and environmental justice consequences for these neighborhoods. However, the agency refused to examine these impacts and instead argued that its “Downline Impacts Analysis” indicates that the agency need not undertake this review.

¹⁹ R.L. Banks Study at xi and xiii.

²⁰ Baurick, Tristan, Welcome to “Cancer Alley,” Where Toxic Air Is About to Get Worse, ProPublica (Oct. 30, 2019), <https://www.propublica.org/article/welcome-to-cancer-alley-where-toxic-air-is-about-to-get-worse>.

²¹ R.L. Banks Study at xi and xiii.

²² Tighe, Kristoffer, Covid-19 and Climate Change Threats Compound in Minority Communities, Inside Climate News (April 17, 2020), <https://insideclimatenews.org/news/17042020/coronavirus-climate-environmental-justice-oil-refinery-hurricanes-port-arthur-texas/>

E.g. FEIS, Appendix T at T-38 (noting with regard to trains hauling Uinta waxy crude to Houston/Port Arthur that “[b]ecause of the many different potential destinations and the many different practical routes available to reach those destinations, OEA concluded that rail traffic outside of the downline study area would be dispersed and that no individual rail lines outside of the downline study area can reasonably be expected to experience an increase in rail traffic in excess of OEA’s analysis thresholds.”). It is on the basis of its downline impacts threshold, therefore, that OEA refused to address the environmental justice implications of and adverse impacts on disproportionately impacted communities surrounding the refineries where the Uinta waxy crude is bound.

OEA’s response to our comments underscores that the agency misses the point and means that the agency has run afoul of NEPA. Specifically, when we noted that it was incumbent on OEA to extend its environmental justice analysis to the Gulf Coast communities where the Uinta waxy crude is bound for refining, OEA merely pointed to its downline analysis. FEIS, Appendix T at T-347 (sending the reader to response to comment UBR-DEIS-00683-59); *id.* at T-344. However, equating downline analysis with environmental justice analysis and consideration of the direct, indirect and cumulative impacts of the proposed project on disproportionately impacted communities is inappropriate under NEPA.

After all, to determine when to consider downline impacts, OEA applies various thresholds. FEIS, Appendix T at T-38. Yet, without analysis in the record OEA appears to apply these thresholds to a determination of whether to evaluate environmental justice impacts on already burden communities where OEA estimates up to 297,000 barrels of oil per day will be delivered for refining.

According to the agency itself, the daily delivery of 297,000 barrels of waxy crude per day is a reasonably foreseeable direct, indirect and cumulative impact of the proposed rail line. This determination, in turn triggers the need to undertake environmental analysis of these consequences. But, the agency refused to evaluate the consequences of these impacts on environmental justice and disproportionately impacted communities, citing its downline analysis. Particularly because there is no basis in the record to apply the downline thresholds to question of the environmental justice impacts of refining 297,000 barrels of waxy crude per day and to ignore reasonably foreseeable direct, indirect and cumulative impacts, OEA’s analysis does not pass scrutiny.

Thorough analysis of the environmental justice consequences and direct, indirect and cumulative impacts on EJ communities of the refining of 270,000 barrels of waxy crude along the Gulf Coast every day is especially warranted because refineries are a significant source of harmful pollution.²³ Refineries release toxic air pollution, which can cause cancer, birth defects

²³ *E.g.* Williams, Stephen et al., Proximity to Oil Refineries and Risk of Cancer: A Population-Based Analysis, National Library of Medicine (2020), <https://pubmed.ncbi.nlm.nih.gov/33269338/>; Borasin, Santiago et al., Oil: A Life Cycle Analysis of its Health and Environmental Impacts, The Center for Health and the Global Environment Harvard Medical School, <http://priceofoil.org/content/uploads/2006/05/OILHarvardMedfullreport.pdf>; Hazardous Substance Research Centers/South & Southwest Outreach Program, Environmental Update #12, Environmental

and chronic conditions like asthma. Children are disproportionately exposed to the emissions and resulting health threats from refineries. Additionally, people of color, including African Americans and Hispanic Americans, have a higher cancer risk from toxic air emissions from refineries than the average risk for the national population, as do adults living below the poverty level.

Refineries reported releasing approximately 22,000 tons of hazardous air pollution to the U.S. Environmental Protection Agency (EPA) in 2010. However, underreporting is a serious problem. Studies have shown that actual toxic air emissions from many refinery sources, like flares, tanks, and cooling towers, can be 10 or even 100 times higher than what is reported to regulatory agencies. Emissions include a toxic soup of carcinogens, neurotoxins, and hazardous metals, such as benzene, hydrogen cyanide, and lead – to name a few.

Thus, OEA's refusal to even discuss the environmental justice consequences and the direct, indirect and cumulative impacts on disproportionately impacted communities of the refining of 270,000 barrels of waxy crude along the Gulf Coast every day violates NEPA and is not supported by the record. Limiting the scope of its environmental justice analysis and evaluation of the admitted direct, indirect and cumulative impacts of the rail line by applying the downline thresholds is improper and finds no support in the record.

3. Greenhouse Gas Emissions

Likewise, the EIS improperly excludes downline greenhouse gas transportation emissions beyond Denver on the grounds that the thresholds for analyzing local air quality impacts have not been triggered in this portion of the downline analysis area. FEIS, Appendix T at 278-79. Because the problem of climate change is a *global* phenomenon resulting from *cumulative* GHG emissions, the exclusion of GHG emissions along segments of the rail line beyond the Denver nonattainment area, on the grounds that the STB's thresholds for analyzing *local air quality* impacts have not been exceeded, is nonsensical and arbitrary. The EIS must calculate total emissions from transporting oil to Gulf Coast refineries and other destinations, as well as emissions from refining, transporting, and burning the end product, and must acknowledge these emissions as "indirect" effects of the project.

C. The EIS Fails to Justify Excluding Potential Rail Operations Along the Tennessee Pass Line

The EIS excludes from analysis the potential downline impacts of operating trains along the Tennessee Pass line, which Rio Grande Pacific's subsidiary Colorado Midland & Pacific Railway Company proposed to reactivate last year.

However, OEA and Rio Grande Pacific's claims that the Tennessee Pass line would not be used to transport oil raises more questions than it answers. *See* FEIS, Appendix T at T-47. First, OEA relied on a modeling program to determine the most efficient routing of trains from Utah to eastern refineries to determine that the Kyune-Denver line was "the most practical routing." It

Impact of the Petroleum Industry (June 2003), available at https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display/files/fileID/14522

appears this was based on its determination of the shortest route, with preference given to main lines over branch lines. It is unclear whether potential delays due to other traffic along the Kyune-Denver line would have been taken into account in determining the most efficient route, but it appears this factor was not weighted.²⁴ In addition, the SCIC anticipates that fracking sand, fracking chemicals, well construction materials, and other products could be transported along the Uinta rail. But it does not appear that the modeling program determined the most practical route for shipping these other products, which would also pose potential hazards if shipped along the Tennessee Pass line.

Further, Rio Grande Pacific makes unsupported claims that “*A route using the Tennessee Pass line is the highest-cost option for moving oil from the Uinta basin to destination refineries anywhere east of Utah, in terms of both capital expenditures and operating expenditures.*”²⁵ The wording of this sentence raises questions—how many routes that could use the Tennessee Pass line are available? Is there more than one? If so, are all such routes the “highest-cost” option? Again, it is unclear what costs were taken into account in Rio Grande Pacific’s costs comparison. In terms of both the capital and operating costs, were the cost-savings from a potential private-public partnership for reactivating this line for passenger service taken into account?²⁶ What are the total operational and capital costs for shipping oil along the Denver-Kyune line versus the Tennessee Pass line (and subsequent downline routes), and what specific costs do they include? Would traffic from other rail service along the Kyune-Denver line cause delays and increase costs? OEA notes that because grades up to or in excess of 3% exist along the Tennessee Pass line, it accepts Rio Grande Pacific’s claim that the route would be costlier than the Kyune-Denver line, because the latter would require less fuel. However, the EIS does not provide an objective comparison of fuel usage between the two lines or account for the additional factors noted above for the public to understand the OEA’s conclusions. *WildEarth Guardians v. Mont. Snowmobile Ass’n*, 790 F.3d 920, 925 (9th Cir. 2015) (to fulfill NEPA’s public disclosure requirements, the agency must provide to the public ‘the underlying environmental data’ from which the [agency] develops its opinions and arrives at its decisions.”).

Insufficient evidence supports the OEA and Rio Grande Pacific’s claims that the Tennessee Pass line would not be used to ship oil, and OEA arbitrarily excluded the Tennessee Pass line from the EIS’s downline area of analysis.

D. The EIS Fails to Adequately Analyze Transportation Safety Issues

²⁴ A number of factors constrain rail traffic capacity in Colorado. Colorado Department of Transportation, Colorado Freight Plan (March 20, 2019), <https://www.codot.gov/performance/assets/march-2019-colorado-freight-plan.pdf>, 67-69. And urban areas like Denver tend to be chokepoints for rail traffic. McClellan, James, Railroad Capacity Issues, Woodside Consulting Group, <https://onlinepubs.trb.org/onlinepubs/archive/conferences/railworkshop/background-mcclellan.pdf>.

²⁵ Seven County Infrastructure Coalition, Correspondence to STB, Verified Statement of Mark Hemphill (Jan. 26, 2021), ¶ 7 (emphasis added), available at <https://dcms-external.s3.amazonaws.com/MPD/90011/E434942DCECCE96E8525866A0049C6BC/EI-27080.pdf>.

²⁶ Blevins, Jason, Opponents urge federal board to reject revival of Tennessee Pass railroad along Arkansas, Eagle rivers, The Colorado Sun (Jan. 22, 2021), available at <https://coloradosun.com/2021/01/22/tennessee-pass-railroad-colorado-midland-pacific-opposition-chaffee-lake-eagle-county/>.

1. The EIS's Rail Safety Risk Analysis Must Be Revised

The EIS's quantitative risk analysis of the risk of a rail accident calculates both the probability of derailment and potential frequency of a major crude oil release. As explained in Attachment A, quantitative risk assessments are notoriously flawed because they rely on shoddy and incomplete data and unreliable assumptions, and recent risk assessments of crude by rail accident risks have been discredited by real-world historical data.

Instead of performing a risk assessment based on irrelevant data, the EIS should look at real-world and site-specific local conditions and use real world data specific to crude oil trains in analyzing both the chances and consequences of a rail derailment, as further explained in Attachment A.

In any case, the EIS's quantitative risk assessment contains major flaws, which must be corrected. That the EIS now disclaims that its calculation of the probability of a train accident and potential rate of crude release is not a quantitative risk assessment does not change the fact that the analysis is an extremely crude and flawed measure of accident risk.

a. The EIS's projection of accident rates is flawed

To calculate accident rates on the rail line, the EIS merely takes into account the national average of derailment accidents, multiplied by an accident rate factor for the specific track class at issue (e.g., a factor of 2 for lower quality Class III tracks and a factor of 0.5 for higher quality tracks—meaning that accidents are twice as likely to occur on Class III tracks compared to the national average for all tracks classes, and half as likely to occur for higher class tracks compared to the national average for all tracks overall). FEIS at E-2.

Our comments on the draft EIS pointed out numerous flaws in the accident rates predicted by the EIS:

- **The EIS fails to consider local site-specific factors in assessing the risk of accidental derailment, such as the presence of areas prone to landslides, soil erosion, and flooding.** The EIS assumes that varying site-specific conditions among the several alternatives do not affect accident rates. It seems highly doubtful that areas with steeper slopes, higher risk of avalanches, flooding, or landslide risk, and greater overlap with wildlife corridors would have an equal chance of derailment as places outside these areas. However, for all alternatives, the EIS assumed that each alternative alignment (excluding the downline route) would have the same accident rate of 2 per million train miles. FEIS at 3.2-3 Thus, the only factor that differentiates the accident rate for each alternative's proposed alignment is the length of the alignment. FEIS at 3.2-7 ("Because the Wells Draw Alternative is the longest of the Action Alternatives, OEA predicts that it would have the highest chance of accidents . . ."). This assumption lacks any support.
- **The EIS fails to consider unique risks posed by unit trains made up entirely of tank cars or the higher derailment risks posed by heavy, long unit trains that would exclusively transport crude oil.** The EIS's underlying assumptions regarding accident rates are based on national data for all trains, rather than unit trains carrying

crude oil. The Canada National Transportation Safety Board has stated that unit trains, made up entirely of tank cars, could make tracks more susceptible to failure.²⁷ In addition, according to the Pipeline and Hazardous Materials Safety Administration (PHMSA), carloads carrying oil tend to be heavier and thus more susceptible to derailment:

There is reason to believe that derailments of [High-Hazard Flammable Trains] will continue to involve more cars than derailments of other types of trains. There are many unique features to the operation of unit trains to differentiate their risk. The trains are longer, heavier in total, more challenging to control, and can produce considerably higher buff and draft forces which affect train stability. In addition, these trains can be more challenging to slow down or stop, and can be more prone to derailments when put in emergency braking, and the loaded tank cars are stiffer and do not react well to track warp, etc., which when combined with high buff/draft forces can increase the risk of derailments.²⁸

The length of crude unit trains proposed here—up to almost two miles long—would also increase the risk of derailment. The EIS fails to discuss these factors that would increase accident risk compared to freight trains generally and instead represents that national data relevant to all freight trains adequately represents the risk of crude train accidents. *See Lands Council v. Powell*, 395 F.3d 1019, 1032 (9th Cir. 2005) (“NEPA . . . requires up-front disclosures of relevant shortcomings in the data or models”).

- **The EIS fails to support the assumption that the risk of empty and loaded cars derailing is the same.** The EIS states: “Because OEA predicts that accidents would be equally likely to occur for loaded trains leaving the Basin and empty trains entering the Basin, only half of the predicted accidents would involve loaded trains with the potential to release any quantity of crude oil.” FEIS at 3.2-5. But the assumption that loaded and empty cars have an equal chance of derailment seems highly questionable given that loaded trains are heavier and would take longer to decelerate.²⁹ The EIS must justify this assumption with reasoned analysis and data. That empirical data is lacking on this point does not give OEA license to make arbitrary assumptions. *See Great Basin Res. Watch v. BLM*, 844 F.3d 1095, 1103 (9th Cir. 2016) (expert agency’s “bare assertion of opinion . . . without any supporting reasoning” violated NEPA); 40 C.F.R. § 1502.24 (requiring “scientific integrity” in EIS).

²⁷ Martell, Allison, Exclusive: CN Rail derailment numbers soared before recent crashes, Reuters (Mar. 23, 2015) <https://www.reuters.com/article/instant-article/idUSKBN0MJ0AZ20150323>.

²⁸ U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Draft Regulatory Impact Analysis for Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains; Notice of Proposed Rulemaking, July 2013 (“Draft RIA PHMSA-2012-0082”) at 24.

²⁹ *See* Draft RIA PHMSA-2012-0082 at 24.

- **The EIS fails to take into account the operator's safety record.** Logically, this information is highly relevant because operators with a poor safety record are more likely to be accident-prone in the future. While the EIS states that this information is not available, it strains credulity to believe that Rio Grande Pacific would not have records of its prior accidents or that the OEA cannot gather it from them. The STB requires the applicant to submit in its environmental report for the proposed action "the applicant's safety record (to the extent available) on derailments, accidents and hazardous spills." 49 C.F.R. § 1105.7(7)(e)(ii).

In short, the EIS fails to account for the higher likelihood of *crude oil unit train derailments*, in the context of the unique conditions of the Uinta Basin and of downline route conditions, and Rio Grande Pacific's safety record.

In an attempt to downplay these analytical flaws, the EIS's response to comments states that the analysis of accident rates in the EIS does not represent "absolute" accident risks and is only meant to provide a relative comparison of these risks between alternatives. FEIS, Appendix T at T-40 ("The resulting estimates are most meaningful when compared to each other, as opposed to considering them as predicting absolute frequencies or potential impacts."); *id.* ("The purpose of the analysis is to estimate the relative likelihood of different types of potential accidents, not to make predictions of the potential for various impacts or outcomes occurring in specific locations."). However, that is not how the EIS represents the analysis. It purports to reflect an estimate of the actual accident rate or frequency per year along the rail route:

OEA estimated *the number of train accidents* (primarily collisions and derailments) *that could occur during rail operation* based on accidents rates from the Federal Railroad Administration (FRA) (2020). OEA analyzed the rates in combination with the specifics of the proposed rail line operation (e.g., number of trains, route length, track class) *to estimate the number of accidents per year*. The analysis used predicted rates based on data for all railroads, informed by rates for BNSF Railway Company (BNSF) and Union Pacific (UP) rail traffic as both are likely to connect the Uinta Basin (the Basin) to other national destinations, using accidents per million train miles (Table E-1).

FEIS, Appendix E at E-1; *see also* FEIS at 3.2-7 ("If the proposed rail line were authorized and constructed, OEA estimates that rail operations would result in 0.2 to 0.72 predicted train accidents per year (primarily collisions and derailments) in the project study area depending on the Action Alternative and volume of rail traffic."); *id.* at 3.2-8 ("OEA predicts that the Whitmore Park Alternative would experience a spill approximately once every 13 to 36 years, depending on the volume of rail traffic.").

In any event, NEPA directs that agencies disclose the significance or severity of effects, not merely relative comparisons (i.e., whether an alternative's impacts are "more" or "less" significant than another's). For example, saying that the BP Gulf Coast oil spill was "larger" or "20 times larger" than the Exxon Valdez spill does not say anything about how massive or destructive either of these spills was, i.e., the nature and extent of harm that the spills caused on the marine environment, coastal communities, and wildlife. *Sierra Club v. Mainella*, 459 F. Supp. 2d 76, 106 (D.D.C. 2006) (NEPA analysis that "lack[ed]. . . explanation as to how it

reached its conclusions [by] . . . simply describing the impact followed by a conclusion that the impact . . . was not ‘significant’” and by using undefined and non-objective “descriptors ‘negligible,’ ‘minor,’ ‘moderate,’ and ‘major’” was flawed); *Defs. of Wildlife v. Babbitt*, 130 F. Supp. 2d 121, 138 (D.D.C. 2001) (failure to discuss project’s impacts on wildlife by simply stating “noise would be increased” and “habitat will be disturbed” without analyzing “the nature and extent of the impacts” violated NEPA); *Natural Resources Defense Council v. Hodel*, 275 F.2d 288, 299 (D.C. Cir. 1988) (“The FEIS does devote a few more sentences here to the inter-regional effects on migrating species but these snippets do not constitute real analysis; they merely state (and restate) the obvious . . .”).).

The EIS’s calculation of derailment accidents per year is unsupported.

b. The EIS minimizes the consequences of derailment

The EIS also downplays the consequences of derailment and fails to reliably and meaningfully analyze the consequences of a crude train accident. An EIS’s analysis of “reasonably foreseeable” impacts should include impacts “which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.” 40 C.F.R. § 1502.22(b)(1).

Despite raising these concerns in our prior comments, the EIS’s methodology for determining the probability and frequency of release of crude oil cargo is still entirely opaque. The EIS merely cites to various data sources that it relies on (e.g., accidental releases in Utah, average number of cars derailed in a crude by rail derailment, volumes of oil released in select major spill releases) and vaguely refers to “other” data without explaining how this data was weighted in its quantitative analysis or its method of determining the probability of a spill or release. FEIS at E-2 to E-4. The EIS must disclose all data and the methods used to make these projections. *Idaho Sporting Cong. v. Thomas*, 137 F.3d 1146, 1150 (9th Cir. 1998) (“NEPA requires that the public receive the underlying environmental data from which a [reviewing agency] expert derived her opinion.”), *overruled on other grounds by Lands Council v. McNair*, 537 F.3d 981 (9th Cir. 2008) (en banc).

It is also unclear whether in determining the probability of a release, the EIS considered data or factors unique to crude oil unit trains. In a nine-year period between 2006 and 2016, almost two-thirds of crude and ethanol accidents (16 out of 24) spilled more than a quarter of the derailed tank car contents.³⁰ The average release from a crude oil or ethanol train derailment was 270,000 gallons, which is equivalent to about 30 gasoline cargo tank trucks.³¹ However, the EIS suggests that if any spills were to occur they would likely be minor releases “equivalent to one car or less.” FEIS, Appendix E, at E-5.

³⁰ Washington State Energy Facility Site Evaluation Council, Adjudication Findings of Fact, Conclusions of Law, and Order to Proceed to Recommendation to the Governor, In the Matter of: Application No. 2013-01 Tesoro Savage, LLC, Vancouver Energy Distribution Terminal, Case No. 15-001 at 44 (Dec. 19, 2017) (“WEFSEC 2017”); Prefiled Testimony of Robert Chipkevich Filed by the City of Vancouver, In the Matter of Application No. 2013-01, Tesoro Savage, LLC, Vancouver Energy Distribution Terminal, Case No. 15-001 at 13 (May 9, 2016) (hereafter “Chipkevich Testimony”).

³¹ WEFSEC 2017 at 53.

The STB's quantitative analysis limits the consideration of consequences to estimating the potential frequency of spills, and the chances of spills involving small to large volumes. FEIS, 3.2-7; Appendix E at E-5. The same expert whose work the EIS relies on for its rail safety risk analysis has attested that if crude oil is spilled in a derailment "there's a fair chance that there's going to be an ignition source which will lead to a fire."³² But the EIS fails to estimate the likelihood, nature, size, or effects of potential fire/explosion impacts of any of the potential release volumes (e.g., area of impact and evacuation, number of people/homes evacuated, number of fatalities, hours or days burning, emergency response costs). Moreover, the EIS fails to discuss these impacts in the context of the local environment along the proposed rail routes and representative downline and local communities that could be affected, and how they would be impacted.

The EIS downplays the risks of spills and fires from releasing Uinta Basin crudes without citing any evidence or analysis on the properties of waxy crude, oil shale, or bitumen. It also does not acknowledge the potential for spills and release of a number of other products, including refined oil products and fracking chemicals, which the railway is likely to transport.

The EIS assumes that local emergency responders along the routes will have the capability to respond to serious derailments and crude rail disasters (e.g., training, manpower, access to high volumes of water/foam, communication/notification systems), without evidentiary support. Crude by rail would pose new and unfamiliar risks to local emergency responders in the Uinta Basin, and rural volunteer fire departments are less likely to obtain specialized training to deal with these risks.³³ The EIS must analyze the capabilities of local emergency responders, which may be especially limited in rural areas.

In addition, once a fire occurs, there are "low odds of being able to actively fight and extinguish such a fire"; as of 2017, "no High Hazard Flammable Trains fire has been controlled by using an offensive strategy during Phase I and . . . fire fighters typically use either a defensive or non-intervention strategy."³⁴ Thus, a spill and fire could have more severe consequences than what local responders are prepared to deal with.

To mitigate the risk of derailment and spills, the SCIC should be required to pay for training local emergency responders and the necessary systems to respond to a disaster. The funds should be adequate to cover regular training of emergency responders and any specialized equipment needed to deal with crude oil spills and fires that local emergency response may not typically have.

In sum, the EIS must be revised to explain its assumptions and analysis and correct errors in the risk analysis. The STB should also condition approval of the project on SCIC paying for training and the necessary equipment and systems to prepare emergency responders for a major spill or fire.

³² *Id.* at 51.

³³ National Academies of Sciences, Engineering, and Medicine, *Safely Transporting Hazardous Liquids and Gases in a Changing U.S. Energy Landscape* (2018), <https://doi.org/10.17226/24923>, p. 110, 117, 120.

³⁴ *Id.* at 54-55, 203.

E. The OEA’s Analysis of Air Quality Impacts Violates NEPA

1. Unhealthy Air Plagues the Uinta Basin, Primarily Due to Oil and Gas Development

In 2018, because of the harmful levels of ozone monitored there in the winter, the Uinta Basin was designated as a marginal nonattainment area for the 2015 8-hour ozone National Ambient Air Quality Standard (NAAQS).³⁵ Based on data from 2018-2020, the Uinta Basin will fail to attain the ozone standard by the August 2021 deadline. Indeed, the monitor in Roosevelt, Utah show that the critical “design value”³⁶ – which determines whether an area is meeting a particular NAAQS – is 0.073 parts per million (ppm), well over the standard of 0.070 ppm.³⁷ Further, during 2019, the fourth highest ozone concentration recorded in Roosevelt reached an alarming 0.087 ppm.³⁸

Ozone concentrations in the Uinta Basin, which occur largely in the winter, are directly tied to oil and gas development.³⁹ As the State of Utah has concluded relative to the Uinta Basin, oil and gas development is the primary source of ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOC), which react in sunlight to form ozone:

NO_x comes from hot combustion sources, and the highest levels are in the oil production areas and population centers. VOC comes from oil and gas production with the highest levels in the gas production areas.⁴⁰

Ozone at the levels already found in the Uinta Basin constitutes a significant danger to public health and the environment. Short and long-term exposure to ozone, even at levels below the national standard, cause adverse health impacts. Ozone has immediate ill effects, causing shortness of breath, wheezing and coughing; asthma attacks; inflamed and damaged the airways and increased risk of respiratory infections and hospital visits for people with lung diseases, like asthma or chronic obstructive pulmonary disease.⁴¹ Exposures to high ozone levels for as little as

³⁵ It is important to remember that U.S. EPA – and not the State of Utah – has jurisdiction over the implementation of the Clean Air Act in a significant portion of the Uinta Basin, including the Uintah and Ouray Reservation. 85 Fed. Reg. 3492 (January 21, 2020).

³⁶ For the 2015 8-hour ozone NAAQS, the design value is the annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.

³⁷ Utah Ozone 3 Year Average Summary for 2019, <http://www.airmonitoring.utah.gov/dataarchive/Y8hrt18-20AveO3.pdf>; see also DAQ 2020 Annual Report at 42, <https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2021-000768.pdf>.

³⁸ *Id.*

³⁹ Utah Department of Environmental Quality, Ozone in the Uinta Basin, <https://deq.utah.gov/air-quality/ozone-in-the-uinta-basin>.

⁴⁰ 2018 Annual Report at 34, <https://documents.deq.utah.gov/air-quality/annual-reports/DAQ-2019-000949.pdf>.

⁴¹ American Lung Association, Ozone (last updated Apr. 20, 2020) (ALA 2020), <https://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/ozone.html>.

one hour can lead to a particular type of cardiac arrhythmia that itself increases the risk of premature death and stroke.⁴²

Long term exposure to ozone increases the risk of death from respiratory diseases and means more hospital admissions for children with asthma, with younger children and children from low-income families more likely than other children to need hospital admissions.⁴³ Long-term exposure to ozone also leads to the development of asthma and lower birthweight and decreased lung function in newborns.⁴⁴

Children and teens, individuals 65 and older, people who work or exercise outdoors, persons with lung diseases and people with cardiovascular disease are particularly vulnerable to ozone pollution.⁴⁵ According to EPA:

Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Children are also more likely than adults to have asthma.⁴⁶

Studies indicate that women, people who suffer from obesity and people with low incomes are also more likely to suffer adverse impacts from exposure to ozone.⁴⁷ Moreover, research shows that even at levels well below the current standard, ozone increases risk of premature death in older adults.⁴⁸

Despite the ongoing health and environmental crisis in the Uinta Basin, the proponents of the rail line advocate for a project that **will** exacerbate ozone concentrations in this area and will impede efforts to bring the Uinta Basin into attainment with the ozone NAAQS as expeditiously as practicable as the Clean Air Act dictates. And, despite the importance of accurately disclosing to decision makers and the public the impacts of the planned rail line on ozone, the OEA's NEPA analysis fails this critical responsibility, leaving the STB and the impacted public in the dark about how the project will affect air quality in the Basin.

2. In Relying on the Monument Butte Analysis, OEA Failed its Obligation to Take a Hard Look at the Cumulative Impacts on Ozone Concentrations in the Uinta Basin Nonattainment Area

⁴² Rich DQ, Mittleman MA, Link MS, Schwartz J, Luttmann-Gibson H, Catalano PJ, Speizer FE, Gold DR, Dockery DW. Increased Risk of Paroxysmal Atrial Fibrillation Episodes Associated with Acute Increases in Ambient Air Pollution. *Environ Health Perspect.* 2006; 114:120-123.

⁴³ U.S. Environmental Protection Agency, Health Effects of Ozone Pollution, Ecosystem Effects of Ozone Pollution ("U.S. EPA, Health Effects of Ozone Pollution"), <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>.

⁴⁴ *Id.*

⁴⁵ ALA 2020.

⁴⁶ U.S. EPA, Health Effects of Ozone Pollution.

⁴⁷ ALA 2020.

⁴⁸ Di Q, Dai L, Wang Y, Zanobetti A, Choirat C, Schwartz JD, Dominici F. Association of Short-Term Exposure to Air Pollution with Mortality in Older Adults. *JAMA.* 2017; 318: 2446-2456.

Acknowledging the importance of examining the cumulative impacts of the rail line project on ozone concentrations in the Uinta Basin nonattainment area, the OEA relies exclusively on analysis done in conjunction with the Monument Butte oil and gas development project to undertake this evaluation:

To assess the cumulative impacts of the proposed rail line and the projected oil and gas development, OEA used information from a detailed photochemical air quality modeling study developed for the Monument Butte EIS.

FEIS at 3.15-37.

According to OEA, the 2014 EIS determined that there would be “no new exceedances” of the ozone National Ambient Air Quality Standard (NAAQS) due to the Monument Butte project. OEA then claimed that because the future oil and gas development associated with the rail line involved fewer wells than the Monument Butte project, the cumulative impacts of the railroad project on air quality would be less substantial than those from those analyzed in 2014:

Although the Monument Butte project would increase ozone concentrations, the Monument Butte modeling predicted no new exceedances due to Monument Butte. Because the high oil production scenario that OEA analyzed would involve a smaller number of wells than were considered in the Monument Butte project, OEA concludes that cumulative emissions of ozone precursors (VOC and NO_x) from the proposed rail line and potential future oil and gas development would be lower than predicted for the Monument Butte project. Existing exceedances of the ozone NAAQS would still occur.

FEIS at 3.15-39. From this, OEA concludes that “the impacts from the proposed rail line, when combined with impacts from past, present, and reasonably foreseeable actions, would not result in new exceedances of the NAAQS[.]” FEIS at 3.15-41.

As we explain below, OEA’s reliance on the Monument Butte EIS was ill-conceived and fails to fulfill the agency’s duty to examine the cumulative impacts of the rail line project air quality, including ozone concentrations, in the Uinta Basin nonattainment area. Further, the conclusions OEA draws from the Monument Butte evaluation are not supported by the record and therefore must be dismissed.

a. The EIS Imposes None of the Emission Reduction Requirements that the Monument Butte Analysis Incorporates into its Analysis and Modeling

OEA claims that the cumulative impacts on air quality from the Monument Butte conservatively represent the cumulative effects of the rail line project:

OEA believes that the air quality impacts described for the maximum emissions year in the Monument Butte EIS represent a conservative estimate of the air

quality impacts that could result from producing the crude oil that could move on the proposed rail line.

FEIS at 3.15-32.

However, as the State of Utah pointed out in its comments on the draft EIS, emissions from the two projects cannot be equated. FEIS, Appendix T at T-266. This is because the Monument Butte EIS undertook modeling based on the assumption that emissions of, inter alia, NO_x and VOCs, would be tightly controlled. In contrast, no such controls are required of the wells that would be developed in conjunction with the rail line proposal. To this end, the State of Utah explains:

The Cumulative Impact evaluation utilized the air quality models performed for the Monument Butte EIS, since that project evaluated a larger amount of oil and gas well development. This comparison does appear to be an adequate evaluation with the conclusion that there would be no new exceedances of the ozone NAAQS. However, unlike the Basin, the Monument Butte project was based upon a ‘net zero’ provision for the development of any new wells. This should be noted in the evaluation made in the Uinta Basin Railway Final EIS, and a demonstration made that the same ‘net zero’ provision is in place for this DEIS to validate that comparison.

FEIS, Appendix T at T-266.

Examination of the Monument Butte EIS confirms Utah’s observation. For example, Appendix B of the Monument Butte FEIS explains that “[t]he Proposed Action includes a large number of Applicant Committed Environmental Protection Measures (ACEPMs) that reduce overall environmental impact and the potential air quality impacts.”⁴⁹ There are at least 24 specific ACEPMs applicable to the Monument Butte project,⁵⁰ and the emission reductions from each of the relevant measures were incorporated into the subsequent analysis and modeling of the project. *See e.g.* Monument FEIS, Appendix B at 29 (“The emission inventory for the Proposed Action includes the benefit of the ACEPMs.”); *id.* at 31 (“The emissions shown include the benefit of the Oil and Gas NSPS and the ACEPMs[.]”); *id.* at 9 (“Both cumulative and project specific modeling using the ARMS platform have been completed. The results of the project specific ARMS modeling for ozone are summarized in Chapter 4, Section 4.2.1.1.5 and the full modeling report is presented as Appendix K.”).

Specifically, the Monument Butte analysis claims significant reductions of VOCs and NO_x due to the ACEPMs. *Id.* at 67 (“The emissions from the Proposed Action are much less than would occur without implementation of the Applicant Committed Environmental Protection

⁴⁹ U.S. BLM, Final Environmental Impact Statement for Newfield Exploration Corp., Monument Butte Oil and Gas Development Project in Uintah and Duchesne Counties, Utah (“Monument Butte FEIS”) (June 23, 2016), Appendix B at 2, available at https://eplanning.blm.gov/public_projects/nepa/62904/75396/83267/FEIS_3_Appendix_A_-_Appendix_K.pdf; *see also* Monument Butte FEIS, Appendix B at 13 (“The Proposed Action and Alternatives include applicant committed environmental protection measures (ACEPMs).”).

⁵⁰ Monument Butte FEIS, Appendix B at 13-16.

Measures (ACEPMs). The ACEPMs are applied annually and to the Ultimate Proposed Action.”). Ultimately, the Monument Butte EIS claims that the ACEPMs result in reductions of 3,124 tons per year of NO_x and 8,216 tons per year of VOCs.⁵¹

However, the future oil and gas development associated with the rail line project that OEA purports to analyze utilizing the Monument Butte analysis includes no ACEPMs. Therefore, there is no basis from which to assert – particularly without any discussion in the record – that the Monument Butte modeling and its inclusion of the ACEPMs are actually representative of the cumulative impacts of the railroad proposal.

When confronted with this reality, OEA ignores the fact that it cannot reasonably rely on a cumulative ozone impact analysis that assumes emission controls resulting in reductions of 3,124 tons per year of NO_x and 8,216 tons per year of VOCs that do not apply to the development associated with the rail line. The agency merely reiterates without explanation that the Monument Butte EIS still represents “the best available data source on the impacts of oil and gas development projects in the Basin.” FEIS, Appendix T at T-266. OEA further insists that it has no authority to impose emission control requirements on oil and gas development. FEIS, Appendix T at T-266 (“The Board has no role in regulating oil and gas production and, therefore, could not impose measures on oil and gas producers, such as a “net zero” provision that would mitigate air quality impacts from potential future oil and gas development.”). While this is true, OEA misses the point. OEA simply cannot rely on the Monument Butte modeling to make claims about the cumulative impacts of the railway on air quality, including ozone concentrations, where that modeling is based on strict emission controls that do not apply to the future oil and gas development associated with the rail line project. This is especially true because OEA makes no attempt to explain how the Monument Butte modeling and its assumptions about emission controls and reductions “represent a conservative estimate of the air quality impacts that could result from producing the crude oil that could move on the proposed rail line.”

Given that there is no basis in the record to support OEA’s reliance on modeling associated with a project that is not “representative,” the agency cannot defend its use of the Monument Butte EIS to evaluate the critical issue of the cumulative impact of the railway on ozone concentrations in the Uinta Basin nonattainment area. Further, OEA cannot defend any conclusions about the rail line project cumulative impacts that are based on the Monument Butte modeling analysis. Therefore, the record does not support any of the claims OEA makes regarding cumulative impacts on air quality and air quality related values.

b. The Monument Butte analysis does not include or model emissions from wastewater ponds, a significant source of VOCs

In our comments on the DEIS, we pointed out that because the Monument Butte analysis failed to consider VOC emissions from wastewater ponds, it was not an accurate representation of the cumulative impacts to air quality. FEIS, Appendix T at T-405. Our comments note that Utah, U.S. EPA and the Ute Indian Tribe updated the 2017 Uinta Basin Emissions Inventory as

⁵¹ Monument Butte FEIS, Appendix B at 68.

catalogued in a paper published in November 2020.⁵² This effort made the inventory more accurate and found that the previous inventory was significantly underestimating VOC emissions from oil and gas operations.⁵³ In particular, the inventory was failing to account for the substantial VOC emissions from produced water disposal.⁵⁴ This analysis means that the Monument Butte modeling, which did not address emissions from produced water disposal fails to take advantage of improved understandings of the actual emissions resulting from oil and gas development activities in the Uinta Basin.

OEA responded to this comment by agreeing that the Monument Butte analysis does not address VOC emissions from wastewater ponds, FEIS, Appendix T at T-406 (“The Monument Butte EIS assumed that the Monument Butte development would not use evaporation ponds to dispose of produced water.”), but then insisted that “relatively little of the produced water in the study area is disposed of via evaporation ponds.” *Id.* This contention is problematic because there is nothing in the record to support it and it is made without citation.⁵⁵ Further and again without citation or basis in the record, OEA disputes this recent study undertaken by the experts in the field – the Utah Division of Air Quality, the Ute Indian Tribe and U.S. EPA.⁵⁶ Indeed, in that study, the Utah Division of Air Quality, the Ute Indian Tribe and U.S. EPA determine that the 2017 inventory underestimates VOC emissions from produced water disposal facilities by **69,137 tons per year**.⁵⁷ This conclusion conflicts directly with OEA’s implicit contention that produced water disposal will not be a source of VOC emissions in the future oil and gas development associated with the construction and operation of the proposed rail line.

Elsewhere, OEA complains that it need not update its analysis based on documents cited in comments on the DEIS if those documents were published after OEA began its air quality

⁵² Uinta Basin Air Agencies, Uinta Basin VOC Composition Study Impacts on the 2017 Oil and Gas Emissions Inventory (November 2020), available at <https://documents.deq.utah.gov/air-quality/planning/technical-analysis/DAQ-2020-016024.pdf>.

⁵³ *Id.* at 18.

⁵⁴ *Id.*

⁵⁵ To defend this contention, OEA cites only one authority which merely states that “Injection is the preferred method of disposal over evaporation ponds (Chidsey 2018).” That source also notes that 11 percent of produced water is hauled to evaporation ponds. Chidsey, Thomas C., Oil and Gas in the Uinta Basin, Utah – What to do with the Produced Water, Survey Notes (May 2018), <https://geology.utah.gov/map-pub/survey-notes/uinta-basin-produced-water/>. This is not a trivial amount, in light of the enormous amounts of produced water generated by oil and gas activities. See Utah Department of Natural Resources, Report Reviews Saline Waste Water from Oil and Gas Fields (Nov. 2017), <https://naturalresources.utah.gov/dnr-newsfeed/report-reviews-saline-waste-water-from-oil-and-gas-fields> (noting more than 100 million barrels of produced water (3.15 billion gallons) is generated by oil and gas production in the Uinta Basin annually). And the greater the amount of oil production, the greater amount of produced water that must be disposed.

⁵⁶ Uinta Basin Air Agencies, Uinta Basin VOC Composition Study Impacts on the 2017 Oil and Gas Emissions Inventory (November 2020) at 1, available at <https://documents.deq.utah.gov/air-quality/planning/technical-analysis/DAQ-2020-016024.pdf>.

⁵⁷ *Id.* at 18.

analysis.⁵⁸ This is not a valid reason to ignore crucial information relevant to the inadequacies of the obsolete Monument Butte EIS. After all, NEPA regulations specifically state that an agency may respond to public comments made on a DEIS by “[s]upplementing, improving, or modifying its analyses” and “[m]aking factual corrections.” 40 C.F.R. § 1503.4(a)(3) & (4).

Further, NEPA instructs OEA to prepare a supplemental EIS to either the draft or final EIS where “[t]here [is] significant new...information relevant to environmental concerns and bearing on the proposed action or its impacts.” 40 C.F.R. § 1502.9(c)(1)(ii). Plainly, these supplements and updates are necessary where the information is required to meet NEPA’s hard look requirement. Therefore, OEA is not free to discount critical information relevant to a sound understanding of cumulative air quality impacts made available to it during the DEIS public comment period simply because that information was not published when it started its environmental review.

Thus, because OEA refused to address a determination by the Utah Division of Air Quality, the Ute Indian Tribe and U.S. EPA that estimates of VOCs failed to account for significant VOC emissions from produced water disposal facilities, its NEPA analysis is inadequate and fails to provide the STB with the information it needs to make a well-informed decision.

c. Because it is concentrated in a small area, the Monument Butte project and its analysis is not representative of the cumulative air quality impacts of the rail line

OEA admits that the Monument Butte project is confined to a small area:

Monument Butte development would be located in the Basin in Duchesne County south of Myton, and would extend eastward about 5 miles into Uintah County. This area is within the region from which producers would truck their crude oil production to the rail terminals. OEA considers the location of the Monument Butte development to be reasonably representative of the cumulative impacts study area in which oil and gas development would occur[.]

FEIS at 3.15-37.

We previously noted that, in contrast, the up to 3,330 new oil wells that OEA projects are reasonably foreseeable would be developed across the Basin. This means that while the Monument Butte project would tend to exacerbate concentrations of various air pollutants in one portion of the Basin, the reasonably foreseeable oil wells would emit pollutants in diverse locations around the Basin and therefore impact sites in a different manner. FEIS, Appendix T at T-403 to 04.

⁵⁸ See FEIS at T-405 (“OEA also notes that the documents cited in the comment were published after OEA began the air analysis for the Draft EIS. Because those documents could not have been used to directly evaluate air quality impacts from the proposed rail line and other reasonably foreseeable future actions, OEA properly relied on the Monument Butte modeling in this EIS.”).

In response, OEA added the following contention to the FEIS:

OEA assumed that localized air quality impacts of future oil and gas field development in the cumulative impacts study area would be similar to the localized impacts described for the Monument Butte project. The specific locations of localized air quality impacts in the cumulative impacts study area are not known because there are no available data on the characteristics or local site conditions of potential future oil and gas development projects.

FEIS at 3.15-33.

This contention is not in keeping with NEPA. First, it is not reasonable to assume without a basis in the record that all the future development associated with the rail line will occur in one confined location that is exactly where the Monument Butte project is located. Second, this claim that localized impacts will be similar between the two projects is not trivial. After all, it is plain that the Monument Butte project would have different impacts on different receptors based on their location vis-à-vis the project site.⁵⁹ Therefore, assuming all the future oil and gas development prompted by the construction and operation of the railway will occur exactly where the Monument Butte development was projected to occur will necessarily produce non-representative estimates of the impacts of emissions on the receptors scattered throughout and even outside the Basin.

d. The conclusions drawn from the Monument Butte analysis are not supported by the record

As indicated above, the Monument Butte EIS is not sufficiently representative of future oil and gas development prompted by the rail line to serve as essentially the sole analysis of cumulative air quality impacts. First, the Monument Butte analysis is based on strict emission controls and reduction that will not be required of the development associated with the rail line. Second, the Monument Butte fails to model or otherwise account for the considerable VOC emissions from produced water disposal facilities that Utah, EPA and the Ute Indian Tribe have determined have been dramatically underestimated. Third, in relying on the Monument Butte analysis, OEA has made an unjustifiable presumption that all future oil and gas development facilitated by the railway will occur in the same locale. This matters because the conclusions from the Monument Butte EIS necessarily reflect modeled impacts to receptors, which are affected to a significant degree based on their location relative to the Monument Butte project.

As a result of these deficiencies, OEA cannot defend the conclusions that it draws from its reliance on the Monument Butte modeling and analysis. That EIS simply is not up to the job of providing a sound basis for evaluating the cumulative air quality impacts of the proposed railway or making well-informed decisions. Because the analysis is flawed, the assertions that OEA makes – including the claim that the “the impacts from the proposed rail line, when combined with impacts from past, present, and reasonably foreseeable actions, would not result in new exceedances of the NAAQS,” FEIS at 3.15-41, are not supported by the record. Similarly, the agency’s contentions about impacts to, for example, concentrations of other

⁵⁹ E.g. FEIS, Appendix K at 3-7.

pollutants, to visibility, to air quality related values, and to air quality in Colorado cannot survive scrutiny.

3. The EIS Fails to State How the Rail Will Achieve or Frustrate the Requirements of the Clean Air Act, Including VOC Reductions and the Expeditious Attainment of the 2015 Ozone Standard

In additions to its “hard look” mandate, NEPA requires that an EIS “**shall** state how alternatives considered in it and decisions based on it will or will not achieve the requirements...other environmental laws and policies.” 40 C.F.R. § 1502.2(d); *e.g. California ex rel. Imperial County Air Pollution Control Dist. v. U.S. Department of Interior*, 767 F.3d 781, 798 (2014) (“An EIS must discuss a project’s interaction with “other environmental laws and policies.”) (*citing* 40 C.F.R. § 1502.2(d)). Importantly, 40 C.F.R. § 1502.2(d) is still the law of the land and was not revoked by the Trump administration.⁶⁰

At the same time, the Clean Air Act dictates that the “attainment date” for any area that is not meeting the NAAQS is as “expeditiously as practicable.” 42 U.S.C. § 7502(a)(2)(A). Thus, because a failure to meet a NAAQS threatens the health and welfare of every exposed individual, the Clean Air Act requires the most immediate attainment of the federal health-based standard possible. In any case, the Uinta Basin must attain the ozone standard no later than August 2024. 42 U.S.C. § 7502(a)(2)(A);

Further, because at the time the OEA was accepting public comment on the DEIS, it was evident that the Uinta Basin would **not** attain the ozone by the first “marginal” nonattainment deadline. As we previously stated in our comments, the Utah Division of Air Quality 2020 Annual Report stated:

[S]everal monitors in the Basin measured high levels of ozone during a strong inversion in February 2019. These monitored levels indicate that it will almost be impossible for the Basin to attain the ozone standard by 2021. Therefore, the DAQ, EPA, and Ute Tribe are beginning to plan for the likely bump up in nonattainment classification from marginal to moderate. This bump up would most likely occur around February of 2022 with a moderate SIP due in February of 2023. The moderate SIP will require additional controls and a modeled attainment demonstration of the standard by August of 2024.⁶¹

Among the requirements of a moderate SIP is a 15% reduction in emissions of VOCs by 2024. 42 U.S.C. 7511a(b)(1)(A)(i); *Sierra Club v. State of Texas*, 985 F.3d 1055 (D.C. Cir. 2021) (“[U]nder Subpart 2, SIPs for ozone nonattainment areas classified as moderate or above

⁶⁰ 85 Fed. Reg. 43304, 43364 (July 16, 2020) provides that the final rule 1502.2(d) is:

Environmental impact statements shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of NEPA as interpreted in the regulations in this subchapter **and other environmental laws and policies.** (Emphasis added.)

⁶¹ Utah Department of Environmental Quality, Utah Division of Air Quality 2020 Annual Report (2021) (“Utah 2020 Annual Report”) at 42, <https://documents.deq.utah.gov/air-quality/planning/air-quality-policy/DAQ-2021-000768.pdf>.

must provide for reductions of VOC emissions by “at least 15 percent from baseline emissions.”) (*citing Id.* § 7511a(b)(1)(A)). These VOC emission reduction mandates become more stringent should the Uinta Basin fail to attain the ozone NAAQS by 2024. *Id.* § 7511a(c)(2)(B).

Despite these Clean Air Act mandates – expeditious attainment and a 15 percent reduction in VOCs by 2024, the FEIS makes no attempt to determine “how alternatives considered in [the FEIS] and decisions based on it will or will not achieve the requirements” of the Clean Air Act. The FEIS does state that “the impacts from the proposed rail line, when combined with impacts from past, present, and reasonably foreseeable actions, would not result in new exceedances of the NAAQS[.]” FEIS at 3.15-41. Initially, this claim is not supported by the record, as established above. Second, this narrow finding and lack of analysis does nothing to address whether or not the rail line and its alternatives “will or will not achieve the requirements of the Clean Air Act, including expeditious attainment of the ozone NAAQS and the required 15% reduction in VOCs. Third, this failure is significant. After all, OEA itself estimates that Wells Alternative and the “high production scenario” for resulting reasonably foreseeable oil and gas development would result in an increase of 4,384 tons of NO_x per year and 5,679 tons per year of VOCs in the nonattainment area. FEIS at 3.15-38.

A comparison to OEA’s own inventory data is instructive. OEA presents a calculation of 2014 VOC and NO_x emissions in the Regional Study Area, which includes the eight-county area consisting of Carbon, Daggett, Duchesne, Emery, Sanpete, Uintah, Utah, and Wasatch counties. FEIS at 3.7-5. OEA also states that “[t]he oil and gas sector accounts for about 20 percent of NO_x emissions and 19 percent of VOC emissions in the regional study area.” FEIS at 3.7-6. Because emissions from oil and gas development are almost exclusively generated in the Uinta Basin, we can focus on the percentage of NO_x and VOCs in the Regional Study Area that are attributable to oil and gas development: 12,382 tons per year of NO_x and 54,393 tons per year of VOCs (i.e., 19 and 20 percent of NO_x and VOC emissions generated in the regional study area). Using OEA’s own numbers, the emissions of 4,384 tons of NO_x and 5,679 tons per year of VOCs from the rail line project represent a 35.4% increase in NO_x and a 10.4% increase in VOCs attributable to the oil and gas sector in the eight-county Regional Study Area, which is considerably more expansive than the Uinta Basin nonattainment area. As a result, the percentage increases within the Uinta Basin nonattainment area would be even more significant.⁶²

Plainly then, the cumulative impacts of the rail line and its associated oil and gas development will frustrate the expeditious attainment of the ozone standard, and will make it harder – if not impossible – to find that the Basin will achieve the requisite first 15 % and any further VOC reductions. Because the OEA did not discuss how the alternatives considered in and any decisions based on the FEIS will or will not achieve the requirements of the Clean Air

⁶² Importantly, the State of Utah makes the same point that using the very large Regional Study Area to examine ozone impacts underestimates the cumulative effects on the Uinta Basin nonattainment area:

Potential contributions of the NO_x and VOC precursors to the formation of ozone are significantly greater in the nonattainment area than when spread through the regional air shed, as was evaluated in the DEIS. The likelihood of an increased impact in the nonattainment area should be noted.

FEIS, Appendix T at T-390.

Act, the environmental review necessarily falls short of an adequate NEPA review. *See* 40 C.F.R. § 1502.2(d).

In sum, under NEPA, the STB and the OEA are legally obligated to analyze how FEIS alternatives and any decision the STB may make based on those alternatives will impact the goals of the Clean Air Act. Only in that way can the agency make a well-informed decision. Because the FEIS does not undertake this analysis, the STB is precluded from basing its decision making on a sound basis and does not have the information it needs to consider the serious public health consequences of the rail line project.

4. To the Extent that it Argues that Adequate Information on the Cumulative Impacts of the Railroad Project on Air Quality is “Unavailable,” OEA Has Not Met its NEPA Obligations

As explained above, OEA often defends its reliance on the Monument Butte analysis by insisting that the EIS represents the best evaluation and best data available to the agency. For example, OEA states:

The existence of more recent emissions inventory data than was used for Monument Butte does not, in itself, provide updated predictions of air quality impacts. It would be necessary to conduct a new air quality modeling study to make use of the inventory data, which is not necessary for the OEA’s analysis of the Coalition’s proposed rail line under NEPA. The modeling conducted for Monument Butte is the most recent applicable modeling study that was available at the time the analysis began, and provides the best data available at that time.

FEIS, Appendix T at T-405. To the extent that OEA is contending that representative, relevant, up-to-date and adequate analysis is not available and therefore that the agency is free to rely on an inadequate, dated, misleading analysis, the agency has violated NEPA.

Under NEPA:

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement, and there is incomplete or unavailable information, the agency shall make clear that such information is lacking.

40 C.F.R. § 1502.21(a). Plainly, OEA has **not** made clear that – as it seems to believe – that there is no available or complete information on which to base an adequate evaluation of the rail line’s cumulative impacts on air quality. Rather, the agency continues to insist that the Monument Butte analysis is good enough for purposes of the present inquiry. Therefore, the agency has run afoul of 40 C.F.R. § 1502.21(a).

Further,

If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are unreasonable or the means to obtain it are not known, the agency shall include within the environmental impact statement:

- (1) A statement that such information is incomplete or unavailable;
- (2) A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
- (3) A summary of existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
- (4) The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

40 C.F.R. § 1502.21(c). Again, given that OEA seems to contend that information that would allow it to accurately evaluate cumulative air quality impacts is incomplete or unavailable, the agency is legally required to follow the dictates of 40 C.F.R. § 1502.21(c). Because it did not do so, the agency has violated NEPA.

F. The EIS's Discussion of Greenhouse Gases and Climate Change Fails to Satisfy NEPA's Hard Look Requirement

1. The EIS Fails to Consider Recent Climate Science

NEPA requires the Board to consider “high quality information” and “accurate scientific analysis” in its decision-making process. 40 C.F.R. § 1500.1 (b). Thus, it must consider recent climate science and analyze climate change impacts in its final EIS. And while the OEA added section 3.7.2.6 on Climate to the Final EIS, FEIS at 3.7-10, it failed to focus on some of the direst climate-related impacts to the Southwest, such as increasing drought, wildfire, heat-associated deaths and illness, and declines in Indigenous peoples' traditional staple foods and culturally significant crops.⁶³ The OEA also failed to discuss the most up-to-date climate reports. In addition to the reports discussed in our comments on the draft EIS, the final EIS also failed to discuss the Intergovernmental Panel on Climate Change's most recent report, titled *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*.⁶⁴ That report found that “unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions,

⁶³ Gonzalez, P. et al., 2018: Southwest. Chapter 25 in *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*, U.S. Global Change Research Program (2018) (“USGCRP Southwest 2018”), <https://nca2018.globalchange.gov/chapter/25/>, at p. 1108-1110.

⁶⁴ https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf.

limiting warming to close to 1.5°C or even 2°C will be beyond reach.”⁶⁵ By failing to consider and analyze these numerous reports, the final EIS does not comply with NEPA and its implementing regulations.

In addition, the EIS must rely on the most recent climate science in estimating GHG emissions or CO₂ equivalent. According to the U.S. Environmental Protection Agency and IPCC, methane is 28 to 36 times more potent than carbon dioxide over 100 years.⁶⁶ The OEA must update the project’s GHG emission projections using this widely accepted global warming potential (GWP) range, rather than the outdated global warming potential of 25 over 100 years. FEIS at 3.7-15. Methane’s warming effects over 20 years is 84 to 87 times more powerful than carbon dioxide, but the FEIS fails to reveal these more potent GHG effects, and instead uses the 20-year GWP of 72.⁶⁷ Given the short time frame that the world has to drastically cut emissions to avoid the worst effects of climate change, the EIS should use the most conservative and scientifically sound GWP.

2. The EIS Fails to Analyze the Railway’s Indirect Greenhouse Gas Emissions

The EIS must fully quantify all reasonably foreseeable greenhouse gas emissions that would result from development of the proposed railway. The FEIS fails to acknowledge that the project will spur increased oil and gas development in the Uinta Basin. As a result, it fails to fully disclose the project’s indirect GHG emissions, including emissions from well construction and drilling, local oil tanker/truck transport to the rail terminal, and refining and burning the extracted product. These emissions are “indirect effects,” which are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.” 40 C.F.R. § 1508.8. The EIS erroneously treats these emissions as “cumulative effects.” Even the cumulative effects analysis does not perform a complete inventory of emissions from oil transported on the railway, omitting emissions from refining the extracted product. And as discussed earlier, the analysis arbitrarily excludes emissions from transporting oil to eastern refineries beyond the Denver metro area. *See* section II.B.3 above.

3. The EIS Fails to Analyze the Climate Change Impacts Resulting from Direct, Indirect, and Cumulative Greenhouse Gas Emissions

In addition to quantifying the railway’s direct, indirect, and cumulative greenhouse gas emissions, NEPA also requires OEA to analyze the emissions’ impacts—its consequences—on climate change. Even if there is uncertainty about climate change impacts, NEPA requires the agency to evaluate “such impacts based upon theoretical approaches or research methods

⁶⁵ IPCC, 2021: Press Release: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press, https://www.ipcc.ch/site/assets/uploads/2021/08/IPCC_WGI-AR6-Press-Release_en.pdf, at p. 1.

⁶⁶ U.S. Environmental Protection Agency, Understanding Global Warming Potentials (Sept. 9, 2020), available at <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials> (“EPA GWP”) (discussing more recent IPCC reports).

⁶⁷ EPA GWP.

generally accepted in the scientific community.” 40 C.F.R. § 1502.22(b)(3)-(4). The final EIS failed to quantitatively—or even qualitatively—analyze the railway’s direct, indirect, and cumulative emissions impacts on climate change. The final EIS offers only bare emissions volume numbers—and incomplete ones at that—which do not give the decisionmaker or the public an understanding of the scale of the project’s “ecological,” “economic,” and “social” impacts, or their significance, nor does it permit a meaningful comparison among alternatives, as NEPA requires. 40 C.F.R. §§ 1508.8(b), 1502.16(b).

In addition, the EIS’s mere comparison of the project’s emissions to statewide, national, and global GHG emissions does not comply with the agency’s obligation under NEPA to assess climate change effects. *See* FEIS at 3.7-26 – 27., 3.7-39. Two scientific methodologies in particular are widely accepted tools for analyzing a project’s climate change impacts—carbon budgeting and the social cost of carbon—neither of which the OEA utilized in the final EIS. OEA should apply these methodologies in the EIS to assess the railway’s direct, indirect, and cumulative climate change impacts.

a. OEA failed to use carbon budgeting as a tool to assess the railway’s climate impacts

As was the case with the draft EIS, the final EIS should calculate the project’s total carbon direct and indirect emissions (including emissions from increased oil and gas production spurred by development of the railway) and take these emissions into account in relation to the global carbon budget. A carbon budget is the cumulative amount of carbon dioxide emissions permitted over a period of time to keep global temperatures below a certain threshold.⁶⁸ However, the EIS failed to use this tool to inform the Board’s decision-making.

In light of the IPCC’s warning that global warming must be limited to 1.5°C, and that at this point, the world will undoubtedly reach 1.5°C of warming, carbon budgeting is a valuable and necessary tool that the Board should utilize in its decision-making process to assess how the railway will contribute to the global climate crisis. The EIS should utilize this tool in its assessment of the impacts of the proposed railway.

b. OEA failed to use the social cost of carbon as a tool to analyze the railway’s climate impacts

The social cost of carbon is a tool that can provide meaningful analysis of the actual harm associated with carbon pollution. *Mont. Envtl. Info. Ctr. v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074, 1097-98 (D. Mont. 2017); *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1195-98 (D. Colo. 2014); *WildEarth Guardians v. Zinke*, 2019 WL 2404860, at *10-12. As climate change causes devastating impacts such as extreme weather events, increased food insecurity, increased wildfire, and will ultimately result in billions of dollars of economic harm, the social cost of carbon is a tool to measure some of the economic harm from those impacts.⁶⁹ The social cost of carbon “is a measure, in dollars, of the long-term

⁶⁸ Carbon Tracker Initiative, Carbon Budgets Explained (Feb. 2018), <https://carbontracker.org/carbon-budgets-explained/>.

⁶⁹ Environmental Defense Fund, The true cost of carbon pollution (2020), <https://www.edf.org/true-cost-carbon-pollution>.

damage done by a ton of carbon dioxide (CO₂) emissions in a given year. This dollar figure also represents the value of damages avoided for a small emission reduction (i.e., the benefits of a CO₂ reduction).”⁷⁰

OEA should have used the social cost of carbon to analyze the railway’s climate change impacts because the final EIS quantified and monetized the benefits of constructing and operating the railway. FEIS at 3.13-26 to 27; *id.* at 3.13-30 to 31. It is arbitrary and capricious for an agency to quantify the benefits but not the costs of a project, for such an approach functionally assumes that the costs associated with greenhouse gas emissions are zero. *High Country*, 52 F. Supp. 3d at 1190-91. *See also MEIC*, 274 F. Supp. 3d at 1098-99 (arbitrary and capricious for the agency to “quantify socioeconomic benefits while failing to quantify costs”); *WildEarth Guardians*, 2019 WL 2404860, at *10-12 (“[b]ecause [the agency] quantified the benefits of the proposed action, it must also quantify the associated costs or offer non-arbitrary reasons for its decision not to”); *Utah Physicians For A Healthy Env’t v. United States BLM*, No. 2:19-cv-00256-DBB, 2021 U.S. Dist. LEXIS 57756, at *17 (D. Utah Mar. 24, 2021) (“[EIS’s] socioeconomics section may not lay out the economic benefits from the proposal without analyzing the socioeconomic costs of GHGs *together with* climate change.” [emphasis in original]). *Cf.* FEIS at Appendix T at T-282-283.

In 2009, the Interagency Working Group (“IWG”) on the Social Cost of Carbon was convened “to develop government-wide estimates of the social cost of carbon for federal agencies to use in conducting regulatory impact analyses for rulemaking.”⁷¹ The first estimates were finalized in 2010, and have since been revised several times.⁷² The latest revision (see Table 1 below)⁷³ shows that depending on the discount rate, between 2020 and 2025, the social cost of one metric ton of carbon ranges from between \$14-\$17 all the way to \$152-\$169. In part because the currently-applied discount rates are too high, and partly because the models on which the IWG social cost of carbon is based rely on outdated science⁷⁴ and fail to capture the full spectrum of harm caused by climate change,⁷⁵ the IWG acknowledges that this cost “likely

⁷⁰ U.S. Environmental Protection Agency (EPA), Fact Sheet: Social Cost of Carbon (2016) (“USEPA SCC Fact Sheet”) at p. 1.

⁷¹ U.S. Government Accountability Office, Social Cost of Carbon: Identifying a Federal Entity to Address the National Academies’ Recommendations Could Strengthen Regulatory Analysis (June 2020) (“USGAO SCC 2020”) at pp. 2-3.

⁷² *Id.*

⁷³ Interagency Working Group on Social Costs of Greenhouse Gases, United States. Technical Support Document: Social Cost of Carbon, Methane and Nitrous Oxide Interim Estimates Under Executive Order 13990, February 2021, https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf, At p. 5.

⁷⁴ National Academies of Sciences, Engineering, and Medicine 2017. *Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24651> at 133-135.

⁷⁵ Howard, Peter, Omitted Damages: What’s Missing From The Social Cost Of Carbon (2014), available at https://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf.

underestimate[s] societal damages from [greenhouse gas] emissions.”⁷⁶ Despite these limitations, the IWG social cost of carbon is a widely accepted tool commonly used by government agencies as a mechanism for quantifying the harms of greenhouse gas emissions in dollars, and may therefore be used by OEA in fulfilling its obligation to quantify the costs of the railway.

The IWG social cost of carbon presents a range of potential costs per ton of carbon dioxide, dependent on the discount rate applied. Discounting is intended to provide a value in today’s dollars that reflects what society is willing to pay today to reduce emissions that cause future damages, including future generations. A high discount rate implies that actions today causing emissions have relatively small financial impacts. Federal agencies are not instructed as to which discount rate to use when determining the social cost of carbon, and suggests that the 3 percent discount rate (\$46 per ton of carbon dioxide for 2025) as the “central value,” but further emphasizes “the importance and value of including all four SCC values [;]” i.e., that the agency should use the range of values in developing NEPA alternatives.⁷⁷ Because any discount rate fails to adequately account for climate uncertainty and values future lives as worth less than lives in being today,⁷⁸ the OEA should also consider disclosing the cost of the project using the social cost of carbon with no discount rate applied. Under any discount rate, the total climate impacts of the railway must be disclosed to the public and decision makers.

⁷⁶ Interagency Working Group on the Social Cost of Greenhouse Gases, Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide – Interim Estimates Under Executive Order 13,990 February 2021, https://www.whitehouse.gov/wpcontent/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf, at p. 5.

⁷⁷ U.S. Government Interagency Working Group, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (2013, updated 2016) at 12.

⁷⁸ Heal, G., Climate Economics: A meta-review and some suggestions, NBER Working Paper 13927, Natural Bureau of Economic Research (May 15, 2011) (“Heal 2011”), *available at* https://www.nber.org/system/files/working_papers/w13927/w13927.pdf.

Table 1

Table ES-1: Social Cost of CO₂, 2020 – 2050 (in 2020 dollars per metric ton of CO₂)³

Emissions Year	Discount Rate and Statistic			
	5% Average	3% Average	2.5% Average	3% 95 th Percentile
2020	14	51	76	152
2025	17	56	83	169
2030	19	62	89	187
2035	22	67	96	206
2040	25	73	103	225
2045	28	79	110	242
2050	32	85	116	260

4. The Final EIS Must Take a Hard Look at Carbon “Lock-in”

Avoiding the approval of new fossil fuel production and infrastructure is critical for preventing “carbon lock-in,” where approvals and investments made now can lock in decades-worth of fossil fuel extraction that we cannot afford. New approvals for wells, mines, and fossil fuel infrastructure—such as pipelines and marine and rail import and export terminals—require upfront investments that provide financial incentives for companies to continue production for decades into the future.⁷⁹ As summarized by Green and Denniss (2018):

When production processes require a large, upfront investment in fixed costs, such as the construction of a port, pipeline or coalmine, future production will take place even when the market price of the resultant product is lower than the long-run opportunity cost of production. This is because rational producers will ignore ‘sunk costs’ and continue to produce as long as the market price is sufficient to cover the marginal cost (but not the average cost) of production. This is known as ‘lock-in.’⁸⁰

Given the long-lived nature of fossil fuel projects, ending the approval of new fossil fuel projects is necessary to avoid the lock-in of decades of fossil fuel production and associated emissions. The EIS should take a hard look at the problem of carbon lock-in, which would result

⁷⁹ Davis, Steven J. and Robert H. Socolow, Commitment accounting of CO₂ emissions, 9 Environmental Research Letters 084018 (2014); Erickson, Peter et al., Assessing carbon lock-in, 10 Environmental Research Letters 084023 (2015); Erickson, Peter et al., Carbon lock-in from fossil fuel supply infrastructure, Stockholm Environment Institute, Discussion Brief (2015); Seto, Karen C. et al., Carbon Lock-In: Types, Causes, and Policy Implications, 41 Annual Review of Environmental Resources 425 (2016); Green, Fergus and Richard Denniss, Cutting with both arms of the scissors: the economic and political case for restrictive supply-side climate policies, 150 Climatic Change 73 (2018).

⁸⁰ *Id.* at 78.

from building the railway, and should weigh the no-action alternative and other action alternatives in light of this issue.

5. The Project Is Incompatible with the Administration's Climate Policies

The project in its current form is incompatible with the Biden Administration's policies on climate and the environment, as set forth in recent executive orders. Denial of the proposed exemption or significant revisions of the OEA's proposed permit conditions are necessary to avoid conflicts with these policy objectives. In any event, these conflicts must be addressed in the EIS before the Board can approve the project.

President Biden's January 20 Executive Order on "Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis" sets forth a sweeping policy for federal agencies to ensure protection of public health and the environment:

Our Nation has an abiding commitment to empower our workers and communities; promote and protect our public health and the environment; and conserve our national treasures and monuments In carrying out this charge, the Federal Government must be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making. It is, therefore, the policy of my Administration to *listen to the science; to improve public health and protect our environment; to ensure access to clean air and water; to limit exposure to dangerous chemicals and pesticides; to hold polluters accountable, including those who disproportionately harm communities of color and low-income communities; to reduce greenhouse gas emissions; to bolster resilience to the impacts of climate change; to restore and expand our national treasures and monuments; and to prioritize both environmental justice and the creation of the well-paying union jobs necessary to deliver on these goals.*

Executive Order 13990, section 1 ("EO 13990"). Accordingly, the Executive Order directs all agencies to "immediately review" and "take action to address the promulgation of Federal regulations and other actions" by the previous administration that "conflict with these important national objectives." *Id.*; *see also id.*, section 2 (directing agencies to identify actions "that are or may be inconsistent with, or present obstacles to, the policy set forth in section 1 of this order" and "consider suspending, revising, or rescinding the agency actions").

On January 27, 2021, President Biden also issued Executive Order 14008 on "Tackling the Climate Crisis at Home and Abroad" ("EO 14008"). That order recognizes that taking action to address the climate crisis is "more necessary and urgent than ever":

The scientific community has made clear that the scale and speed of necessary action is greater than previously believed. There is little time left to avoid setting the world on a dangerous, potentially catastrophic, climate trajectory. Responding to the climate crisis will require both significant short-term global reductions in greenhouse gas emissions and net-zero global emissions by mid-century or before.

EO 14008, Section 101. Accordingly, EO 14008 establishes national policy that places the climate crisis “at the center of U.S. foreign policy and national security.” *Id.* On the domestic front, it sets forth a policy to “organize and deploy the *full capacity* of its agencies to combat the climate crisis to implement a Government-wide approach that reduces climate pollution in every sector of the economy.” *Id.*, section 201 (emphasis added).

Of particular relevance here, EO 14008 orders the Secretary of Interior to “pause new oil and gas leases on public lands” pending “completion of a comprehensive review and reconsideration of Federal oil and gas permitting and leasing practices in light of the Secretary of the Interior’s broad stewardship responsibilities over the public lands and in offshore waters, including potential climate and other impacts associated with oil and gas activities on public lands or in offshore waters.” *Id.*, section 208 (emphasis added).

Relatedly, EO 14008 prioritizes bolstering climate change resilience: “The United States will also move quickly to build resilience, both at home and abroad, against the impacts of climate change that are already manifest and will continue to intensify according to current trajectories.” *Id.*, section 101. This includes taking action to “conserve[] our lands, waters, and biodiversity” *id.*, section 201, and specifically to “achieve the goal of conserving at least 30 percent of our lands and waters by 2030” (the “30x30” goal or initiative).

Together these policies and directives militate strongly in favor of denying approval of the project. As discussed above, the rail project is specifically geared toward increasing oil production in the Uinta Basin, much of which would occur on public lands. *See* STB Order Preliminarily Granting Rail Construction and Operation Exemption (Oberman dissent) (Jan. 4, 2021) at 14 (“[T]here can be no doubt that the singular rationale for constructing the proposed railroad is to provide rail transportation to stimulate an increase in oil production in the Basin.”). As a result, the Project will *cause* potential downstream emissions from combustion of fuels refined from crude transported by the rail of more than 53 million metric tons of CO₂, FEIS at 3.15-36, or six times the annual emissions of the dirtiest coal plant in Utah.⁸¹ At a minimum, a full accounting of these emissions and weighing of their climate change impacts in light of the U.S.’s remaining carbon budget is required to carry out the Administration’s climate change policies.

Moreover, allowing the development of habitat for several listed plants, including the endangered Barneby Ridge-cress, and for highly sensitive sage-grouse, pronghorn, elk, mule deer, and bighorn sheep on public lands before fully understanding these impacts and considering feasible habitat protection alternatives undermines the biodiversity protection goals of the Administration’s 30x30 initiative. Development of the rail within several miles of several sage-grouse leks in Emma Park risks sharp declines and potential extirpation of the Emma Park greater sage-grouse population, which is partially located on BLM lands. *See* section II.H below. Likewise, disruption of big game migration routes could eliminate connectivity between seasonal habitats, detrimentally harming big game populations, in direct conflict with the 30x30 policy. *See* section II.I below.

⁸¹ The Hunter plant in 2019 emitted 8.5 million tons of CO₂e. *See* https://ghgdata.epa.gov/ghgp/service/facilityDetail/2019?id=1001036&ds=E&et=FC_CL&popup=true.

In sum, approval of the Project without adequate environmental review would run contrary to the new administration's goals of "reduc[ing] greenhouse gas emissions" and bolster[ing] resilience to the impacts of climate change." EO 13990, section 101.

6. Recommendations for Permit Conditions

If the STB decides to authorize SCIC's petition, it should do so only with mandatory conditions to reduce GHG emissions from the railway itself and from downstream combustion. In its 2018 report on *Global Warming of 1.5°C*, the IPCC found that staying below 1.5°C of warming will require aggressive action as a global community to reduce emissions by 45% from 2010 levels by the year 2030, and to bring the planet to net-zero emissions by 2050.⁸² Similarly, the United Nations scientific reports estimated that to achieve the 1.5°C climate limit, countries must cut their greenhouse gas emissions by at least 7.6% per year⁸³ and must decrease **fossil fuel production by roughly 6% per year between 2020 and 2030**.⁸⁴ The IPCC's latest report warns that "unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach."⁸⁵

Furthermore, studies have established that the construction of new fossil fuel infrastructure projects, including but not limited to railways, pipelines, import and export terminals, storage facilities, refineries, power plants and petrochemical plants, is also inconsistent with meeting the 1.5°C target.⁸⁶ Research shows that the committed carbon emissions from *existing* fossil fuel infrastructure in the transportation, energy and industrial sectors exceed the carbon budget for limiting warming to 1.5°C, meaning that no new fossil infrastructure--such as this railway--can be built and much existing infrastructure must be *retired early* to avoid catastrophic climate harms.⁸⁷

In light of this, the STB should require the Uinta Basin Railway to achieve net-zero emissions from the project immediately, from construction onward, including its indirect

⁸² IPCC SR15, Summary for Policymakers. Available at: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf at Summary for Policymakers p. 26; Technical Summary p. 33; Chapter 2 Executive Summary p. 95; chapter 2 p. 116.

⁸³ United Nations Environment Programme Emissions Gap Report 2019, UNEP, Nairobi (2019), <https://www.unenvironment.org/resources/emissions-gap-report-2019>.

⁸⁴ SEI, IISD, ODI, E3G, and UNEP, The Production Gap Report: 2020 Special Report (2021), <http://productiongap.org/2020report>.

⁸⁵ IPCC, 2021: Press Release: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press, https://www.ipcc.ch/site/assets/uploads/2021/08/IPCC_WGI-AR6-Press-Release_en.pdf, at p. 1.

⁸⁶ Tong, D. et al., Committed emissions from existing energy infrastructure jeopardize 1.5 °C climate target, 572 Nature 373-377 (2019); Smith, C.J. et al., Current fossil fuel infrastructure does not yet commit us to 1.5 °C warming, 10 Nature Communications 101 (2019); Pfeiffer, Alexander et al., Committed emissions from existing and planned power plants and asset stranding required to meet the Paris Agreement, 13 Environmental Research Letters 054019 (2018).

⁸⁷ Tong, D. et al., Committed emissions from existing energy infrastructure jeopardize 1.5 °C climate target, 572 Nature 373-377 (2019).

emissions, which includes emissions from the additional oil and gas production that is enabled by the railway construction both upstream and downstream. To do so, OEA should analyze the GHG emissions for the entire project via a greenhouse gas emissions inventory and forecast, including all upstream and downstream emissions, in order to establish a baseline for reducing emissions. Then, the OEA should develop a plan to achieve immediate net-zero emissions, including zero emissions from the operation of the railway itself and offsetting any remaining upstream and downstream emissions that cannot be accomplished with direct emissions reductions.

The STB should require zero emissions from the railway operation itself by electrifying the railway using clean, renewable solar and wind energy to generate the electricity. If the entire railway is unable to be electrified, but parts of it can be, the STB should consider what parts of the railway may operate electrically, and include provisions to require this electrification in the permit. For electrification that is not able to be generated from renewables, the STB should consider conditioning SCIC's authorization on the applicant's agreement to reduce its emissions elsewhere.

Only once SCIC has committed to reducing all possible emissions from the operation of the railway and upstream emissions, the Board can consider allowing SCIC to purchase renewable energy credits (REC) and local offsets to offset the rest of the emissions from the rail and all upstream and downstream emissions.

A REC is an instrument that accounts for and tracks rights to the environmental, social, and other non-power attributes of renewable electricity generation.⁸⁸ RECs can be purchased and used to reduce indirect GHG emissions from electricity, and can lower gross emissions from electricity that is purchased, not generated by the organization or project.⁸⁹ The OEA should determine the number of RECs needed, and should factor this into their budget for the proposed railway.

Offsets are “used to address direct and indirect GHG emissions by verifying global emissions reductions at additional, external projects. Offsets (verified emissions reductions) are subtracted from organizational emissions to determine net organizational emissions.”⁹⁰ An offset project is “a specific set of activities intended to reduce GHG emissions, increase the storage of carbon, or enhance GHG removals from the atmosphere.”⁹¹ For offsets to be valid, they must be additional, meaning GHG reductions from these offsets would not have occurred in the absence of a market for offset credits.⁹² They must also be permanent, meaning the GHG reductions must be permanent, and cannot be reversed.⁹³

Here, OEA should ensure that the project's baseline is not overestimated, and that actual emissions are not underestimated. In addition, OEA should ensure that SCIC prioritizes offsets

⁸⁸Track My Electricity, Renewable Energy Certificate, <https://www.trackmyelectricity.com/learn-more/rec/>.

⁸⁹ United States Environmental Protection Agency. Offsets and RECs: What's the Difference? At https://www.epa.gov/sites/default/files/2018-03/documents/gpp_guide_recs_offsets.pdf, p.3.

⁹⁰ *Id.* at.3.

⁹¹ *Id.* at 3.

⁹² Carbon Offset Guide, Additionality, <https://www.offsetguide.org/high-quality-offsets/additionality/>.

⁹³ Carbon Offset Guide, Permanence, <http://www.offsetguide.org/high-quality-offsets/permanence/>.

for local emissions reductions. This is the clearest way to ensure that offsets are valid.⁹⁴ The project also must not fail to account for the indirect effects of the project on GHG emissions. Carbon offset credits also “must convey an exclusive claim to GHG reductions.”⁹⁵ Finally, double issuance must not occur with any given offset project, meaning emissions benefits for any given offset project may only be claimed once. Double use must also be avoided, meaning only one party must count the offset. And double claiming must be avoided, meaning that credits issued to the project may not be counted by another entity.⁹⁶

Given the urgency of the global climate situation, the OEA should do everything in its power to reduce emissions from the proposed railway.

G. The EIS Fails to Identify Baseline Geotechnical Hazards

The EIS fails to present an adequate baseline for assessing geotechnical aspects of the proposal, thereby making it impossible to reasonably conclude that the geotechnical impacts of the project will not be significant. Rather than establish the necessary baseline data, the EIS errs in providing for further investigation of geotechnical conditions as post-approval mitigation measures, thereby presupposing that the results of these investigations will not result in the discovery of significant and unmitigable impacts.

“NEPA aims (1) to ensure that agencies carefully consider information about significant environmental impacts and (2) to guarantee relevant information is available to the public. . . The use of mitigation measures as a proxy for baseline data does not further either purpose.” *Northern Plains Council v. STB*, 668 F.3d 1067, 1072 (9th Cir. 2011). In *Northern Plains*, plaintiffs challenged STB approval of construction of a rail line that would transport coal from mines to markets, arguing that the STB had failed to take the requisite “hard look” at the proposed project. Among the issues considered was whether the STB’s imposition of post-approval mitigation measures to conduct additional studies and surveys to further assess the impacts of the project on various species was sufficient to satisfy its obligations under NEPA. The court held that it was not sufficient, noting that “NEPA requires that an agency provide the data on which it bases its environmental analysis,” and that “[s]uch analyses must occur before the proposed action is approved, not afterward.” *Id.* at 1083. The court noted that conducting additional studies or surveys after approval did nothing to help evaluate and understand the impact before construction: “In a way, reliance on mitigation measures presupposes approval. It assumes that – regardless of what effects construction may have on resources – there are mitigation measures that might counteract the effect without first understanding the extent of the problem.” *Id.* at 1084-85. Regarding the STB’s arguments that it was unable to conduct some surveys prior to approval due to rough terrain and restricted access to private land, the court noted that these excuses did not explain how conducting these surveys after approval rather than before would alleviate the issue.” *Id.* at 1085.

In the EIS OEA notes that “[c]onstruction of any of the Action Alternatives would involve large amounts of earthmoving and soil disturbance” that “could potentially be affected

⁹⁴ See e.g., *Golden Door Properties, LLC v. County of San Diego* (2020) 50 Cal.App.5th 467.

⁹⁵ Carbon Offset Guide, Exclusive Claim to GHG Reductions, <https://www.offsetguide.org/high-quality-offsets/exclusive-claim-to-ghg-reductions/>.

⁹⁶ *Id.*

by geological hazards, such as landslides, but this impact would be minimized by the implementation of appropriate mitigation measures, including pre-construction geotechnical investigations to identify areas that are at risk of landslide.” FEIS at S-11. The EIS specifically identifies the presence of geological units over which the railroad line would pass in areas known to be susceptible to mass movement, as well as unmapped mines and landslide deposit areas. *Id.* at 3.5-20, 3.5-22; *see also id.* at 3.5-28. Because the construction of the project would “create steep slopes or disturb the surface within unstable geologic units,” the EIS notes that these activities “could cause geologic hazards such as landslides, debris flows, and rockslide.” *Id.* at 3.5-20. Furthermore, “[i]f mass movement were to occur during or following construction, it could dislocate, damage, or destroy rail-related facilities and result in both environmental damage and potentially cause injury or death.” *Id.*

The EIS notes that the project’s tunneling activities in unstable geologic units in particular would increase both construction and post-construction risk of collapse, as well as potentially dangerous interactions with subsurface features such as groundwater, and underground inflammable gases. FEIS at 3.5-23. As a proposed mitigation measure, the OEA recommends conducting geotechnical investigations “to identify and address such geologic hazards,” concluding that if this were done “OEA concludes that the risks associated with collapse, water inrush, portal landslide, and gas explosion during tunnel construction would be minimized.” *Id.* *See also id.* at 3.5-27 to 3.5-28, 4-14 (GEO-MM-2).

The EIS also notes the risk of induced liquefaction, where ground shaking causes soil saturated with water to temporarily lose strength and act like a liquid, potentially causing infrastructure built on the soil to collapse. *See* FEIS at 3.5-3. The EIS states that all of the Action Alternatives either cross or run close to the Duchesne-Pleasant Valley fault system, a poorly understood network of faults with a history of ground-rupturing seismic events and strong ground shaking. *See* FEIS at 3.5-25. As a result, all of the Action Alternatives would be susceptible to induced liquefaction. To address this, the EIS calls for the Coalition to conduct as post-approval mitigation measures geotechnical investigations to identify areas of risk and potentially replace such soils with engineered soils. FEIS at 3.5-25 to 3.5-26; *id.* at 4-14 (GEO-MM-5, GEO-MM-8).

According to the EIS, portions of the project study area appear to contain soils with high corrosivity to concrete or steel, making any such materials embedded in those soils vulnerable to corrosion. FEIS at 3.5-24. To mitigate this potential, OEA recommends imposing post-approval requirements to investigate soil corrosivity to identify corrosive soils for replacement. *Id.* at 3.5-25.

The EIS’s mitigation measures calling for further post-approval geotechnical investigation of identified risks to human health and the environment constitute precisely the same sort of impermissible deferral of environmental analysis observed by the court in *Northern Plains*. Rather than adequately assessing the potential effects of unstable geological soils and bedrock subject to mass movement or slumping, unmapped mines and landslide areas, high corrosivity soils, and soils at higher risk of seismically induced liquefaction, all of which are reasonably foreseeable risks that are actually foreseen by OEA, the OEA calls for identification of these risks in site-specific locations *after* approval. OEA offers these investigations as mitigation measures, even though identifying these effects will do nothing to mitigate them. These measures presuppose the project’s approval, even though the effects of the project are not

understood because the requisite data has not yet been collected. Moreover, OEA has provided no reason for why these investigations cannot be conducted prior to approval. That engineering and design plans have not yet been finalized is no excuse for deferring the gathering of this information. *Cf.* FEIS, Appendix T at T-241. Indeed, geotechnical investigations are necessary to compare the geotechnical risks of each alternative and *inform* the STB's selection of an alternative and the project's final design and engineering. Accordingly, OEA must require that these investigations be conducted prior to approval, rather than as post-approval mitigation measures.

The potential direct impact of landslides, erosion, and unstable soils on railroads is far from theoretical. In 1983, a landslide in Thistle, Utah created a natural dam that blocked a rail line. As a result, Utah's State Hazard Mitigation Plan notes, "[t]he Marysvale branch of the Denver and Rio Grande Railroad was never reopened, leaving a large area of central Utah without rail service."⁹⁷

The EIS must be revised to disclose existing geological hazards in the project area.

H. The EIS Fails to Take a Hard Look at the Railway's Harm to Greater Sage-Grouse Populations

1. Background on Greater Sage-Grouse

Greater sage-grouse are iconic birds of the interior west and highly imperiled due to loss and fragmentation of their native sagebrush-steppe habitats.⁹⁸ A primary threat to the species is habitat loss and fragmentation, largely due to industrial activities, including oil and gas development. For example, noise and human presence from oil and gas operations are known to produce stress responses in sage-grouse, reduce their reproductive success, and cause birds to abandon suitable habitat, resulting in population declines.⁹⁹

Several characteristics make sage-grouse particularly sensitive to development. First, sage-grouse have strong "site fidelity," meaning they are intensely loyal to their mating grounds, nesting habitat, and wintering areas.¹⁰⁰ Birds may return to disturbed areas even if they can no longer successfully reproduce or survive there, which limits their adaptability to human disturbance.¹⁰¹ Second, sage-grouse tend to self-select habitats that maximize survival and reproductive success, meaning that when birds are forced to relocate, it is often to suboptimal habitat. Third, sage-grouse require connectivity between seasonal habitats, including leks and nearby nesting areas, wetter summer habitats, and lower-elevation wintering areas.¹⁰² When

⁹⁷ Utah Department of Public Safety, Division of Emergency Management, 2019 Utah State Hazard Mitigation Plan, at 146 (2019), available at: <https://hazards.utah.gov/wp-content/uploads/Utah-State-Hazard-Mitigation-Plan-2019.pdf>.

⁹⁸ See 75 Fed. Reg. 13,910, 13,921 (Mar. 23, 2010).

⁹⁹ *Id.* at 13,948.

¹⁰⁰ 80 Fed. Reg. at 59,866.

¹⁰¹ *Id.*

¹⁰² 75 Fed. Reg. at 13,916–17.

human development—such as a roads and pipelines—cuts across a landscape, it can inhibit birds from accessing required habitats and thus cause “functional” habitat loss.¹⁰³

According to the EIS, the preferred Whitmore Park alignment would cross large swaths of both federally designated (1) “general habitat management areas,” which are occupied sage-grouse habitat, and (2) “priority habitat management areas” (PHMA or “priority habitat”) which “hav[e] the *highest value to maintaining sustainable greater sage-grouse populations.*” FEIS at 3.4-26 - 27. The resulting habitat loss would be significant:

- The Whitmore Park alignment would cut through 23.7 miles of contiguous priority habitat, severing habitat between the western side of this area around Scofield Reservoir and Whitmore Park on its eastern side.¹⁰⁴
- The preferred alignment would permanently disturb more than 377 acres of this priority habitat and temporarily disturb 869.5 acres.
- As a result, the Whitmore Park alignment would cause the indirect or functional loss of 44,123 acres of priority habitat (nearly 69 square miles), assuming abandonment of priority habitat within 3.1 miles of the preferred alignment.¹⁰⁵

Moreover, within the priority habitat management areas, the Whitmore Park alternative would come within one mile of six mating grounds or “leks” frequented by the Emma Park meta-population. *Id.*¹⁰⁶ This meta-population of grouse uses a string of 11 leks that follow along (from west to east), Price Canyon, the terminus of all three proposed rail-lines, Emma Park, Summit Creek and Whitmore Park. This population likely intermingles and moves among and between these 11 leks from year to year.

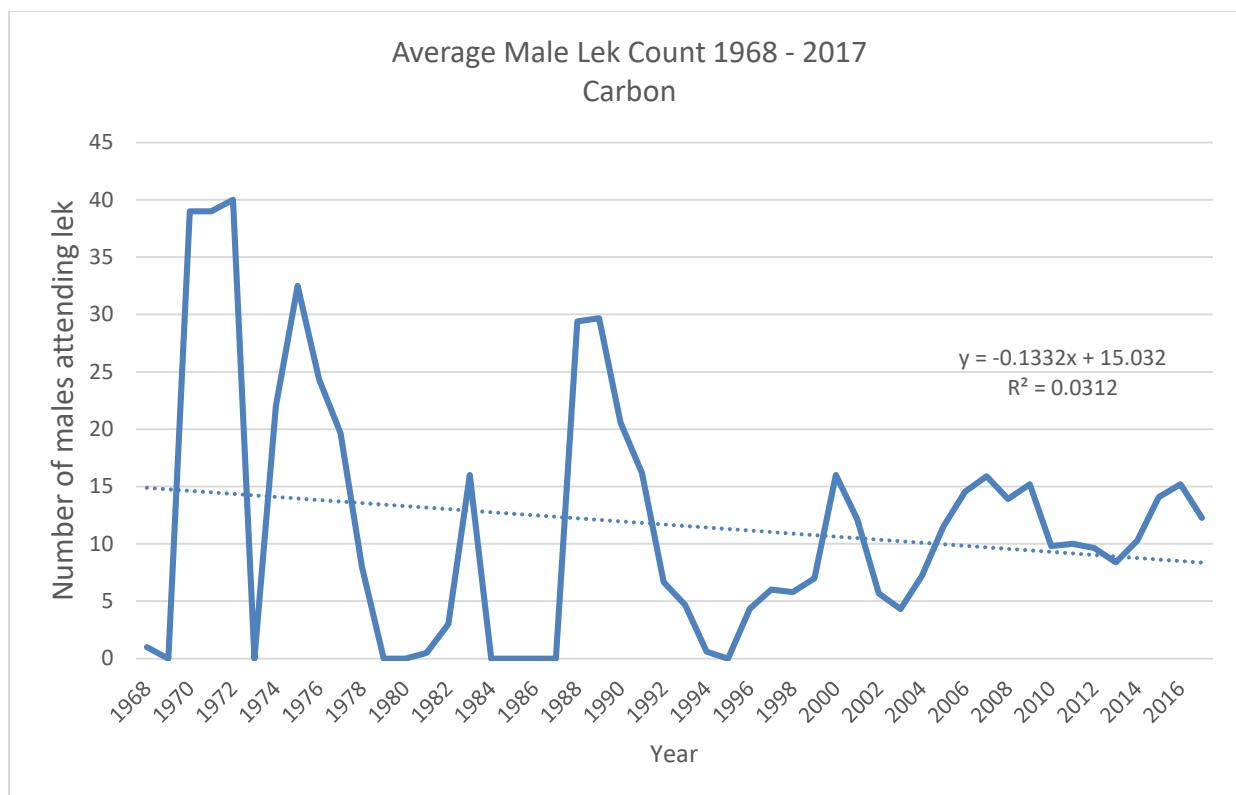
The Emma Park meta-population of sage-grouse is part of the Carbon Sage-grouse Management Area (SGMA), as defined by the Utah State Sage-grouse Conservation Plan. A chart below summarizes a regression model of over 50 years of lek data from the late 1960’s to near present day for the Carbon SGMA. This chart illustrates that, on the whole, the average number of grouse seen on leks in the Carbon SGMA has been steadily declining over the past 50 years.

¹⁰³ 75 Fed. Reg. at 13,927.

¹⁰⁴ USGS 2014; Sage-grouse National Technical Team, A Report on National Greater Sage-grouse Conservation Measures (2011); U.S. Fish and Wildlife Service, Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report (2013).

¹⁰⁵ U.S. Geological Survey (USGS), Conservation buffer distance estimates for Greater Sage-Grouse – A review: U.S. Geological Survey Open-File Report 2014-1239 (2014) (“USGS 2014”).

¹⁰⁶ See also Center for Biological Diversity, Updated Map of Sage-Grouse Management Areas (2021).



Lek data provided by the Utah Division of Wildlife Resources indicate that the negative trend for the Emma Park sage-grouse meta population continues for the years 2017 through 2020 (the years after the above chart was created), with the 2020 lek count across the 11 leks down over 40% compared to the 2017 count.¹⁰⁷

The EIS, however, fails to acknowledge these declining population trends or discuss how the project, and especially noise from train operations, would exacerbate population declines and affect the viability of the Emma Park meta-population, the Carbon SGMA, and other connected populations, as further discussed below.

¹⁰⁷ Wild Utah Project, Unpublished Sage-Grouse Data Analysis. The EIS does not dispute the underlying data or regression analysis but nonetheless attempts to minimize the analysis by pointing out that populations fluctuate from year to year. However, the regression analysis shows a clear declining trend for this population over fifty years, which is also exhibited range-wide and across the state. According to USGS, “Greater sage-grouse populations have declined significantly over the last six decades, with an 80% rangewide decline since 1965 and a nearly 40% decline since 2002. . . .” Coates, P.S., et al., Range-wide Greater Sage-Grouse Hierarchical Monitoring Framework: Implications for Defining Population Boundaries, Trend Estimation, and a Targeted Annual Warning System, Open-File Report 2020-1154 (2021), <https://doi.org/10.3133/ofr20201154>. In Utah, “overall populations have generally followed a downward trend,” meriting state designation as a “sensitive species.” Utah Division of Wildlife, Greater Sage-grouse, Species Status Statement (April 20, 2020), https://wildlife.utah.gov/pdf/sensitive_species/birds_greater_sagegrouse_2020.pdf. This downward trend is occurring despite the adoption of state and federal conservation plans in 2015 to avoid federal ESA listing. See U.S. DOI, Historic Conservation Campaign Protects Greater Sage-Grouse (Sept. 22, 2015), <https://www.doi.gov/pressreleases/historic-conservation-campaign-protects-greater-sage-grouse>.

2. The EIS Fails to Analyze the Impacts of Intermittent Train Noise on Sage-Grouse, Including Potential Population Declines

The FEIS fails to meaningfully analyze the noise effects of train operations on sage-grouse within the project area. Because the EIS fails to gather baseline information as to ambient noise levels, it cannot meaningfully determine how severely the project will affect sage-grouse leks and surrounding habitat, and the Carbon SGMA and Emma Park population.

Sage-grouse are particularly sensitive to anthropogenic noise, because they rely on acoustic communication to find and court mates. Noise above typical ambient back-ground levels could negatively interact with the ability of individuals to pick up on these auditory cues. For example, noise from energy development can substantially mask the sounds produced by lekking sage-grouse, and thus increase the difficulty of mate assessment.¹⁰⁸ In addition, studies have shown that energy-development noise *alone* dramatically reduced male attendance on leks and caused a decline in female attendance.¹⁰⁹ Sage-grouse subject to energy-development noise also exhibit elevated stress-hormone levels, suggesting that noise has a physiological impact on sage-grouse.¹¹⁰

In light of these studies, researchers have recommended that:

- (1) noise-management objectives be set *relative to typical ambient noise levels in sage-grouse habitat* before development, with the best currently available measurement of residual noise levels in undisturbed sage-grouse habitat suggesting an ambient level of 16 to 20 dBA;¹¹¹
- (2) an increase in median noise levels of 10 dBA above ambient be allowed but no more than that;
- (3) management strategies be expanded to protect the soundscape in areas critical for foraging, nesting, and brood-rearing activities of sage-grouse, rather than protecting the lek area alone; and
- (4) management strategies be focused on the siting of roads or limiting of traffic volumes during crucial times of the day (6 a.m. to 9 a.m.) and breeding season.¹¹²

Here, the EIS acknowledges that adverse impacts to sage-grouse could occur at 10 dBA above ambient levels, consistent with the scientific literature, but fails to determine baseline ambient noise levels at lek sites, to properly assess whether the 10 dBA threshold would be

¹⁰⁸ Blickley, J.L. and G.L. Patricelli, Potential acoustic masking of Greater sage-grouse (*Centrocercus urophasianus*) display components by chronic industrial noise, 74 Ornithological Monographs 23 (2012).

¹⁰⁹ Blickley et al. 2012a.

¹¹⁰ Blickley et al. 2012b.

¹¹¹ “Ambient noise is the sum of all noise (from human and naturally occurring sources) at a specific location over a specific time. It is usually used to characterize the noise environment without the new proposed noise source.” FEIS at 3.6-3 at n.3.

¹¹² Patricelli, G.L. et al., Recommended management strategies to limit anthropogenic noise impacts on greater sage-grouse in Wyoming, 7 Human–Wildlife Interactions 2 (2013) (“Patricelli 2013”).

exceeded at each site. Instead, the EIS uses baseline noise level measurements that were taken far from the lek sites to determine the potential increase in noise from train operations: “Although OEA *did not conduct ambient noise monitoring in the Emma Park area*, ambient noise elsewhere in the study area ranged from 33 dBA to 56 dBA. . . .” FEIS at 3.4-59. These 33 dBA to 56 dBA ambient noise measurements were taken miles away in “small town residential areas” and “suburban residential areas” to determine noise effects on residents along the proposed rail line. *Id.* at 3.6-65 to 3.6-6. The EIS then predicts noise levels at each lek for train operations under the Whitmore Park alternative and finds “the 10-decibel noise threshold could be exceeded for at least one lek and potentially up to six leks, *depending on current ambient noise levels*,” but assuming that ambient noise levels fall within the 33 to 56 dBA range. FEIS at 3.4-62.

The use of the 33 dBA to 56 dBA ambient noise baseline for sage-grouse leks, however, lacks any evidentiary support or reasoned explanation. The EIS does not explain why ambient noise levels from residential areas are representative of existing conditions at leks in Emma Park. Further, the scientific literature notes that the best currently available measurement of residual noise levels in undisturbed sage-grouse habitat is an ambient level of 16 to 20 dBA, which is significantly lower than the 33 dBA to 56 dBA range assumed by the EIS, but the EIS does not explain why this latter range is more appropriate.¹¹³

In any event, OEA should have conducted on-the-ground noise studies, but the EIS fails to explain why it could not do so, when baseline noise levels were gathered in other parts of the study area. The FEIS must be revised to disclose baseline ambient noise levels at all potentially affected leks. *N. Plains Res. Council*, 668 F.3d at 1084-85 (failure to gather baseline noise levels to determine proposed railway’s vibration and noise impacts on hatchery fish violated NEPA).

The EIS’s response to comments dismisses the need for baseline noise studies, on the grounds that “additional ambient noise monitoring would not provide useful information about impacts on sage-grouse that could change the conclusions of the Draft EIS, better inform decision-makers or the public about the impacts of the proposed rail line, or support the development of additional mitigation measures to address impacts on sage-grouse.” FEIS, Appendix T at T-209. But the potential impacts on sage-grouse populations could differ drastically depending on the existing ambient noise level. The EIS finds that for the Whitmore Park alternative, “the 10-decibel noise threshold could be exceeded for at least one lek and potentially up to six leks, *depending on current ambient noise levels*.” FEIS at 3.4-62 (emphasis added). Noise adversely affecting only one lek versus six leks in Emma Park—either a small fraction versus over half of the 11 leks used by the meta-population—could potentially spell the difference between minor and major population declines, or extirpation. In addition, because some leks have more robust lek attendance than others,¹¹⁴ population-level effects could vary, depending on which leks experience adverse noise effects.

This crude analysis does not pass muster under NEPA: “general statements about ‘possible’ effects and ‘some risk’ do not constitute a ‘hard look’ absent a justification” for why an agency could not supply more “definitive information.” *Or. Nat. Desert Ass’n v. Rose*, 921

¹¹³ Patricelli 2013.

¹¹⁴ Utah Division of Wildlife Resources, Utah Sage-Grouse Lek Database, Lek Attendance Spreadsheet (2017-2020).

F.3d 1185, 1191 (9th Cir. 2019) (faulting EIS for failing to conduct baseline analysis of “the physical condition of [trail] routes,” to determine impacts of agency’s plan to open 500 miles of trails to motorized travel).

3. The EIS Fails to Analyze Population-Level Impacts on Sage-Grouse

Relatedly, the EIS disregards the population consequences of increased noise from the rail line, failing to address whether populations would decline or increase, and whether populations would remain viable over the long-term. In its discussion of impacts to wildlife generally, it suggests that wildlife could relocate to other areas unaffected by the project, without consequences to population viability. *See* FEIS at 3.4-30 (“The large areas of suitable habitat around the Action Alternatives would be sufficient to allow for wildlife movement and dispersal.”).

The EIS must acknowledge not just the potential for lek abandonment but also impacts to sage-grouse populations and their viability. The abandonment of high-quality habitat will not just result in long-term habitat loss (including habitat for mating, foraging, and nesting), but this habitat loss will reduce available high-quality habitat and forage, increase competition for these limited resources, increase energy expenditure and stress of individual animals, and reduce reproductive success and population numbers, which the EIS fails to address. Further, the smaller the population, the smaller the gene pool and less viable the population.

This is well-established science and not a controversial matter of expert opinion. For example, the Wyoming Game and Fish Department has explained that it is a common misconception that, in response to development, “[w]ildlife simply relocate to unaffected habitats, so there really is no impact”:

This common assumption contradicts a fundamental axiom of population ecology and wildlife management that has been known and reconfirmed since the time of Aldo Leopold – populations of organisms increase to fill vacant, suitable habitat and are then regulated by the essential component of their habitat that is in least supply (Leopold 1933; Edwards and Fowle 1955; Smith 1966:355; Odum 1971:183). For example, availability and quality of crucial winter ranges at lower elevations generally limit productivity, recruitment and abundance of migratory big game populations in mountainous environments. Complexes of suitable *breeding and brood-rearing habitats* are thought to limit populations of sage-grouse. In any given environment, existing populations of wildlife occupy the habitats that are suitable. Conversely, the areas that are not suitable for one reason or another are not used. When activities associated with energy development displace animals from otherwise suitable habitats, the animals are forced to utilize marginal habitats or they relocate to unaffected habitats where the population density and competition increase. Consequences of such displacement and

competition are lower survival, lower reproductive success, lower recruitment, and lower carrying capacity leading ultimately to population-level impacts.¹¹⁵

The potential for displacement and population declines here is real. The Emma Park meta-population is located within federally designated “priority habitat management areas,” which “hav[e] the highest value to maintaining sustainable greater sage-grouse populations.”¹¹⁶ FEIS at 3.4-26. The U.S. Geological Survey’s review of published literature on sage-grouse buffers show that the majority of sage-grouse nests in any given area (up to 95%) are within a 3.1-mile radius of leks, and that nesting hens and other sage-grouse within this occupied habitat are sensitive to various human-created disturbances.¹¹⁷ Moreover, according to the same report, assessment of lek trends in proximity to a large, interstate highway (I-80) indicated that all formerly recorded lek sites within 2 km (1.25 mi) of the highway were unoccupied, and leks within 7.5 km (4.7 mi) of the highway had declining attendance.¹¹⁸ Accordingly, the 3.1-mile buffer is widely accepted in the scientific literature, and the State of Nevada requires a 3-mile lek buffer from geothermal energy facilities for reducing noise effects on sage-grouse.¹¹⁹

Further, reduced connectivity between the Carbon SGMA (which includes the Emma Park meta-population) and the Uintah and Strawberry SGMAs, and between habitat to the west and east of Emma Park, could compound population declines.¹²⁰ Noise from trains causing abandonment of habitat would essentially fragment habitat, adding barriers to genetic mixing between populations. This fragmentation coupled with other sources of habitat abandonment (e.g., oil and gas development, the development of rail terminals to serve the project) could result in cumulatively significant population declines, by causing inbreeding and decreased fitness in localized and isolated populations.

The EIS’s only reference to population-level effects is its pointing to the State’s claim that “it is anticipated that by avoiding, minimizing, and through providing compensatory mitigation to benefit sage-grouse, the proposed project will not negatively impact the greater sage-grouse population *that uses the general area over the long-term.*” See FEIS, Appendix T at T-425-26 (citing Appendix K, Letter from Utah Governor’s Office re Mitigation Compliance for Greater Sage-grouse (July 23, 2020) at 5). But this statement is so vague and lacks any supporting analysis that it raises a number of questions: (1) Would *short-term* population-level effects still occur? (2) How long would it take for habitat restoration and other compensatory mitigation measures to bring back sage-grouse populations—several years or several decades? (3) What sage-grouse population or “general area” is the State referring to—does it include the

¹¹⁵ Wyoming Game and Fish Department, Recommendations for Development of Oil and Gas Resources Within Important Wildlife Habitats at 11-12 (2010), <https://wgfd.wyo.gov/Habitat/Habitat-Information/Development-of-Oil-and-Gas>.

¹¹⁶ *Id.*

¹¹⁷ USGS 2014.

¹¹⁸ *Id.*; Connelly, J. W. et al., Conservation assessment of greater sage-grouse and sagebrush habitats: Western Association of Fish and Wildlife Agencies (WAFWA) (2004).

¹¹⁹ USGS 2014.

¹²⁰ See Center for Biological Diversity, Updated Map of Uinta Basin Sage-Grouse Management Areas (2021).

Emma Park meta-population or the Carbon SGMA, or does the State agree they would be irretrievably lost?

In sum, the EIS failed to analyze population-level effects, despite evidence of significant lek and nest abandonment within 3.1 miles of noise sources.¹²¹

4. The Proposed Mitigation Plan Is Unproven in Its Ability to Boost Sage-Grouse Population Numbers

The EIS's *Draft Greater Sage-Grouse Mitigation Strategies Memorandum* lays out the general strategy for mitigation efforts that SCIC may adopt to offset sage-grouse habitat losses that cannot be avoided if the railway is built. FEIS, Appendix K. Essentially, the State of Utah recommends that the SCIC build one "Beaver Dam Analog Complex" for every acre of habitat developed, which would purportedly increase the availability of wet meadow habitat for late summer brood-rearing, and thereby offset the rail line's habitat loss effects. FEIS, Appendix K at 3.

Limited research has found that sage-grouse habitat improvements, such as juniper removal, are correlated with positive population level effects, but no such research exists with respect to Beaver Dam Analogs. We are not aware of studies demonstrating that raising water tables in sagebrush systems leads to increased viability rates or any other measures of population growth in sage-grouse. Nor does the EIS cite to any. Further, it is unclear on what basis the State and OEA conclude that the proposed amount of wet meadow habitat restoration would be adequate to offset any population declines resulting from lek abandonment—or why a ratio of 4 Beaver Dam Analogs (equivalent to one Complex) for every acre of permanent habitat loss was selected, and not 8 or 20 Beaver Dam Analogs for every acre? Indeed, the EIS fails to estimate total population declines or project how much population levels would improve with the proposed compensatory mitigation, or whether these benefits would be realized in time to avert significant declines or extirpation. *See also Nat'l Audubon Soc'y v. Dep't of the Navy*, 422 F.3d 174, 200 (4th Cir. 2005) ("The sufficiency of the mitigation measures proffered in the FEIS are necessarily dependent on an adequate assessment of environmental impact. For this reason, the FEIS also fails to sufficiently address mitigation.")

The EIS fails to acknowledge these uncertainties, but instead states in conclusory fashion that "it is anticipated that by avoiding, minimizing, and through providing compensatory mitigation to benefit sage-grouse, the proposed project will not negatively impact the greater sage-grouse population *that uses the general area over the long-term*."¹²² The failure to provide analytical data in support of this assertion violates NEPA. *See Wyo. Outdoor Council v. United States Army Corps of Eng'rs*, 351 F. Supp. 2d 1232, 1252 (D. Wyo. 2005) (invalidating agency's finding of no significant impact, because "record is devoid of any information whatsoever that would support the efficacy of wetland replacement mitigation" at 1:1 replacement ratio);

¹²¹ USGS 2014; Sage-grouse National Technical Team, A Report on National Greater Sage-grouse Conservation Measures (2011); U.S. Fish and Wildlife Service, Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report (2013).

¹²² FEIS, Appendix T at T-425-26 (citing Appendix K, Letter from Utah Governor's Office re Mitigation Compliance for Greater Sage-grouse (July 23, 2020) at 5).

O'Reilly v. United States Army Corps of Eng'rs, 477 F.3d 225, 234 (5th Cir. 2007) (“[T]he EA provides only cursory detail as to what [proposed mitigation] measures are and how they serve to reduce those impacts to a less-than-significant level. Because the feasibility of the mitigation measures is not self-evident, . . . the EA does not provide a rational basis for determining that the Corps has adequately complied with NEPA.”).

In conclusion, the scientific literature is conclusive that sage-grouse are highly sensitive to development. If the rail line is built, the Emma Park population could be severely impacted. The Carbon SGMA population has already been in slow and steady decline for decades, and that trend is continuing, even without the rail line being built. As 8 of the 11 Emma Park leks lie within 3.1 miles of the preferred route,¹²³ construction and train operations would likely lead to abandonment of leks and surrounding nest/brood habitat, population declines, and the distinct possibility of extirpation.

Accordingly, we recommend that (1) the EIS be revised to consider the foregoing issues and to consider a rail line that avoids leks by at least three miles; and (2) if the Whitmore Park alternative is approved as proposed, that the Board prohibit train operations through the Carbon SGMA during critical hours in the mating season (6:00 a.m. to 9:00 a.m.).¹²⁴

I. The FEIS's Analysis of the Project's Impacts on Big Game Populations Is cursory and Incomplete

Big game species, including elk, mule deer, pronghorn, bighorn sheep, and moose, and their habitat would be significantly impacted by the railway. The proposed railway would destroy, fragment, and degrade habitat; disrupt and potentially sever seasonal migrations; and displace big game. However, the EIS lacks sufficient analysis of these impacts.

First, it fails to evaluate baseline population levels, population trends, and habitat needs of each big game species within the project area. Without an adequate baseline analysis for each species, the public cannot understand the importance of the affected habitat to the viability of the big game population, and how severely the railway will affect each big game population. *Great Basin Res. Watch v. BLM*, 844 F.3d 1095, 1101 (9th Cir. 2016) (“Without establishing the baseline conditions which exist . . . before [a project] begins, there is simply no way to determine what effect the [project] will have on the environment and, consequently, no way to comply with NEPA.”); *W. Watersheds Project v. Bernhardt*, No. 1:18-cv-00187-REB, 2021 U.S. Dist. LEXIS 108470, at *43-46 (D. Idaho June 9, 2021) (agreeing with plaintiffs’ claim that environmental assessments for lease sales fell short when it simply “disclose[d] the number or acreage of greater sage-grouse parcels,” but did not provide an evaluation of actual ‘baseline conditions,’ including ‘information on local population trends; habitat function and conditions; the extent of existing leasing and anthropogenic development; or the lease area’s role in population connectivity’”).

Second, the EIS only quantifies direct habitat loss that would result from the project’s construction, to conclude that the effects of rail construction on big game populations would be

¹²³ Center for Biological Diversity, Map of Sage-Grouse Leks within 3.1 Miles of Uinta Basin Railway (2021).

¹²⁴ Patricelli 2013.

“minimal,” because this direct habitat loss “is a very small percent of all available crucial habitat available for the big game populations in the respective management units” FEIS, Appendix T, at T-214. However, the EIS fails to quantify *indirect* habitat loss resulting from habitat fragmentation, *i.e.*, habitat loss resulting from big game avoidance of rail and well infrastructure.¹²⁵ As explained in our previous comments, the development of human infrastructure, including oil and gas extraction, leads to avoidance of prime habitat by ungulates and indirect loss of habitat. For example, [with] “every acre of mule deer habitat taken by roads, well pads and other oil and gas development infrastructure in Wyoming's Green River Basin, an average of 4.6 other acres of available forage is lost, according to . . . University of Wyoming scientists.”¹²⁶ “As a result, the indirect loss of deer forage due to human disturbance far exceeded direct habitat loss from roads, well pads and other oil and gas infrastructure. In fact, across all three study areas, human disturbance resulted in a 10.5 percent decrease in use of available forage; direct habitat loss from construction accounted for just 2.3 percent.”¹²⁷ Attachment B details extensive scientific literature documenting indirect habitat loss from human development, including roads and oil and gas infrastructure. In any event, it is unclear what percentage of habitat loss would be significant or more than “minimal.” The EIS fails to establish any threshold of significance for habitat loss based on scientific evidence or reasoning.

Third, the EIS fails to adequately address the impacts of fencing and barriers to migration posed by the railway, which would undermine wildlife connectivity. “Wildlife connectivity is defined as “the unimpeded movement of species and the flow of natural processes that sustain life on Earth. The ability of animals and plants to move among different areas of habitat to find food, shelter and mates is crucial for healthy ecosystems to function.”¹²⁸ The EIS shows that the proposed rail would disrupt numerous migration corridors for elk mule deer, bighorn sheep, and pronghorn. *See* FEIS, Appendix G at G-7, G-8, G-10, G-11.

As previously discussed in our comments, both the rail itself and fencing would be a significant barrier to big game migration, as well as a danger to big game, especially juveniles. The FEIS states, “the Coalition is not proposing fences unless a landowner agreement requests one.” FEIS at 3.4-31. However, it also suggests that fencing could be allowed along vast stretches of the rail but defers the consideration of where fencing should be avoided until after project approval, by providing the following voluntary measure:

VM-40. The Coalition will work with UDWR, the Ute Indian Tribe, and adjacent landowners to define areas of the right-of-way that can be left without fences to maintain big game migration corridors.

¹²⁵ This unsupported statement also fails to take into account other stressors that could affect the health of big game populations, including noise, train collisions, migration bottlenecks (due to fences or the rail line itself), pollution, and invasive species.

¹²⁶ University of Wyoming, Research details impact of energy development on deer habitat use, ScienceDaily, August 22, 2019, available at www.sciencedaily.com/releases/2019/08/190822165035.htm.

¹²⁷ *Id.*

¹²⁸ Yap, Tiffany et al., California Connections: How Wildlife Connectivity Can Fight Extinction and Protect Public Safety (August 2021) at 3 (“California Connections”).

Given the lack of any guarantees that fencing will be avoided in any particular area (including migration corridors), the FEIS cannot assume that impacts on migratory big game herds will be minor or insignificant. Further, the FEIS does not detail what type of fencing will be used if requested and where fencing could be located along the rail route. Nor does it discuss the effects of fencing on specific migratory herds, including effects on the viability of the specific populations or herd management units affected.

The purported commitment to deal with fencing issues at a later time does not absolve the STB of its duty to consider, analyze, and disclose the effects of fences in the EIS *before* it decides whether or not to approve the rail. “Agencies are required to satisfy the NEPA before committing themselves irretrievably to a given course of action, so that the action can be shaped to account for environmental values.” *Pennaco Energy, Inc. v. United States DOI*, 377 F.3d 1147, 1159 (10th Cir. 2004) (citation omitted). In addition, section II.L discusses the STB’s improper deferral of the formulation of mitigation measures to address big game migration impacts until after the project is approved.

1. Recommendations to Ensure Big Game Movement

The FEIS fails to adequately assess and provide appropriate measures for the movement and connectivity needs of ungulates throughout the project area. Below we recommend a number of mitigation measures that should be incorporated as permit conditions for the rail to protect big game species in the Uinta Basin and connectivity between seasonal habitats. This includes wildlife crossing structures (e.g., underpasses and overpasses), exclusion fences and wildlife-friendly fences, reduced speed limits, and sound signaling and sound barriers.

a. Underpasses and overpasses

In areas along the rail route where the chance of wildlife crossings is high, the STB should require overpasses and underpasses to re-route wildlife to overpasses and underpasses and to prevent wildlife collisions.

“Wildlife connectivity is critical for biodiversity resilience and climate change adaptability. A permeable landscape that has multiple pathways or linkages between habitat patches allows a wide variety of species to adjust to shifts in resource availability.”¹²⁹ Corridor crossing structures can effectively preserve wildlife connectivity and reduce injury and death of big game species. “[C]rossing structures contribute to mitigating both mortality and barrier effects of linear infrastructures, their main role has been focused on barrier effects, ensuring connectivity through the landscapes crossed by railways and roads.”¹³⁰

To ensure the effectiveness of any wildlife crossings, they should be planned in areas with high quality, protected habitat on both sides of the rail infrastructure. “Research shows that

¹²⁹ California Connections at 6.

¹³⁰ Carvalho F., Santos S.M., Mira A., Lourenço R. (2017) Methods to Monitor and Mitigate Wildlife Mortality in Railways, at 31. In: Borda-de-Água L., Barrientos R., Beja P., Pereira H. (eds) *Railway Ecology*. Springer, Cham. https://doi.org/10.1007/978-3-319-57496-7_3, https://link.springer.com/chapter/10.1007/978-3-319-57496-7_3 (“Railway Ecology, Chapter 3”).

if wildlife crossings are designed to accommodate...connectivity, they can be highly effective at improving wildlife connectivity. For example, crossing structures on the Trans-Canada Highway in Banff National Park were found to facilitate sufficient gene flow in both grizzly bear and black bear populations. Pronghorn were shown to gradually acclimate to crossing structures that allow them to migrate safely between their summer and winter ranges in the Greater Yellowstone Ecosystem and Grand Teton National Park.”¹³¹

Chapter 3 of the Federal Highway Administration’s Wildlife Crossing Structure Handbook discusses in detail how to determine where to locate wildlife crossing structures and the necessary tools and resources to identify the most suitable sites for these crossing structures.¹³² Also, the STB must evaluate the optimal types of structures and number of crossings for each wildlife species along an 88-mile railway and should require monitoring and adaptive management to ensure that the crossing structure is successfully implemented. “The Wyoming Department of Transportation recently installed 6 underpasses and 2 overpasses along 20 km of U.S. Highway 191 in western Wyoming, where [they] evaluated species-specific preferences by documenting the number of migratory mule deer and pronghorn that used adjacent overpasses and underpasses for 3 years following construction.”¹³³

Wildlife overpasses “are designed exclusively to meet needs of a wide range of wildlife from small to large.”¹³⁴ “To ensure performance and function, wildlife overpasses should be situated in areas with high landscape permeability, are known wildlife travel corridors and have minimal human disturbance.”¹³⁵ “Large passes mimicking natural habitat are more expensive, but they are also the most effective technique for reducing barrier effects, commonly suitable for most species, including the most demanding ones, like large carnivores and ungulates.”¹³⁶

Underpasses “facilitate animal movement under linear infrastructures, and are generally located where railways cross watercourses and roads.”¹³⁷ “Underpasses can be very large (i.e., viaducts, expanded bridges), where railways cross large watercourses and extensive valleys, in which it is assumed that passage for wildlife is limited...”¹³⁸ “To ensure performance and function, large mammal underpasses should be situated in areas with high landscape permeability and that are known wildlife travel corridors and experience minimal human

¹³¹ California Connections at 8.

¹³² See Federal Highway Administration, Wildlife Crossing Structure Handbook, Publication No. FHWA-CFL/TD-11-003 (March 2011) Chapter 3 –Impact Identification, Remediation, Planning and Placement at 21 (“FHA Handbook”).

¹³³ Hall, Sawyer et al., Pronghorn and mule deer use of underpasses and overpasses along U.S. Highway 191, Wildlife Society Bulletin, May 16, 2016.

¹³⁴ FHA Handbook at 59.

¹³⁵ *Id.* at 115.

¹³⁶ Barrientos R., Borda-de-Água L. (2017) Railways as Barriers for Wildlife: Current Knowledge, at 55. In: Borda-de-Água L., Barrientos R., Beja P., Pereira H. (eds) Railway Ecology. Springer, Cham. https://doi.org/10.1007/978-3-319-57496-7_4, available at https://link.springer.com/chapter/10.1007/978-3-319-57496-7_4 (“Railway Ecology, Chapter 4”).

¹³⁷ Railway Ecology, Chapter 3 at 32.

¹³⁸ *Id.*

disturbance. Underpass should be designed to conform to local topography. Design drainage features so flooding does not occur within the underpass”¹³⁹

Rather than specifically identify the types of crossings that could be used and where they should be placed, the EIS impermissibly defers the formulation of measures to address barriers to big game movement after the project’s approval. *See* section II.L below. The EIS should be revised to evaluate potential mitigation for big game movement barriers. If the STB decides to approve the rail, it should impose conditions requiring proven measures that successfully allow wildlife crossings.

b. Exclusion fences and wildlife friendly fences

If fencing or other barriers are installed they should be reserved for collision hotspots (areas with high incidence risk of wildlife-train collisions) and combined with wildlife passes to maintain railway permeability.¹⁴⁰ “Exclusion fences are currently considered to be the most effective means to restrict wildlife access to railways.”¹⁴¹ Exclusion fences, however, should still have escape routes built in as some animals may be capable of climbing over, jumping over, or digging under them.¹⁴²

To the extent that fencing must still be installed outside collision hotspots, wildlife-friendly fencing should be used. Barbed wire fencing discourages ungulates from using migration paths, whereas wildlife-friendly fencing allows for successful crossings.¹⁴³ Ungulate studies have shown that wildlife friendly fencing increases the probability of a crossing attempt being successful by 33% (across all species that were studied - elk, mule deer, white tail deer, and pronghorn).¹⁴⁴

Wildlife friendly fencing is compatible with pronghorn movement by using a smooth bottom wire 46 cm (18 inches) above the ground.¹⁴⁵ Visible markers also reduce collisions with fences and allow jumpers to better judge height before a jump.¹⁴⁶ Reducing the height of the top wire can also improve crossing rates.¹⁴⁷

In areas where elk are likely to roam, fence specifications should be adjusted. Studies have shown that elk can be encouraged to cross fences by raising the bottom wire further to 53

¹³⁹ FHA Handbook at 137.

¹⁴⁰ Railway Ecology, Chapter 4 at 54.

¹⁴¹ Railway Ecology, Chapter 3 at 34.

¹⁴² *Id.*

¹⁴³ Segar, Josiane & Aidan Keane, Species and demographic responses to wildlife-friendly fencing on ungulate crossing success and behavior, Conservation Science and Practice (Sept. 16, 2020), <https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/csp2.285> (“Segar 2020”).

¹⁴⁴ *Id.*

¹⁴⁵ Utah Division of Wildlife Resources Department of Natural Resources, Utah Pronghorn Statewide Management Plan (No Date) at 5-6; Rocky Mountain Elk Foundation, Mending Fences – Wildlife Friendly Fencing, <https://www.rmef.org/elk-network/mending-fences-wildlife-friendly-fencing/> (“REMF”).

¹⁴⁶ Segar 2020; REMF.

¹⁴⁷ *Id.*

cm (20.87 inches) and lowering the top wire to 96.5 cm (38 inches) and keeping wires tight, which reduces entanglements.¹⁴⁸ Both top and bottom wires should be smooth.¹⁴⁹

The EIS should study appropriate wildlife fencing measures to ensure that big game with migration routes in the study area can cross the railway freely and safely where fencing is used. Wildlife friendly fencing specifications should be included in the rail permit.

c. Reduced train speeds in high-risk collision areas and migration pathways

“Greater [train] speeds are undoubtedly associated with a greater risk of wildlife mortality...on railways.”¹⁵⁰ Reducing the speed of trains would most likely reduce injury and mortality. Slower trains tend to have fewer train and animal collisions.¹⁵¹ Railways can cause more wildlife killings than roads, because trains are heavier and take longer to brake. The STB should require reduced speed limits in areas where wildlife collisions are likely.

Factors that contribute to wildlife collisions include (1) train speed and track curvature, which both limit an animal’s ability to detect oncoming train traffic in time to move out of the way, and (2) environmental conditions such as the presence of water, deep snow, dense shrub, or steep slopes along the tracks, which limit an animal’s ability to quickly escape to safety.¹⁵² Areas that exhibit these risk factors and migration crossings should have reduced speed limits to avoid collisions with big game, and/or speed limits in winter. The EIS should analyze appropriate speed limits for these high-risk areas and the STB should impose speed limits in these areas as permit conditions.

d. Sound signaling and sound barriers

We request that the STB require sound signaling and barriers to keep wildlife away from the rail line in areas that could be collision hotspots.

Sound signaling and barriers can be a promising mitigation measure if they do not greatly limit big game movement across railways.¹⁵³ “Sound signaling consists of warning animals of approaching trains, while sound barriers are mostly intended to keep animals off the railway.”¹⁵⁴ Stationary systems can be installed in crucial habitat areas using a motion activated sensor to frighten wildlife from the railway.¹⁵⁵ In addition, electronic systems that emit ultrasonic or

¹⁴⁸ *Id.*; REMF.

¹⁴⁹ *Id.*

¹⁵⁰ *Id.* at 36.

¹⁵¹ *Id.*

¹⁵² Brown, Michael, U of A researchers pinpoint where wildlife are most likely to be killed by trains, Folio (Feb. 11, 2021), <https://www.ualberta.ca/folio/2021/02/u-of-a-researchers-pinpoint-where-wildlife-are-most-likely-to-be-killed-by-trains.html>; Study finds train speed a top factor in wildlife deaths in Banff, Yoho national parks, The Canadian Press (Nov. 15, 2020), <https://www.vicnews.com/news/study-finds-train-speed-a-top-factor-in-wildlife-deaths-in-banff-yoho-national-parks/>.

¹⁵³ Railway Ecology, Chapter 3 at 34-35.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

audible sounds depending on the targeted species can be attached to trains.¹⁵⁶ “Babińska-Werka et al. (2015) studied the effectiveness of an acoustic wildlife warning device in reducing casualties along railways. The sound sequence in their devices combined: (1) the alarm call of the jay *Garrulus glandarius*; (2) the sound of a frightened brown hare *Lepus europaeus*; (3) a dog *Canis familiaris* is growling and barking; (4) a wolf *Canis lupus* howling; (5) squeal of a wild boar *Sus scrofa*; and (6) warning sounds of roe deer *Capreolus capreolus*. These natural warning calls should promote the alerted behavior of wild animals thus increasing their escape time from oncoming trains.”¹⁵⁷

In sum, the EIS is deficient because it fails to take a hard look at the project’s big game impacts and consider specific measures for the protection of big game.

J. The EIS’s Analysis of Impacts on Listed and Sensitive Plant Species Is Deficient

According to the EIS, construction of the preferred alternative would destroy hundreds of acres of “occupied habitat” for four plant species listed as threatened or endangered under the Endangered Species Act (ESA), including Barneby ridge-cress, Pariette cactus, Uinta Basin hookless cactus, and Ute’s ladies-tresses. FEIS at 3.4-45 to 3.4-46. In addition, the Biological Opinion (BiOp) for the project finds that 20 percent of the entire range-wide population would be harmed by the project, which is likely an underestimate, given that the EIS and BiOp underestimate the distance within which listed plants would be harmed by rail construction activities.

The EIS, however, fails to conduct baseline analysis of existing populations in the project area, or analyze the potential impact on existing populations for these extremely rare plants. The EIS also proposes inadequate mitigation to avoid harm to listed plants and vegetation generally.

1. Occurrence of Listed Plants in the Project Area Must Be Documented

The EIS notes that “field evaluations” were performed to document the existence of “suitable habitat” for the four ESA-listed plant species in the project area.¹⁵⁸ However it does not address whether, where, and to what extent the listed plants occur in the project area. It appears that this information would not be collected until *after* the project is approved. The Biological Opinion proposes conducting preconstruction surveys *after* final engineering of the approved alternative is completed:

MM-1: The Coalition shall conduct preconstruction surveys of federally listed plants (Barneby ridge-cress, Pariette cactus, Uinta Basin hookless cactus, and Ute ladies’-tresses) along the Action Alternative licensed by the Board and *after final engineering of that Action Alternative is complete*. The Coalition shall design and

¹⁵⁶ *Id.*

¹⁵⁷ *Id.* at 35.

¹⁵⁸ Barneby Ridgecress has been documented near the rail route, according to data from Consortium of Intermountain Herbaria. 2019. [accessed June 22, 2019], <https://www.intermountainbiota.org/portal/>. Center for Biological Diversity, Map of Barneby Ridgecress Occurrences and Plant Collections (2019).

implement preconstruction surveys in consultation with OEA and USFWS and shall follow the procedures that OEA and USFWS approve.

U.S. Fish and Wildlife Service, Biological Opinion for Uinta Basin Railway (Sept. 20, 2021) (“BiOp”) (emphasis added).¹⁵⁹

But baseline conditions, including population occurrences and habitat use, should *inform* the selection of the action alternative and final engineering plans and therefore must be disclosed in the EIS. That the EIS assumes that all suitable habitat is “occupied habitat” does not inform the public of the project’s actual impacts. Incidentally, the EIS’s response to comments suggests that it agrees that at the very least, pre-construction surveys should inform the final design of the railway, but it incorrectly states that “Because preconstruction surveys would be conducted *during* the final engineering and design phase, the surveys would account for more detailed and accurate engineering information than would be available during the EIS phase and would allow the Coalition to design the proposed rail line to avoid and minimize impacts on plants to the maximum extent possible.” FEIS, Appendix T at T-199. This description is not consistent with MM-1’s requirements quoted above, which requires that the pre-construction surveys occur “after final engineering of the [selected] Action Alternative is complete.”

In *Northern Plains Resource Council v. Surface Transportation Board*—a NEPA challenge to the STB’s approval of a railroad in Montana—the EIS merely assessed “the number of acres of *potential* sage grouse habitat within the 200-foot railroad right of way” rather than documenting the extent of sage-grouse habitat use and activity throughout the entire area that sage-grouse could be harmed. *See N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1084 (9th Cir. 2011) (emphasis added). As a condition of project approval, the STB adopted a mitigation measure requiring “pre-construction surveys . . . to determine the extent of sage grouse habitats and activity in the project area.” *Id.* The Ninth Circuit held that the failure to gather this baseline data prior to approving the railroad fell short of NEPA’s “hard look” requirement, because “without this [baseline] data, an agency cannot carefully consider information about significant environment impacts.” *Id.* at 1085. Likewise, the court held unlawful the STB’s postponement of plant field surveys until after project approval. *Id.* at 1084-85.

Merely documenting “suitable habitat” in the EIS is insufficient, even if the EIS assumes it is “occupied.” The EIS must disclose whether and where *actual* occupied habitat exists within the project area, and the total number of plant occurrences and health of these populations. Suitable habitat is not an adequate proxy. Suitable habitat could contain a species’ entire population or no individual plant occurrences. The failure to disclose this information inhibits informed decisionmaking. For example, although the Indian Canyon alternative would impact less “suitable habitat” than the Whitmore Park alternative, it could be that this alternative would affect more occupied habitat than the Whitmore Park alternative. Such a factor might weigh

¹⁵⁹ Available at: https://icfbimetrics.blob.core.windows.net/uinta-basin/20_F_0871_1_UBRR_BO_20210920_final_signed.pdf.

against selecting the Whitmore Park alternative.¹⁶⁰ Documenting whether plant populations occur within or without proposed areas of disturbance and how far from these areas is important to assessing the extent to which the project would harm *existing* populations and the severity of these effects. See *Idaho Conserv'n. League v. U.S. Forest Serv.*, No. 1:16-CV-0025-EJL, 2016 U.S. Dist. LEXIS 90371, at *29, *25 (D. Idaho July 11, 2016) (“Without accurate baseline data before the Project begins, it is impossible to know whether and to what extent the Project’s activities will impact [rare bitterroot plant],” including “how many plants will be destroyed” or “how much habitat fragmentation will occur”).

The STB must therefore conduct field surveys of the four listed plant species and disclose the project area’s baseline population levels or plant occurrences in the EIS. The timing of these surveys is critically important.¹⁶¹ For example, for the ESA-listed Barneby ridge-cress (*Lepidium barnebyanum*), the Fish and Wildlife Services protocol calls for May-June surveys for that species, when it is flowering.¹⁶² By late May to early June the flower is done and the plant is virtually impossible to detect.

Surveys should also be conducted over at least two consecutive seasons given extreme drought conditions. 2020 was a very bad drought year in Utah in general. Many plants growing in xeric places are “boom and bust” species with significant population declines during drought.

Field surveys must also be conducted along the entire route. According to FWS, Barneby ridgecress “habitat occurs at an elevation of 6,200 to 6,500 feet on poorly developed soils derived from marly shales in a zone of interbedding geologic strata from the Uinta and Green River Formations.”¹⁶³ Thus, the occurrence of the species could span the entire rail length.

2. Proposed Buffer and Disturbance Zones to Protect Listed Plants Are Inadequate

For all four listed plant species the mitigation strategy is described as: “The Coalition shall conduct ground disturbing activities that require removal of vegetation to be located a minimum distance of 300 feet from individual plants and/or populations, to the extent

¹⁶⁰ The BiOp now provides actual “occupied habitat” acreages and individual plant counts of Barneby ridge-cress based on field surveys for the Whitmore Park alternative, although these acreages and plant counts are incomplete. BiOp at 27. Still, the BiOp does not provide this information for the Indian Canyon and Wells Draw alternatives, precluding a comparison among all alternatives

¹⁶¹ If the SCIC conducted plant surveys at the same time it conducted suitable habitat “field evaluations,” these searches occurred outside the proper survey window and were flawed because they could not have detected the listed species. See FEIS, Appendix I, Biological Assessment at 4-7. (field evaluation for Barneby ridge-cress and Ute ladies’ tresses occurred on July 17, 2020 and June 22-July 1, 2020, respectively).

¹⁶² U.S. Fish and Wildlife Service, Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants (Aug. 31, 2011) at p. 8; U.S. Fish and Wildlife Service, Utah Field Office Guidelines for Inventory and Monitoring PowerPoint (no date), <http://www.fws.gov/utahfieldoffice/surveyor.php>.

¹⁶³ U.S. Fish and Wildlife Service, Barneby ridge-cress (*Lepidium barnebyanum*), <https://ecos.fws.gov/ecp/species/3736> (last accessed Jan. 26, 2021).

practicable.” FEIS, Appendix I, Biological Assessment at 7-2, 7-4, (measures BRC-10, ULT-12, SCL-1).

As an initial matter, that buffer zones should be used “to the extent practicable” does not provide adequate assurance that the listed plants will be sufficiently buffered. Under what conditions would buffering be impracticable and who would make this determination? What would happen if the plants are located in the right of way?

In addition, best practice requires that the appropriate buffer/disturbance zone be tailored to each plant species. Using 300 feet for all species is not supported by science. A Red Butte Garden Conservation Department study conducted in 2020 relating to *Penstemon grahamii* looking at roads and pollinator distance recommendations, identified 200 meters (656 feet) as the needed buffer for that species.¹⁶⁴ Similarly, for a plant similar to Barneby ridgecress that occurs solely in Colorado, *Physaria rollinsii*, best management practices have established 200-meter buffers for that species.¹⁶⁵

Colorado has developed different distances for different species but uses a generic recommendation that is much more generous and happens to also be 200 meters:

The Best Management Practices are recommendations for voluntary use during the project planning, pre-ground disturbance field work, project implementation, revegetation, and post-project monitoring phases. Examples of specific recommendations include: gather mapped location information from CNHP for plants of concern, conduct field surveys to map plants prior to disturbance, and have an *avoidance buffer of 656 feet (200 meters)*.¹⁶⁶

The 300-foot buffer zones referred to in the EIS are inadequate for all referenced plant species. Baseline surveys should use a minimum of 200 meters absent specific studies indicating a different buffer zone.

Plant species potentially have different buffer zones requirements because of their reproductive biology. Rare plant species generally require cross pollination and typically (although certainly not always) by bees. Thus, the appropriate buffer zone depends on the pollinator size and their flying distances as well as where they live in proximity to the plant in question. Some plants can only be pollinated by pollinators/bees of a certain size. Some require large pollinators that have more strength (like bumblebees i.e. *Bombus*) or that are a special size that can effectively bring about pollination, or in some cases that are relatively small. First you

¹⁶⁴ Barlow, Susan E. & Bruce M. Pavlik, Red Butte Garden and Arboretum, University of Utah, Understanding the Relationships Between Roads, Pollinator Visitation and Reproductive Output of White River Penstemon (*Penstemon albifluvis*) and Graham’s Penstemon (*P. grahamii*), Final Report (Dec. 2020).

¹⁶⁵ Panjabi, S.S. & G. Smith, Recommended best management practices for Rollins’ twinpod (*Physaria rollinsii*): practices developed to reduce the impacts of road maintenance activities to plants of concern. Colorado Natural Heritage Program (2014).

¹⁶⁶ Neely, B. et al., Colorado Rare Plant Conservation Strategy, Colorado Rare Plant Conservation Initiative, The Nature Conservancy (2009) at p. 39.

must know what the effective pollinators (not just floral visitors) are, to make that determination. To our knowledge no pollinator research has occurred with respect to Barneby ridge-cress (*Lepidium barnebyanum*).

The typical homing and forage distances of bees varies greatly based on the size of the bee. For smaller to mid-sized bees, it can be 0.1 miles to 2.5 miles roughly. For larger bees it can be over 2.5 miles up to 5.5 miles or even much more. The pollinators typically don't live where the plants grow. So the larger average sizes of the effective pollinators should be correlated to larger buffer sizes around the plants, to allow them to travel between the flowering plant and their home (typically in the ground, sometimes in wood logs, etc.):

The size of the buffer zone that should be left around rare plant occurrences that rely exclusively on insect pollination depends on how far bees fly to obtain their resources (Tepedino 1996). For insecticide spraying, Tepedino (1996) recommended a provisional, best guess buffer zone of 4.8 kilometers (km) (3 miles (mi)) around rare plant occurrences. Smaller buffers of 200 m (656 ft) or less are employed for most oil and gas development and other activities subject to Section 7 consultation because there is no available information regarding the effects of these activities on pollinators.¹⁶⁷

Another reason for varied buffer zones relates to the very different types of habitat that the plants may grow in. For example, wetland plants need buffer strips in adjoining upland/dry areas in addition to protection of all of their wetland habitat in view of the fact the wetland habitat types are the most 'threatened' types of habitat and in light of climate change and drought (like we find ourselves in now).

Wetland plants live in a very fragile association that can be easily disrupted when their habitats are infringed upon. And because they are flat, they tend to be built over or otherwise easily impacted. Thus, Ute's ladies'-tresses habitat shouldn't be infringed on at all and wetland/wet meadow delineations need to be strictly observed.

Larger buffer zones may also be needed to protect plants from vehicle pollution and from roads and/or the rail line.

In Colorado, Fish and Wildlife Service's recommendations vary from 250 meters to up to 1,000 meters depending on the pollinator. For two species in the same plant family as *Lepidium barnebyanum* (two species of *Physaria*, also in the Mustard family), the recommendation is 600 meters.¹⁶⁸ For Ute's ladies'-tresses, it is 800 meters.¹⁶⁹ And the recommendation for Colorado hookless cactus, a close relative of the Uinta Basin hookless cactus, is 500 meters.¹⁷⁰

¹⁶⁷ U.S. Fish and Wildlife Service, Dudley Bluffs Bladderpod (*Lesquerella congesta* or *Physaria congesta*) and Dudley Bluffs Twinpod (*Physaria obcordata*) 5-Year Review Summary and Evaluation, Western Colorado Field Office Grand Junction, Colorado (June 2008) at p. 8.

¹⁶⁸ U.S. Fish and Wildlife Western Ecological Services Offices, Draft Guidance for Section 7 Consultations that Include Plants within the State of Colorado (Mar. 6, 2013) at 15.

¹⁶⁹ *Id.* at 16.

¹⁷⁰ *Id.* at 15.

However, we are unaware of any reproductive biology work that has been done for *Lepidium barnebyanum*. Without this analysis proper buffer zones for the impacts that would be caused by the proposed railway cannot be determined, and thus the project should be deferred until that work can be done.

In any event, the EIS must forthrightly admit that information regarding the species' pollinators and the distance at which its pollinators would be harmed by development activities is unavailable. NEPA regulations require that when information relevant to evaluating reasonably foreseeable significant adverse effects is "incomplete or unavailable," the agency "shall always make clear that such information is lacking." 40 C.F.R. § 1502.22. Further, "[i]f the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives, and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the [EIS]." *Id.* § 1502.22(a). Here, both the Whitmore Park and Indian Canyon alternatives contain habitat for Barneby Ridge-cress but the Wells Draw alternative does not. The missing information is essential to understanding how severely each alternative could cause harm to this endangered plant species, but the OEA has not made any determination that the costs of obtaining the missing information are exorbitant, as required by 40 C.F.R. § 1502.22(a), to exclude it from the EIS's analysis. Because the OEA has not determined that the costs of obtaining this information are exorbitant or "the means to obtain it are not known," OEA must include within the EIS:

- (1) A statement that such information is incomplete or unavailable;
- (2) A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
- (3) A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
- (4) The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

40 C.F.R. § 1502.22(c). Because OEA has failed to follow these procedures, the EIS is deficient.

3. The SCIC's Revegetation Plan Is Inadequate

The EIS identifies 1,430.5 acres of vegetation that will be "permanently impacted" by railway construction and 3,087.9 acres that will be "temporarily impacted" under the preferred Whitmore Park, alternative. FEIS at 3.4-45-46. The reality is that some "temporary" impacts could last for decades. Some temporary impacts could even be permanent—for example, if a bulldozer were to scrape off the upper soil horizons down to subsurface horizons where there are no soil nutrients or mycorrhizae. The EIS should specifically identify how long "temporary" effects would last for the specific habitats at issue here. The duration could vary among different

areas, depending on the vegetation community, soil type, or disturbance level.

The EIS states that “temporary footprints would be reclaimed and revegetated” but revegetation efforts without adequate planning and follow-up are not likely to be successful. FEIS, Appendix H at 6. Further, without a revegetation plan based on best practices, the effort to revegetate the “temporarily impacted” areas will likely fail. The description of the Coalition’s voluntary mitigation plan is extremely vague,¹⁷¹ and when combined with acknowledgement of the potential spread of invasive species through construction and operation is cause for concern. See FEIS at 3.4-40. Revegetation plans identifying concrete measures and specific success criteria should be included for public review and comment in the EIS.

Apparently in response to these concerns expressed in our comments on the draft EIS, the final EIS now proposes the following additional measure:

BIO-MM-17. Prior to any project-related construction, the Coalition shall consult with the Ute Indian Tribe, USFWS, and UDWR to develop and implement a reclamation and revegetation plan for areas that would be temporarily disturbed by construction activities. For any construction activities on lands managed by federal, state, or tribal agencies, the Coalition shall seek input on the plan from the appropriate agency. The reclamation and revegetation plan shall incorporate the reasonable requirements and recommendations of those agencies and shall clearly identify and address 1) the areas to be reclaimed and revegetated; 2) the proposed reclamation and revegetation materials, methods, and timing; and 3) the proposed monitoring schedule and contingency plans.

The EIS proposes a similar approach to deal with invasive species and weeds:

BIO-MM-15. Prior to any project-related construction, the Coalition shall consult with the appropriate County Weed Boards/Departments and the Ute Indian Tribe to develop and implement a plan to address the spread and control of nonnative invasive plants during project-related construction. For any construction activities on lands managed by federal, state, or tribal agencies, the Coalition shall seek input on the plan from the appropriate land management agency. The plan shall incorporate the reasonable requirements and recommendations of those agencies and shall identify and address 1) planned seed mixes, 2) weed prevention and eradication procedures, 3) equipment cleaning protocols, 4) revegetation methods, 5) protocols for monitoring revegetation, and 6) ongoing inspection of the rail right-of-way for noxious weeds and invasive species during rail operations.

¹⁷¹ See FEIS at 4-5 (“VM-22: The Coalition will revegetate disturbed areas, where practical and in consultation with the Ute Indian Tribe as applicable, when construction is completed. The goal of reclamation will be the rapid and permanent re-establishment of native groundcover on disturbed areas to prevent soil erosion, where feasible. If weather or seasonal conditions prevent vegetation from being quickly re-established, the Coalition will use measures such as mulching, erosion-control blankets, or dust-control palliatives to prevent erosion until vegetative cover is established. The Coalition will monitor reclaimed areas for 3 years. For areas where efforts to establish vegetative cover have been unsuccessful after 1 year, the Coalition will reseed annually for up to 3 years as needed.”).

It is unclear whether more stringent recommendations by the agencies consulted would preempt measures in the Coalition's proposed voluntary mitigation (such as the SCIC's stated plan to monitor revegetated areas for 3 years). And, again, neither BIO-MM-17 nor BIO-MM-15 include specific performance targets that the revegetation plans must achieve or even general guidelines as to seed mixes, revegetation methods, or weed control measures.

A number of best practices should be included in each revegetation plan, as more fully explained in Attachment C.¹⁷² For example, planning and collection of seeds in advance of soil disturbance should occur. The planting palette should include seeds appropriate to the environment and climate conditions. Only local native plant propagules should be used and the plantings/seedlings should be administered in an ecologically successional way – introducing early successional species first, followed sequentially over a multiple year process with mid-successional species and finally late-successional species. A frequent weeding schedule particularly during the growing season (removal before seeds are produced is best) should be implemented, particularly in the first three years to reduce non-native and invasive species from proliferating, which would doom revegetation efforts.

Revegetation plans should include short-term and frequent “establishment” criteria, so that problems can be identified and remedied early (e.g., protection from herbivory, adequate soil moisture, stopping weed invasions before they start). Long-term success criteria should also be included (e.g., monitoring shows that the revegetation site is statistically similar to a reference (undisturbed) site by looking at cover, density, diversity). The project developer should be held to all revegetation plan requirements and success criteria. Otherwise, revegetation is unlikely to be successfully implemented. The EIS does not specify whether and how the STB would monitor compliance.

Proposed revegetation periods and the proposed three-year monitoring period in the Coalition's mitigation plan falls short of what's needed to be successful, as more fully explained in Attachment C.¹⁷³ Most agencies require five years of monitoring with the last two years not having any “interventions” (no additional irrigation, weed removal, augmentation of revegetation). If additional remediation/revegetation is required, then the clock should restart in those areas with five more years of monitoring. For example, if most of the revegetation is meeting success criteria, but one area is not meeting the success criteria, then additional revegetation augmentation should be done in the “unsuccessful” area and the monitoring should continue for five years after the augmentation, which is typically standard.

The better practice, however, would be to require long-term monitoring up to ten years (with a reduced monitoring schedule in years 6-10 – once every 2 years) until the success criteria are met. Because not much data exists on the long-term outcomes of revegetation, long-term monitoring would be advisable.

¹⁷² See Attachment C, Center for Biological Diversity, Recommendations of Plant Biologist Ilene Anderson (Feb. 5, 2021).

¹⁷³ *Id.*

Finally, the EIS asserts that compliance with conditions required by the Biological Opinion for the project, which has not been released with the final EIS, would “minimize” the Project’s impacts. FEIS at 3.4-42. The EIS must specify the specific measures under consideration by Fish and Wildlife Service and allow the public the opportunity to comment on these measures before the STB adopts the final EIS.

K. The EIS’s Range of Alternatives Is Inadequate

The EIS does not analyze an adequate range of alternatives, in violation of NEPA. The alternatives analysis is the “heart” of the EIS. 40 C.F.R. § 1502.14. Agencies must “[r]igorously explore and objectively evaluate all reasonable alternatives,” *id.* § 1502.14(a), including alternatives that “would avoid or minimize adverse impacts.” 40 C.F.R. § 1502.1. The EIS must “[d]evote substantial treatment to each alternative considered in detail . . . so that reviewers may evaluate their comparative merits.” *Id.* § 1502.14(b). Without such “substantive” analysis, “the ability of an EIS to inform agency deliberation and facilitate public involvement would be greatly degraded.” *WildEarth Guardians*, 870 F.3d at 1227.

The EIS must “analyze[] sufficient alternatives to allow [the agency] to take a hard look at the available options.” *Richardson*, 565 F.3d at 709. It must analyze a reasonable range of alternatives and “provide legitimate consideration to alternatives that fall between the obvious extremes.” *See High Country Conserv’n Advocates v. U.S. Forest Serv.* (“HCCA”), 951 F.3d 1217, 1224 (10th Cir. 2020); *Richardson*, 565 F.3d at 711 n.32 (same). An alternative’s reasonableness turns on whether it (1) “falls within the agency’s statutory mandate” and (2) meets the agency’s “objectives for a particular project.” *Id.* at 709. In addition, an alternative need not be considered unless it is “significantly distinguishable” from those actually considered, *see id.* at 708–09, but “[c]onsideration of alternatives which lead to similar results is not sufficient under NEPA . . .” *Citizens for Envtl. Quality v. United States*, 731 F. Supp. 970, 989 (D. Colo. 1989). In any case, “[w]here the agency omits an alternative but fails to explain why that alternative is not reasonable, the EIS is inadequate.” *HCCA*, 951 F.3d at 1224–25; *see also* 40 C.F.R. § 1502.14(a).

All alternatives analyzed in the EIS result in the destruction of wetland habitat near and along the Price River¹⁷⁴ and all alternatives come within less than one mile of Greater sage-grouse leks or mating grounds. These areas occur within priority habitat management areas (PHMA) for sage-grouse. The wetlands would be used by sage-grouse, including wet meadows and emergent marsh edges for brood rearing; shrub-scrub areas as cover for sage-grouse chicks and subadults; and ephemeral, intermittent, and perennial streams (so long as they are not near riparian areas) for foraging during the spring and summer.

The EIS should consider more protective alternatives of these important and highly sensitive resources, including an alternative that completely avoids wetlands along the Price River and an alternative that does not come within at least three miles of the leks in Emma Park. *Nat. Res. Def. Council v. U.S. Forest Serv.*, 421 F.3d 797, 813 (9th Cir. 2005) (holding that the Forest Service unlawfully failed to consider an alternative to a timber program that would have provided greater protection for old-growth habitat); *N.M. ex rel. Richardson v. BLM*, 565 F.3d

¹⁷⁴ Center for Biological Diversity, Aquatic Resources Map (2021).

683, 711 (10th Cir. 2009) (faulting EIS for failing to consider alternative that would have closed sensitive area to oil and gas leasing).

The EIS's response to comments only cursorily rejects the proposed alternative to avoid sage-grouse leks without reasoned explanation or evidentiary support that such an alternative would be infeasible. *Cf.* FEIS, Appendix T at T-213. And it fails to provide any explanation whatsoever as to why an alternative to avoid sensitive wetlands is not feasible.

In addition, conservation groups suggested a "solutionary alternative" or electrified rail in their scoping comments, which the draft EIS failed to address. While the final EIS's response to comments now rejects this alternative on the basis that it would be financially infeasible, the EIS's assertions are conclusory and unsupported by evidence, such as estimates of the upfront capital costs of electrification or the long-term costs savings that could result from improved reliability, improved energy efficiency, and lower operating costs. "[T]he fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project." *Sierra Club v. Tahoe Reg'l Planning Agency*, 916 F. Supp. 2d 1098, 1124 (E.D. Cal. 2013) (cleaned up) (invalidating agency's finding as to alternative's infeasibility under NEPA-analogous statute).

The agency may not accept the project proponents' unsubstantiated claims that electrified rail would not be feasible without independently verifying those claims. 40 C.F.R. § 1506.5 ("The agency shall independently evaluate the information submitted and shall be responsible for its accuracy."); *Utahns v. United States DOT*, 305 F.3d 1152, 1165 (10th Cir. 2002) (faulting agency for rejecting alternative without verifying project proponent's costs estimates); *cf.* *Sierra Club*, 916 F. Supp. at 1125 ("The agency cannot simply rely on evidence proffered by the project's proponent regarding infeasibility; instead, the agency "'must independently participate, review, analyze and discuss the alternatives in good faith.'" (citation omitted). "[E]lectric rail consistently comes in with a lower total cost of operation over its life" than diesel-powered rail.¹⁷⁵ But the EIS makes no effort to balance these cost savings against the upfront capital costs. It is also unclear whether the agency considered distributed solar or wind to power the rail and the costs of distributed energy instead of power lines. Such technologies for powering rail are available.¹⁷⁶

¹⁷⁵ Field, Kyle, Solutionary Rail Proposes a Single Infrastructure Upgrade that Solves Two Chronic Problems, *Clean Technica* (Sept. 16, 2017), <https://cleantechnica.com/2017/09/16/solutionary-rail-proposes-a-single-infrastructure-upgrade-that-solves-2-chronic-problems/>.

¹⁷⁶ Turner, Julian, Shining Example: Will Solar PV Power the Railways of the Future, *Future Rail*, https://rail.nridigital.com/future_rail_apr19/shining_example_will_solar_pv_power_the_railways_of_the_future; Berti, Adele, Solar-powered trains: the future of rail?, *Rail Technology* (Sept. 12, 2019), <https://www.railway-technology.com/features/solar-powered-trains/>; Murray, Lee & Nathaniel Bottrell, Riding Sunbeams, Powering our railways with solar PV (December 2017), https://static1.squarespace.com/static/5c7014458dfc8ca9655f10c5/t/5c73e0bb7817f79f73b5c0ea/1551098050918/RidingSunbeams_Report_final.pdf; Murray, Lee & Ollie Pendered, Riding Sunbeams: Before Dawn, Progress Report (February 2019), https://static1.squarespace.com/static/5c7014458dfc8ca9655f10c5/t/5c73e469eb39313412e3a3b4/1551098991379/RS_BeforeDawn_Report_web.pdf.

Even if electrified rail is more expensive, the upfront capital costs alone should not preclude consideration of this alternative. In light of the serious climate and public health impacts from diesel emissions, the benefits of electrification could be significant.

The EIS should be revised to consider an alternative with a 3.1 mile-setback from sage-grouse leks in Emma Park, avoidance of wetlands around the Price River, and electrified rail operations.

L. The EIS Fails to Specify and Analyze Mitigation

The EIS fails to specify mitigation measures with respect to numerous impacts. Instead, the EIS merely provides that the SCIC in consultation with other entities or individuals will devise mitigation plans at some future unspecified time without public review of those plans. The EIS takes this approach with respect to many resources, including Greater sage-grouse, migratory big game species, vegetation, rail and public safety, invasive species control, water resources, and noise. This deprives the public the opportunity to comment on the potential mitigation plans and fails to inform the public of the potential severity and unavoidability of the project's impacts, in violation of NEPA.

In *Robertson v. Methow Valley Citizens Council*, the Supreme Court discussed the importance of disclosing possible mitigation measures in an EIS:

One important ingredient of an EIS is the discussion of steps that can be taken to mitigate adverse environmental consequences. The requirement that an EIS contain a detailed discussion of possible mitigation measures flows both from the language of the Act and, more expressly, from CEQ's implementing regulations. Implicit in NEPA's demand that an agency prepare a detailed statement on "any adverse environmental effects which cannot be avoided should the proposal be implemented," 42 U.S.C. § 4332(C)(ii), is an understanding that the EIS will discuss the extent to which adverse effects can be avoided.

Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 351-52 (1989) (citation omitted).

Accordingly, the EIS must include a discussion of possible mitigation measures to avoid adverse environmental impacts. *See* 42 U.S.C. § 4332(C)(ii); 40 C.F.R. §§ 1502.14(f), 1502.16(h), 1508.14, 1508.25(b)(3); *see also* 40 C.F.R. § 1505.2(c) (record of decision must "[s]tate whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not"). Such discussion must be "reasonably complete" in order to "properly evaluate the severity of the adverse effects" of a proposed project prior to making a final decision. *Robertson*, 490 U.S. at 352. "A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1380 (9th Cir. 1998). Rather, the EIS should provide "[d]etailed quantitative assessments of possible mitigation measures" for a site-specific proposal, unless additional environmental assessments under NEPA will be conducted at the time of later site-specific approvals (also known as "tiering"). *See San Juan Citizens All. v. Stiles*, 654 F.3d 1038, 1054 (10th Cir. 2011). (Here, the EIS does not mention plans for later site-specific environmental assessments under NEPA.) The mere

commitment to devise mitigation plans in the future does not inform the public as to “possible mitigation measures,” much less provide a quantitative assessment of those measures.

The EIS must be revised to specify mitigation measures and analyze their effectiveness in reducing impacts. For example, to mitigate damage to vegetation, Greater sage-grouse habitat, and big game habitat, the FEIS requires the formulation of a “reclamation and revegetation plan,” but fails to identify the specific potential measures to be used, analyze their effectiveness, or set forth any minimum performance standard:

BIO-MM-17. Prior to any project-related construction, the Coalition shall consult with the Ute Indian Tribe, USFWS, and UDWR to develop and implement a reclamation and revegetation plan for areas that would be temporarily disturbed by construction activities. For any construction activities on lands managed by federal, state, or tribal agencies, the Coalition shall seek input on the plan from the appropriate agency. The reclamation and revegetation plan shall incorporate the reasonable requirements and recommendations of those agencies and shall clearly identify and address 1) the areas to be reclaimed and revegetated; 2) the proposed reclamation and revegetation materials, methods, and timing; and 3) the proposed monitoring schedule and contingency plans.

FEIS at 4-13 – 4-14.

Another measure to mitigate impacts on big game migration corridors requires a “big game movement corridor crossing plan,” but does not define the plan’s specific objectives or potential measures to allow movement of big game, where crossings would be located, or where fencing should be restricted:

BIO-MM-19. The Coalition shall consult with the Ute Indian Tribe, UDWR, OEA, and appropriate land management agencies to develop and implement a big game movement corridor crossing plan. The plan shall address the need for dedicated big game crossings of the rail line, the need to limit fencing (if applicable), and the need for additional data collection. The plan shall use the latest available big game movement corridor data from UDWR and the Ute Indian Tribe.

FEIS at 4-14.

Without any minimum performance standard, or even a listing of potential measures the plan could rely on or a description of their effectiveness, there is no rational basis for the OEA or STB to conclude that “if this mitigation is implemented . . . impacts on big game movement corridors would not be significant,” and would be “minor.” FEIS at S-10 - S11. In other words, the public cannot understand how severely the STB’s proposed authorization of the rail will affect big game species or whether these impacts are avoidable, in violation of NEPA. 40 C.F.R. § 1502.16(a)(1) (requiring agency to consider the “environmental impacts of the proposed action . . . and the significance of those impacts,” and “any adverse environmental effects that cannot be avoided”).

To mitigate impacts on Greater sage-grouse, the EIS sets forth the following measure to restrict construction during the nesting and mating season:

BIO-MM-20. The Coalition shall not construct in the Carbon SGMA during the nesting and breeding season to be determined in consultation with OEA, UDWR, and other appropriate land management agencies.

FEIS at 4-14. By failing to identify the specific dates that construction will be prohibited, the public cannot understand whether the timing limitations would effectively minimize disruption to sage-grouse.

With respect to geological hazards, the lack of details as to the types of measures that the Coalition may rely on to reduce landslide, seismic, and other risks, and the failure to discuss their effectiveness precludes the public from understanding whether mitigation is feasible and whether the Coalition can engineer its way out of a host of geological risks without excessive cost.

For example, GEO-MM-2 provides that to reduce mass movement or slumping risks, “the Coalition shall implement engineering controls to avoid mass movement or slumping. If mass movement or slumping of soils or bedrock occurs during project-related construction, the Coalition shall promptly institute appropriate remedial actions.” FEIS at 4-14. But is unclear whether effective engineering controls or remedial actions are available. According to one expert, to control landslides, “[t]here are a number of potential engineering ‘fixes,’ but many of these are expensive and not always effective, especially for loose debris”¹⁷⁷ Further, it is unclear whether such controls could result in other environmental impacts (such as effects on stream flow or vegetation). GEO-MM-2 also provides that “The Coalition shall periodically monitor the railbed during operations to identify changes related to use, cumulative effects of weight and vibration, and changes in underlying soils to prevent deterioration from settling, deformation, collapse, and erosion.” FEIS at 4-14. It is unclear how often these inspections should occur, in which specific areas, and what actions the Coalition should take if any abnormal conditions are detected.

GEO-MM-3, GEO-MM-4, GEO-MM-5, GEO-MM-7, which deal with mitigation for corrosive soils, unmapped abandoned mines, seismically induced liquefaction, and avalanche risks, respectively, raise similar questions. The EIS fails to discuss the potential engineering solutions to these problems and how likely they are to be effective. Further, it is unclear whether engineered soils to replace corrosive soils or soils at risk of liquefaction would present other problems, such as erosion, sedimentation, or obstacles to native plant restoration.

Other mitigation measures that lack sufficient analysis and specificity include: VM-7 (spill control plan), VM-11 (emergency response plan), VM-21 (stormwater pollution prevention plan), VM-22 (vegetation), VM-27 (wetland compensatory mitigation plan), VM-35 (sage-grouse Mitigation Agreement), VM-38 (noxious weed control plan), VM-40 (fencing plan to mitigate big game impacts), BIO-MM-7 (wildfire management plan), BIO-MM-15 (weed control plan), BIO-MM-14 (vegetation debris removal plan), NV-MM-1 (construction noise control plan).

¹⁷⁷ Torres, Jordana, 3Qs: An engineer’s breakdown of a landslide, News @Northeastern, available at <https://news.northeastern.edu/2014/03/28/3qs-landslide/>.

In addition, in various places the EIS concludes that impacts “would not be significant” or would be “minor” (e.g., with respect to Greater sage-grouse, migratory big game species, rail safety risks, invasive species control) on the basis that unspecified mitigation measures will be adopted. *See, e.g.*, FEIS at S-7, S-9 to S-12. Such conclusory reasoning is unsupported when the plans themselves have yet to be formulated, and the EIS does not set forth any performance standards or other success criteria that the mitigation plans must achieve, or commit to any monitoring plan or other adaptive management to ensure that mitigation is successful, including triggers for the implementation of additional measures. Thus, the public has no way of evaluating the EIS’s conclusions that various adverse impacts will not be significant or will be minor. Such conclusions lack evidentiary support. *Cf. Dine Citizens Against Ruining Our Env’t v. Klein*, 747 F. Supp. 2d 1234, 1258 (D. Colo. 2010) (where mining permit approval lacked “detailed mitigation plans upon which [agency] could have relied in making its finding of no significant impact,” agency’s “reliance on hypothetical mitigation measures is arbitrary and capricious”); *San Luis Valley Ecosystem Council v. U.S. Fish and Wildlife Serv.*, 657 F. Supp. 2d 1233, 1245 (D. Colo. 2009) (“[A] perfunctory description or mere listing of mitigation measures, without supporting analytical data, is not sufficient to support a finding of no significant impact.”); *Davis v. Mineta*, 302 F.3d 1104, 1125 (10th Cir. 2002) (because environmental review made “no firm commitment to any noise mitigation measures” its conclusion that project’s impact would not be significant was arbitrary).

Along similar lines, the EIS frequently states that mitigation measures will apply only if “possible,” “practical,” “practicable,” or “reasonable,” precluding the public’s understanding of whether mitigation would actually occur. For example:

VM-38. The Coalition will prepare a noxious and invasive weed control plan in consultation with the Ute Indian Tribe as applicable. *Where practical*, the Coalition will include the policies and strategies in Utah’s Strategic Plan for Managing Noxious and Invasive Weeds when designing response strategies for noxious and invasive weeds.

VM-22. The Coalition will revegetate disturbed areas, *where practical* and in consultation with the Ute Indian Tribe as applicable, when construction is completed.

BIO-MM-13. The Coalition shall abide by the BLM *Utah Greater Sage-Grouse Approved Resource Management Plan Amendment* for Action Alternatives that affect BLM land, and will follow the *reasonable requirements* of the *Utah Conservation Plan for Greater Sage-Grouse*.

BIO-MM-16. If the Board authorizes the Indian Canyon Alternative or Whitmore Park Alternative, the Coalition shall comply with the *reasonable mitigation conditions imposed by the Forest Service* in any special use permit allowing the Coalition to cross National Forest System Lands, including complying with the USDA Forest Service Guide to Noxious Weed Prevention Practices and the Ashley National Forest Noxious Weeds Management Supplement.

LUR-MM-7. Prior to project-related construction, the Coalition shall consult with BLM, the Forest Service, the Ute Indian Tribe, and SITLA, as appropriate, to

develop a plan to limit, *to the extent practicable*, impacts on recreational resources under those agencies' management or jurisdiction. The Coalition shall develop the plan prior to completing the final engineering plans for the proposed rail line and following the above-mentioned consultation to determine the location of all public roads used as access points to a recreation area that would be crossed by the proposed rail line. The plan shall designate temporary access points if main access routes must be obstructed during project-related construction. The plan shall also include the number and location of access points as decided during consultation with the applicable agencies.

WAT-MM-1. *To the extent practicable*, the Coalition shall design culverts and bridges to maintain existing surface water drainage patterns, including hydrology for wetland areas, and not cause or exacerbate flooding. Project-related supporting structures (e.g., bridge piers) shall be designed to minimize scour (sediment removal) and increased flow velocity, *to the extent practicable*. The Coalition shall consider use of multi-stage culvert designs in flood-prone areas, as appropriate.

WAT-MM-7. During project-related construction, the Coalition shall use temporary barricades, fencing, and/or flagging around sensitive habitats (e.g., wetlands, streams) to contain project-related impacts on the construction area. The Coalition shall locate staging areas in previously disturbed *sites to the extent practicable*, avoiding sensitive habitat areas *whenever possible*.

This open-ended mitigation does not adequately disclose the extent to which mitigation measures will apply to project activities and therefore cannot support a conclusion that the targeted effects will be "minor" or insignificant. *N.M. ex rel. Richardson v. BLM*, 565 F.3d 683, 715 (10th Cir. 2009) (agency "acted arbitrarily by concluding [in EIS] without apparent evidentiary support that impacts on the Aquifer would be minimal").

Rather than clarifying in the EIS which specific measures will not apply to the project, the EIS's response to this comment still leaves the public in the dark:

In rare instances, project proponents have asserted that certain mitigation requirements are unreasonable or not practical and cannot be implemented. The Board is the authority that will determine, when necessary, whether the mitigation measures imposed in its decision have been sufficiently implemented and whether the mitigation requirements are reasonable, taking into consideration project-specific circumstances. In the unlikely event that the requirements of a federal, state, or local law conflicts with ICCTA, those laws could be preempted under 49 U.S.C. § 10501. To provide additional clarity for all parties regarding the Board's ongoing authority over the implementation of mitigation measures, OEA is recommending an additional mitigation measure (MC-MM-1) that would require the Coalition submit quarterly reports to OEA regarding the status of construction activities and of mitigation measure implementation. OEA will review the reports and consult with the Coalition and appropriate tribes and federal, state, and local agencies, as necessary, to ensure that the Coalition is complying with all mitigation measures.

However, it is unclear why that determination should be made behind closed doors post-approval without the public's participation when the specific measures that the SCIC claims are "unreasonable or "not practical" have already been identified. This approach deprives the public the opportunity to weigh in on the feasibility of these measures and understand the project's impacts on specific resources with or without the purportedly unidentified "impractical" measures. Nor does the proposed requirement under MC-MM-1 requiring the SCIC to report the status of construction activities and of mitigation measure implementation provide the public this opportunity.

In any event, for any measures that require the formulation of mitigation plans or allow the SCIC discretion to pick and choose which existing plan measures or legal requirements it will abide by, the Board should require that those newly formulated plans or proposed exemptions from existing plans or requirements be submitted to the Board "prior to any project-related construction." For example, BIO-MM-15 and BIO-MM-17 require the formulation of mitigation plans "prior to any project-related construction," but do not necessarily require Board review and approval of these plans prior to construction. Further, BIO-MM-13 and -16 allow the SCIC to determine which measures from the state's sage-grouse conservation plan and the Forest Service's special use permit are "reasonable" to comply with, respectively, with limited oversight. Even if the Board is the final arbiter of what requirements are "reasonable," it is possible that the Board may not discover the SCIC's failure to comply with "reasonable" requirements until after damage to sage-grouse habitat and forest resources has already been done.

Accordingly, the Board should make the proposed mitigation plans or proposed exemptions available to the public through its website and make construction contingent on final approval of the Board's review of the proposed mitigation plans or exemptions. If, after their review, the Board finds that the proposed mitigation (or proposal to not comply with certain mitigation measures) would substantially change the project or result in significant new circumstances bearing on the project or its impacts, the Board should direct OEA to prepare a supplemental EIS to address the changes and their environmental consequences. *See* 40 C.F.R. § 1502.9(d) (supplemental EIS required where "[t]he agency makes substantial changes to the proposed action that are relevant to environmental concerns" or "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.").

Relatedly, we dispute that the Board may waive legal requirements imposed by other agencies or laws, such as the special use permit requirements of the Forest Service. The Board's forerunner (the ICC) held that its exemption power "is limited to exempting rail carriers from provisions of 49 U.S.C. Subtitle IV and cannot be used to exempt carriers from the provisions of other statutes." 366 I.C.C. 885, 890, 1983 ICC LEXIS 37 (June 3, 1983); *see also id.* (exemption procedures "cannot exempt compliance with relevant energy and environmental acts"). Although the Board has the power to preempt other federal laws under 49 U.S.C. § 10501(b), this power is limited: "If an apparent conflict exists between ICCTA and a federal law, then the courts must strive to harmonize the two laws, giving effect to both laws if possible." *Ass'n of Am. R.R. v. S. Coast Air Quality Mgmt. Dist.*, 622 F.3d 1094, 1097 (9th Cir. 2010). Thus, the Board can only relieve the SCIC from federal requirements that conflict with the Board's regulation—not measures that the SCIC deems unreasonable. Accordingly, BIO-MM-16 should be revised as

follows: “If the Board authorizes the Indian Canyon Alternative or Whitmore Park Alternative, the Coalition shall comply with the ~~reasonable~~ mitigation conditions imposed by the Forest Service in any special use permit allowing the Coalition to cross National Forest System Lands . . .”

III. The Biological Opinion for the Project Is Inadequate

On September 20, 2021, U.S. Fish and Wildlife Service (“Service”) issued a biological opinion (“BiOp”), completing “formal consultation” with the Surface Transportation Board regarding the project’s effects on endangered and threatened species under the Endangered Species Act. The BiOp is inadequate with respect to its discussion of the project’s effects on (1) the endangered Barneby ridge-cress and the threatened Pariette cactus, Uinta Basin hookless cactus, and Ute ladies’-tresses (“listed plants”)—and (2) the four Colorado River endangered fish—Colorado pikeminnow, humpback chub, razorback sucker, and bonytail. Accordingly, the Board should reinitiate consultation with the Fish and Wildlife Service to prepare a legally adequate BiOp before considering approval of the project.

A. Background on Endangered Species Act

Congress enacted the Endangered Species Act (ESA) to provide “a program for the conservation of . . . endangered species and threatened species.” 16 U.S.C. § 1531(b). Section 2(c) of the ESA establishes that it is “the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act.” 16 U.S.C. § 1531(c)(1). The ESA defines “conservation” to mean “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this [Act] are no longer necessary.” 16 U.S.C. § 1532(3). The ESA imposes substantive and procedural obligations on all federal agencies with regard to listed and proposed species and their critical habitats. *See id.* §§ 1536(a)(1), (a)(2) and (a)(4) and § 1538(a).

Under Section 7 of the ESA, federal agencies must “insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined . . . to be critical.” 16 U.S.C. § 1536(a)(2). “Jeopardize the continued existence of” means “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival *and* recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. § 402.02 (emphasis added).

“Endangered species” means “any species which is in danger of extinction throughout all or a significant portion of its range.” 16 U.S.C. § 1532(6). “Threatened species” means “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” *Id.* § 1532(20). The Fish and Wildlife Service “lists” species as threatened or endangered. *See id.* § 1533.

The definition of agency “action” is broad and includes “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies.” 50 C.F.R. §

402.02. The STB’s proposed approval of the railway constitute such an action. The “action area” includes “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” *Id.*

The duties in ESA Section 7 are only fulfilled by an agency’s satisfaction of the consultation requirements that are set forth in the implementing regulations for Section 7 of the ESA, and only after the agency lawfully complies with these requirements may an action that “may affect” a protected species go forward.

Formal consultation commences with the action agency’s written request for consultation and concludes with Fish and Wildlife Service’s issuance of a “biological opinion.” 50 C.F.R. § 402.02. The biological opinion states the Service’s opinion as to whether the effects of the action are “likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.” *Id.* § 402.14(g)(4).

When conducting formal consultation, Fish and Wildlife Service and the action agency must evaluate the “effects of the action,” which includes “all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action.” *Id.* § 402.02. In formulating its biological opinion, the Service must evaluate the effects of the action, added to the environmental baseline. *Id.* § 402.14(g)(2), (3). The environmental baseline “includes the past and present impacts of all Federal, state, and private actions and other human activities in the action area” *Id.* The effects of the action must also be considered together with “cumulative effects,” which are “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” *Id.*

If Fish and Wildlife Service concludes that the proposed action will jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of critical habitat, the biological opinion must outline “reasonable and prudent alternatives” to avoid jeopardy. 16 U.S.C. § 1536(b)(3).

The action agency and Fish and Wildlife Service must use the best scientific and commercial data available when consulting about whether federal actions may jeopardize listed species or adversely modify critical habitat. *See* 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(d), (g)(8).

An agency’s reliance on a flawed biological opinion is unlawful agency action. *Ctr. for Biological Diversity v. Bernhardt*, 982 F.3d 723, 751 (9th Cir. 2020). Although Fish and Wildlife Service is responsible for formulating and issuing the biological opinion, an agency cannot meet its Section 7 duties to insure that its actions are not likely to jeopardize the continued existence of the species by relying on a legally flawed biological opinion or by failing to discuss information that might undercut the opinion’s conclusions. *Id.*

B. The BiOp’s Jeopardy Analysis with Respect to the Listed Plants Is Flawed

The BiOp does not rely on current and complete field surveys to determine the extent to which the listed plants would be destroyed or harmed by the project; arbitrarily confines the “action area,” i.e., the area that listed plants would be impacted, to areas within 300 feet of ground disturbing activities; and fails to consider the effects of oil and gas development spurred by the rail on the listed plant species. The failure to use the best scientific and commercial data available to inform the BiOp renders the BiOp inadequate.

In addition, the BiOp’s “no jeopardy” finding is unsupported, because (1) the mitigation measures that would purportedly help avoid jeopardy are undefined and uncertain to occur, and (2) the BiOp fails to consider the project’s effects on the Barneby ridge-cress’s recovery.

1. The BiOp Fails to Use the Best Scientific and Commercial Data Available to Determine the Project’s Effects on Listed Plant Species

a. The BiOp should have relied on recent field survey data for determining the extent of occupied habitat that could be affected by the project

In preparing the BiOp, Fish and Wildlife Service was required to use “the best scientific and commercial data available.” 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g)(8). Moreover, the Service’s regulations for the ESA provide that “[t]he federal agency requesting formal consultation”—in this case STB—“shall provide [the Service] with the best scientific and commercial data available *or which can be obtained during the consultation* for an adequate review of the effects that an action may have upon listed species or critical habitat.” 50 C.F.R. § 402.14(d) (emphasis added).

The BiOp states that complete clearance surveys for Barneby ridge-cress have not occurred throughout the entire suitable habitat area, and that STB and SCIC “acknowledge the inability to document all Barneby ridge-cress individuals and the extent of occupied habitat within the action area prior to issuance of the [BiOp].” BiOp at 27. For Ute-ladies’ tresses, three consecutive years of clearance surveys in suitable habitat are needed to determine the presence of the orchid, but only the first year’s clearance surveys were completed. *Id.* In addition, clearance surveys were not completed for Pariette cactus and Uinta Basin hookless cactus. *Id.* at 28. Instead, the Service relied on data for these species in an unidentified database, but it is unclear how old or reliable that data is.

Field survey data, however, was apparently obtainable. Such data was collected for Barneby ridge-cress albeit not for the entire area of suitable habitat, and purportedly preconstruction surveys will be completed after the project’s approval. *See* BiOp, Appendix A at 64 (MM-1). It is unclear why OEA was unable to obtain complete surveys for Barneby ridge-cress, Pariette cactus, and Uinta Basin hookless cactus during the consultation period, and why it was only able to obtain data for one flowering season for Ute ladies’-tresses. Although OEA did not initiate formal consultation with FWS until March 2021, when the OEA transmitted the Biological Assessment to FWS, the parties began discussions about the project in February 2019. Discussions about “survey needs” began as early as February 2020, such that on-the-ground surveys could have occurred during at least two full flowering seasons for the listed plants before the BiOp was issued. BiOp at 3.

Accordingly, field survey data was the best data available to determine the extent to which species currently occupy the project area. OEA should have provided this information to FWS in its Biological Assessment but did not. OEA and FWS's failure to obtain and use the "best scientific . . . data available" to inform the BiOp violates Section 7 of the ESA and its implementing regulations. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.14(g)(8); 50 C.F.R. § 402.14(d).

b. The BiOp arbitrarily limits the action area to areas within 300 feet of the project footprint

As explained in our earlier comments on the EIS, the assumption that listed plants only within 300 feet of ground disturbing activities would be harmed is unsupported. Adverse effects could potentially occur within a much greater distance, depending on the pollinators the listed plants depend on. *See* section II.J.2 above. The BiOp, however, assumes that effects from dust and ground-disturbing activities would harm plants and pollinators within only a 300-foot radius.

Under the ESA regulations, the "action area" means "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." 50 C.F.R. § 402.02. The BiOp defines the action area as:

- The entire Project footprint;
- A 300-ft buffer from the edge of the Project footprint and any ground disturbance to account for effects from dust and to pollinators from Project actions; and
- The area of the Upper Colorado River Basin affected by water depletions. This includes the Green and Colorado Rivers and their 100-year floodplains from Flaming Gorge Reservoir downstream to Lake Powell.

The BiOp, however, fails to justify the 300-foot buffer. It notes that information regarding reproductive biology and pollinators of Barneby ridge-cress is lacking. BiOp at 14 ("Barneby ridge-cress reproduces by seeds, but we lack information on its pollinators and breeding system."). Despite this uncertainty, it determines that effects to plants and pollinators from Project actions would occur only within 300 feet of the Project footprint without explaining how this figure was derived. The Colorado Natural Heritage Program at Colorado State University recommends that the best management practice to protect imperiled plants from roads is to buffer them by 200 meters or 656 feet, over twice the distance within which the BiOp assumes that the listed plants will be affected: "The 200 meter/218 yard buffer reduces dust transport, weed invasion, herbicide damage, magnesium chloride damage, and other unintended impacts, such as disturbance of hydrological setting. It also reduces impact to pollinators and their habitat."¹⁷⁸ Fish and Wildlife Service has recommended a 600-meter buffer distance for plants within the same family as Barneby Ridge-Cress, a 500 meter buffer for Colorado hookless cactus (a close

¹⁷⁸ Panjabi, S.S. and G. Smith, Conserving Roadside Populations of Colorado's Globally Imperiled Plants, a Pilot Project, Colorado Natural Heritage Program, Colorado State University, Fort Collins, Colorado (2014).

relative of Uinta Basin hookless cactus and Pariette cactus), and an 800 meter buffer for Ute ladies'-tresses.¹⁷⁹

In light of these recommendations, and in the absence of a rational explanation as to why the action area should be limited to 300 feet from the project footprint, this figure “appears to have been selected at random.” *Def. of Wildlife v. United States DOI*, 931 F.3d 339, 350 (4th Cir. 2019) (faulting BiOp for failing to explain how it calculated nest density or why it relied on data specific to other species). The arbitrary selection of the 300-foot action area violates the ESA’s requirement that the FWS use the “best scientific . . . data available” to support its analysis in the BiOp.

c. The BiOp arbitrarily excludes from the action area listed-plant habitat within the Uinta Basin that could be developed for oil and gas

The BiOp also excludes from the action area those areas in which oil and gas development would result from the development of the rail, while at the same time recognizing that the rail would “induce” oil and gas development throughout the Uinta Basin:

Induced growth and development associated with the railroad may negatively affect ESA-listed plants that occur outside of the action area. Growth inducing effects and other effects are related to changes in the pattern of land use, the density or growth rate of that land use, and related effects on air and water and other natural systems, including ecosystems (as defined under NEPA, 40 CFR 1508.8). These effects can also result from incremental changes in land uses attributable to a transportation project that, for example results in population growth (including rate or pattern) and development in a manner that would not have otherwise occurred (Tidd et al. 2013). The Project would provide a viable means of freight transport (crude oil, mineral and agricultural products) to and from the Uinta Basin as an alternative to the existing but limited road network (Uinta Basin Railway Final EIS Chapter 1 2021). *The Project may support an increased growth rate of oil and gas commercial development in the Uinta Basin and shorten the time to reach full field development within delineated oil and gas fields than with the existing road network (Utah Geological Survey 2018).*

BiOp at 41 (emphasis added). In other words, oil and gas development activities would be induced by the project and thus are “effects of the action,” which must be analyzed in the BiOp. 50 C.F.R. § 402.14 (g)(3). “Effects of the action” means:

all consequences to listed species . . . that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action, and it is reasonably certain to occur. Effects of the action

¹⁷⁹ U.S. Fish and Wildlife Western Ecological Services Offices, Draft Guidance for Section 7 Consultations that Include Plants within the State of Colorado (Mar. 6, 2013) at 15-16.

may occur later in time and may include consequences occurring outside the immediate area involved in the action.”

50 C.F.R. § 402.02.

However, the BiOp does not identify potential areas of oil and gas development that could affect the habitat of Barneby ridge-cress, Pariette cactus, Uinta Basin hookless cactus, and Ute ladies’-tresses, and the effects of increased oil and gas development on listed plants (in connection with the effects of constructing the rail within occupied habitat). Instead, the BiOp perfunctorily acknowledges adverse effects of energy development on the listed plants, and defers analysis until oil and gas proposals with a federal nexus are proposed:

Energy development has the potential to negatively affect ESA-listed plant species as a result of plant and habitat loss, habitat fragmentation, increased fugitive dust generation, and weed invasions. Where there is a Federal nexus, we will have the opportunity to consult on future energy development and effects to ESA listed plants.

BiOp at 41.

The failure to consider the effects of this induced growth results in the failure to adequately consider whether the agency action is likely to jeopardize the continued existence of the species. *Cf. Conner v. Burford*, 848 F.2d 1441, 1454-55 (9th Cir. 1988). (faulting BiOp for failing to consider all activities that could result from oil and gas leasing and rejecting “incremental-step consultation” as a substitute for comprehensive biological opinion). That the STB and FWS do not necessarily know the precise areas that could be developed does not excuse them from consulting over these effects. *Id.* at 1454. The agencies must rely on the “best scientific and commercial data available” to determine where development could occur and where potential areas of development may overlap with listed species habitat. Indeed, it appears that all three areas where Barneby ridge-cress are found—Starvation Reservoir, Indian Canyon, and Coyote Canyon (BiOp at 15-16)—have previously been developed for oil and gas.¹⁸⁰

Moreover, the deferral of consultation until wells that “have a federal nexus” are proposed ignores the effects of wells that do not have a federal nexus. Development of wells without a federal nexus would also result from the proposed action, and their consequences for listed species must also be considered in the BiOp. Alternatively, these wells that lack a federal nexus are within the “action area” for the proposed action, and should be considered in the cumulative effects analysis. *See* 50 C.F.R. § 402.02 (“Cumulative effects are those effects of future State or private activities, not involving

¹⁸⁰ BiOp at 15-16; Center for Biological Diversity, Map of Barneby Ridge-Cress Occupied Habitat and Oil and Gas Fields (2021) (data obtained from Utah Department of Natural Resources, Oil, Gas and Mining Division, <https://gis.utah.gov/data/energy/oil-gas/>).

Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.”).

The BiOp’s current approach is not consistent with Congress’s intent to “‘give the benefit of the doubt to the species.’” *Conner*, 848 F.2d at 1454 (citation omitted). The action area and effects analysis should take into account the project’s effects of inducing increased oil and gas development on the listed plant species.

2. The BiOp’s “No Jeopardy” Finding Is Unsupported

The BiOp’s determination that the Whitmore Park alternative is not likely to jeopardize the continued existence of the listed plants is unsupported, in light of the above flaws in the BiOp’s analysis, including the failure to obtain up-to-date field survey information as to listed plant locations, the arbitrary 300-foot buffer around the project footprint to define the action area, and the failure to fully consider the effects of the project, including oil and gas development induced by the rail, in its jeopardy analysis. Each of these deficiencies results in an inadequate jeopardy analysis and unreliable “no jeopardy” determination, in violation of ESA Section 7. 16 U.S.C. § 1536(a)(2).

In addition, the BiOp’s “no jeopardy” finding relies in part on mitigation measures to be implemented by the SCIC, which lack specificity, are uncertain in whether, how, and when they will be implemented, and do not “insure” that jeopardy will be avoided, as further explained below. 16 U.S.C. § 1536(a)(2). The “no jeopardy” finding for Barneby ridge-crest is also inadequate, because it fails to address how the project will affect the Barneby ridge-crest’s recovery.

a. Mitigation measures are too uncertain to support the “no jeopardy” finding

FWS may rely on mitigation measures within a biological opinion “only where they involve ‘specific and binding plans’ and ‘a clear, definite commitment of resources for future improvements’ to implement those measures.” *Ctr. for Biological Diversity v. Salazar*, 804 F. Supp. 2d 987, 1001 (D. Ariz. 2011), quoting *Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv.*, 524 F.3d 917, 935-36 (9th Cir. 2008). Furthermore, “mitigation measures supporting a [biological opinion’s] no jeopardy or no adverse modification conclusion must be ‘reasonably specific, certain to occur, and capable of implementation; they must be subject to deadlines or otherwise-enforceable obligations; and most important, they must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards.’” *Id.*, quoting *Ctr. for Biological Diversity v. Rumsfeld*, 198 F. Supp. 2d 1139, 1152 (D. Ariz. 2002).

Here, compensatory mitigation measures to offset the destruction of listed plants and/or occupied habitat are too indefinite to “insure” that the project is not likely to jeopardize the continued existence of the listed plant species.

For example, the BiOp determines that the project could destroy 347 Barneby ridge-crest plants, which represents 3.6 percent of the known range-wide population; eliminate up to 67 acres of known occupied habitat, or 6.8 percent of occupied habitat; and indirectly affect

approximately 1,974 Barneby ridge-cress plants in the 300 ft survey buffer of the action area through fugitive dust deposition, weed encroachment, erosion, and habitat fragmentation, or 20 percent of the known range-wide population.

To compensate for “effects of ground disturbance activities within 300 feet of Barneby ridge-cress or populations,” the BiOp requires that the SCIC “develop a project-specific plan in consultation with [FWS], STB, and any appropriate land-management agencies to offset effects and monitor individuals or populations.” BiOp at 9. The BiOp sets forth several elements that would be included in the plan, including:

- a. The Coalition shall fund the permanent protection of occupied habitat at a 5:1 ratio, where one acre of occupied habitat lost would be replaced by five acres of occupied habitat of equal or better condition for Barneby ridge-cress. If Barneby ridge-cress mitigation is needed, the Coalition will prioritize the Utah Division of Wildlife Resources’ (UDWR) Cottonwood Wildlife Management Area for permanent protection of occupied Barneby ridge-cress habitat in consultation with our office and UDWR. If insufficient acreage of documented habitat is available for permanent protection, the Coalition may fund survey efforts to identify currently undocumented habitat for permanent protection at a 5:1 ratio.
- b. If permanent protection of occupied habitat cannot be achieved at a 5:1 ratio, the Coalition shall establish permanent protections to the extent possible and shall also fund and implement, in coordination with our office, the restoration or enhancement of Barneby ridge-cress habitat at a 5:1 ratio. Habitat restoration or enhancement activities, including maintenance and monitoring activities, shall be conducted in accordance with protocols developed in consultation with and agreed to by our office.
- c. If neither the permanent protection of Barneby ridge-cress occupied habitat nor the restoration or enhancement of habitat can be implemented at the agreed upon ratios, the Coalition shall fund and ensure the implementation of specific reasonable research or other activities for the conservation of Barneby ridge-cress identified in consultation with and agreed to by our office.

BiOp at 9-10.

The highest priority measure—funding the permanent protection of occupied habitat—does not specify what specific protections the SCIC would fund. It is unclear whether it would entail the purchase of private lands containing occupied habitat, establishment of a permanent conservation easement, funding of law enforcement patrols or signage to keep trespassers off public lands containing occupied habitat, or some other protection. The second element—restoration of habitat—also lacks specificity. Rather than detailing the specific protocols and restoration standards that restored or enhanced habitat must meet, the BiOp allows SCIC to develop protocols at later time “in consultation with and agreed to by [FWS].” *Id.* at 9.

In addition, neither of these first two elements—permanent protection and restoration of habitat—is certain to occur, as the BiOp suggests that they may not be capable of implementation “at the agreed upon ratios.” *See id.* It is unclear whether any obstacle to achieving these measures, including SCIC’s claim that the measures are too expensive, would let SCIC off the hook, rendering it even more uncertain whether either of these measures will be implemented.

This leaves the third element—the open-ended general commitment to implement “specific reasonable research or other activities for the conservation of Barneby ridge-cress”—as a measure of last resort, but the specific conservation activities and research that could be carried out are undefined. Without more specifics, there is no assurance that this measure would adequately compensate for the loss of occupied habitat or insure against jeopardy.

None of the foregoing plan elements lacks enforceable deadlines, leaving the timeframe for implementation open-ended. If mitigation measures are not completed in a timely manner, before significant declines occur, they cannot insure against jeopardy. *Ctr. for Biological Diversity v. BLM*, 422 F. Supp. 2d 1115, 1131 (N.D. Cal. 2006).

In addition, the BiOp does not explain how each of these measures would be effective against avoiding jeopardy to Barneby ridge-cress. The BiOp does not justify the selection of a 5:1 ratio for protection and/or restoration of Barneby ridge-cress habitat (or the lower 3:1 ratio for protection of Ute ladies’-tresses habitat, *id.* at 10). The BiOp does not address whether these measures would likely boost population numbers. Further, if “insufficient acreage of documented habitat is available for protection,” the SCIC may instead fund “survey efforts to identify currently undocumented habitat for permanent protection at a 5:1 ratio.” *Id.* at 9. If survey efforts result in the identification of occupied habitat at a 5:1 ratio, it is unclear whether the SCIC’s obligation ends there, or if this measure would also entail funding permanent protection of the identified habitat. If only survey efforts must be funded, this measure would not appear to result in any tangible benefits to the species.

The mitigation plan formulated by FWS and SCIC would also require the following two additional elements, which suffer from similar defects:

- d. If any Barneby ridge-cress individuals would be crushed or killed by project activities, the Coalition shall collect seeds from the plants prior to construction, if possible. Seeds will be collected by a qualified botanist and stored according to USFWS and Center for Plant Conservation guidelines. The Coalition shall deliver any collected seeds to our office or designee.
- e. If construction activities would crush or kill Barneby ridge-cress individuals on public lands, the Coalition shall consult with the appropriate land-management agency and our office prior to undertaking activities that would crush or kill individual Barneby ridge-cress and shall relocate individual plants if requested by the land-management agency. A post-transplant monitoring plan would be developed in agreement with our office, and individuals would be monitored for 5 years post-transplant.

BiOp at 10.

SCIC is only required to collect seeds from plants about to be crushed or killed “if possible,” but the circumstances under which the SCIC may forego collecting seeds are undefined, potentially allowing SCIC to evade this obligation under virtually any circumstances. In addition, the SCIC is only required to relocate individual plants found on public lands “if requested by the land-management agency.” In any case, there is no guarantee that plants would be relocated, much less successfully transplanted. Specific details as to how monitoring would occur are lacking, but monitoring plans would be formulated at a future, unspecified time.

If the STB adopts the mitigation measures in the BiOp as conditions for project approval, we request that the STB strengthen these measures as follows:

- (1) Require the funding and implementation of a conservation easement restricting development of occupied habitat, at a 5:1 ratio, where one acre of occupied habitat lost would be replaced by five acres of occupied habitat of equal or better condition for Barneby ridge-cress and occupied habitat is defined as the area within 200 meters (656 feet) of an individual plant. If insufficient acreage of documented habitat is available for permanent protection, require the SCIC to fund survey efforts to identify currently undocumented habitat for permanent protection. If survey efforts result in the identification of occupied habitat, require SCIC to fund the creation of a conservation easement restricting development of the newly identified occupied habitat, at a 5:1 ratio.
- (2) If the conservation easement at a 5:1 ratio cannot be achieved because SCIC or FWS cannot find habitat available for purchase/establishment of a conservation easement, require habitat restoration at a ratio that would compensate for the loss of occupied habitat. Identify specific protocols, performance standards, and maintenance and monitoring requirements for restoration, and require the successful planting or transplanting of Barneby ridge-cress on lands to be restored.
- (3) Identify the specific conservation projects or research that must be undertaken if habitat is unavailable for permanent protection or restoration.
- (4) Require implementation of all mitigation measures before project construction begins (unless the measure must necessarily be implemented after construction, such as collection of seeds from plants about to be crushed or killed);
- (5) Require the relocation of all plants that would otherwise be destroyed or crushed to suitable habitat, whether found on private or public lands, and identify specific standards, protocols, and monitoring requirements for relocation of plants.

b. The BiOp fails to analyze the project's effects on the recovery of Barneby ridge-cress

The BiOp is also inadequate because it fails to address whether the project would reduce the likelihood of recovery of Barneby ridge-cress. The BiOp must evaluate whether the agency action is “likely to jeopardize the continued existence of the species.” 50 C.F.R. § 402.14(h). “Jeopardize the continued existence of” means “to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival *and* recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.” 50 C.F.R. § 402.02 (emphasis added). Thus, a BiOp must evaluate the project’s effects on recovery of the species. *Def’s. of Wildlife v. United States DOI*, 931 F.3d 339, 354 (4th Cir. 2019); *Nat’l Wildlife Fed’n*, 524 F.3d at 932 (determining that agency acted arbitrarily when it failed to “analyze effects on recovery as well as effects on survival”). Recovery is defined as “improvement in the status of a listed species to the point at which listing is no longer appropriate.” 50 C.F.R. § 402.02. Further, it is “the process by which species’ ecosystems are restored *and/or* threats to the species are removed so self-sustaining and self-regulating populations of listed species can be supported as persistent members of native biotic communities.”¹⁸¹

The Barneby ridge-cress is found only in the Uinta Basin. The entire range-wide population is restricted to 985 acres of known occupied habitat spanning only 9 miles across and distributed over three populations in the Basin. BiOp at 14. The proposed railway would cut through the area with the largest population, the Indian Canyon population, which consists of 6,614 individuals. *Id.* at 14-15. The other two populations are located at Starvation Reservoir and Coyote Canyon, and consist of 27 and 1,090 plants, respectively. *Id.* at 15. All populations are within existing oil and gas fields.¹⁸²

The BiOp notes the two primary threats to the species are oil and gas development and off-road vehicle use. BiOp at 15. Off-road vehicle use is a problem on Ute Indian Tribe lands, which make up the majority of the species’ occupied and potential habitat. *Id.* With respect to oil and gas development, “[h]abitat loss associated with oil and gas development occurs across the known range of Barneby ridge-cress.” *Id.* The BiOp further acknowledges that the project may induce increased oil and gas development in the Uinta Basin: “The Project may support an increased growth rate of oil and gas commercial development in the Uinta Basin and shorten the time to reach full field development within delineated oil and gas fields than with the existing road network (Utah Geological Survey 2018).” BiOp at 41.

These threats are heightened due to the lack of regulatory mechanisms to address these threats to the species: “The species is not located on Federal land, and therefore a Federal nexus to address project-level effects is not assured. A conservation agreement or other similar type of protection has not [sic] established for the species. Therefore, additional regulatory mechanisms are needed to address threats to the species.” *Id.* at 15.¹⁸³

¹⁸¹ U.S. Fish & Wildlife Service and National Marine Fisheries Service, Endangered Species Consultation Handbook (March 1998), https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf.

¹⁸² Center for Biological Diversity, Map of Barneby Ridge-Cress Occupied Habitat and Oil and Gas Fields (2021) (well data obtained from Utah Department of Natural Resources, Oil, Gas and Mining Division, <https://gis.utah.gov/data/energy/oil-gas/>).

¹⁸³ The ESA’s prohibition on “take” or harm to listed species only applies to fish and wildlife, and not plants. See 16 U.S. Code § 1538(a)(1).

Further, according to the BiOp, “climate change beyond the naturally occurring drought cycles may reduce the resiliency and redundancy of Barneby ridge-crest (Gonzalez et al. 2018).”

The BiOp fails to evaluate whether the project would reduce the likelihood of recovery of Barneby ridge-crest. It finds that the Project “is not likely to jeopardize the continued existence of Barneby ridge-crest” but only briefly mentions recovery of the species. The no-jeopardy determination seems to be based in part on the BiOp’s reasoning that the Project will directly affect 3.6 percent of the known-range wide population, indirectly affect 20 percent of the known range-wide population, and will not affect the remaining 88.5 percent of the known range-wide population (although these percentages total more than 100 percent).¹⁸⁴ BiOp at 47. The BiOp then concludes: “The remaining relatively large number of plants would continue to persist in relatively intact habitat and contribute to the recovery of Barneby ridge-crest.” BiOp at 47.

These statements do not amount to an analysis of the project’s effects on the recovery of the species, or a determination that the project would not reduce appreciably the likelihood of the recovery of the species. Even if it could be construed this way the BiOp’s cursory conclusion that the remaining plants would “continue to persist in relatively intact habitat and contribute to the recovery of Barneby ridge-crest” does not square with its earlier evaluation of the species’ status, primary threats, and the lack of regulatory mechanisms to control these threats.

The BiOp acknowledges that the project would cause the loss of a significant portion of the rangewide population, and could worsen the threat of increased oil and gas development spurred by the project (which the BiOp does not account for), but there are no regulatory mechanisms to control oil and gas threats to the remaining population. A smaller population could also be more vulnerable to climate change. Further, the BiOp states that “long-term population dynamics” for the species “are unknown.” BiOp at 14. Accordingly, there appears to be no basis for assuming that the species would be no worse off in terms of recovery, in the face of significant population losses, the increased threat of oil and gas development posed by the rail, the lack of regulatory mechanisms to limit oil and gas development harms to the species, the threat of climate change, and uncertainty as to how the species is currently faring. Nor would mitigation measures proposed as part of the project necessarily provide an adequate buffer against population losses. As discussed above, there is little assurance that permanent protection or restoration of habitat or any other measure would actually be implemented, and no evidence to support the effectiveness of these measures.

In sum, the BiOp fails to consider the effects of the project on recovery, and its “no jeopardy” finding runs counter to the evidence before the Board.

C. The BiOp Fails to Fully Analyze the Project’s Effects on the Four Colorado River Endangered Fish and Their Critical Habitat

¹⁸⁴ These calculations do not appear to be correct. Further, the calculations assume the total range-wide population is 9,768 plants, *id.* at 47, which is inconsistent with the BiOp’s earlier statement that the range-wide population is approximately 7,731 plants. *See id.* at 15.

The BiOp overlooks several impacts on Colorado pikeminnow, humpback chub, razorback sucker, and bonytail that inhabit the Colorado River Basin (“endangered fish”), including downline impacts from train operations, oil and gas development effects induced by the rail, and climate change.

First, as freight trains from the proposed railway move eastward through Utah and Colorado, the trains will cross waterways, including critical habitat for all four endangered fish in the Green and Colorado rivers, using an existing Union Pacific route downline from the proposed oil railway.¹⁸⁵ However, the BiOp fails to analyze the effects of water contamination from train operations on endangered fish and their habitat. For example, the BiOp does not acknowledge potential harm from leaks due to routine train operations, or the risk of catastrophic spills of crude oil, refined oil products, fracking chemicals, and frack sand, all of which the railway is likely to transport.

One of the most important habitats to the Colorado pikeminnow and the razorback sucker is the Colorado River’s “15-mile Reach” within Colorado’s Grand Valley near Grand Junction, Colorado, which is along the route trains carrying oil and other toxic materials will travel.¹⁸⁶ “The 15-mile reach is that portion of the Colorado River between the Grand Valley Diversion Dam at Palisade, Colorado and the confluence with the Gunnison River near downtown Grand Junction. This reach is critical habitat for two endangered fish species, the Colorado pikeminnow and the razorback sucker.”¹⁸⁷ According to U.S. Fish and Wildlife Service, the quality and quantity of habitat in the 15-mile reach of the upper Colorado River must be protected and enhanced if Colorado River populations of two endangered species are to be maintained and recovered.”¹⁸⁸ The BiOp fails to analyze the potential for spills and leaks to adversely modify critical habitat in the 15-mile reach, or any other endangered fish habitat downline of the proposed rail that trains would travel between the project’s rail terminal and Colorado.

Second, the BiOp fails to analyze the consequences of increased oil and gas development spurred by the rail, including (1) changes in aquatic ecosystems due to increased sedimentation from roads and other oil and gas development; (2) chronic contamination and acute fish kills from spills and leaks of oil and gas, wastewater, frack fluid, and other fluids; and (3) water depletions from increased fracking. Both the White and Green rivers contain critical habitat for

¹⁸⁵ Center for Biological Diversity, Map of Downline Route, Oil and Gas Fields, and Endangered Fish Critical Habitat (2021).

¹⁸⁶ *Id.*; U.S. Fish and Wildlife Service, Final Programmatic Biological Opinion for the Bureau of Reclamation’s Operations and Depletions, Other Depletions, and Funding and Implementation of Recovery Program Actions in the Upper Colorado River above the Confluence with the Gunnison River, 25, 32, 45 (Dec. 1999), available at <https://www.coloradoriverrecovery.org/documentspublications/section-7consultation/15mile/FinalPBO.pdf>

¹⁸⁷ Osmundson, Douglas, Importance of the ‘15-Mile Reach’ to Colorado River Populations of Endangered Colorado Pikeminnow and Razorback Sucker Final Report (March 2000) at PDF 8

¹⁸⁸ Osmundson, Douglas at PDF 6.

the endangered fish in the Uinta Basin, and are areas where extensive drilling already occurs and could potentially expand.¹⁸⁹

Oil and gas developments and infrastructure affect entire aquatic ecosystems. The overall health of an aquatic habitat derives from the condition of the entire watershed including the uplands, riparian corridor and the stream channel.¹⁹⁰ For example, the decline of native trout is caused primarily by habitat damage (much of it associated with roads, dust, and sedimentation), and the effects of introduced, non-native fish. Roads are a significant cause of trout habitat damage and water quality degradation. In streams where cutthroat trout share habitat with other non-native salmonids, any habitat degradation is likely to shift the balance to dominance by non-native salmonids.¹⁹¹ Once non-native trout displace native trout, the situation is almost impossible to reverse.¹⁹² Thus, water quality degradation can have long-lasting effects on native fish. Expanded oil and gas development in the Uinta Basin near the White and Green Rivers and their tributaries is likely to lead to degradation of endangered fish habitat.

Chronic contamination and acute fish kills from expanded oil and gas development must also be addressed in the BiOp. Oil and gas infrastructure and pipelines within or adjacent to waterways regularly and foreseeably lead to releases and directly mortality.¹⁹³ The potential for spills to move from tributaries into endangered fish critical habitat within main-stem rivers was shown by a 2014 spill into the Green River. On the night of May 20, 2014 an oil well operated by SW Energy on lands administered by BLM “blew out,” leaking an estimated 100 barrels per hour of crude oil and production water into Salt Wash which leads to the Green River. SW Energy did not shut-in the well until 1:20 p.m. on May 22, at least 36 hours later. On May 24, flooding from a thunderstorm “overcame prevention measures” washing an unknown quantity of oil and produced water 1.5 miles from Salt Wash into the Green River and critical habitat for endangered fish.¹⁹⁴ The U.S. Fish and Wildlife Service’s recent Biological Opinion for the Gasco Energy Inc. Field Development Project anticipates these events and the potential for more frequent spills given expanded drilling:

There is a greater potential for impacts from pollutants, if a pipeline, well pit, or other source were to inadvertently release contaminated fluids into waterways at points near the Green and White Rivers. Through direct or indirect discharge, these pollutants could reach the Green River and negatively impact water quality to the point of affecting native fish populations. Direct impacts will result from a discharge from a pipeline or well pit reaching the Green River in its original form or within a single release event. Indirect effects occur when discharges are

¹⁸⁹ Center for Biological Diversity, Map of Downline Route, Oil and Gas Fields, and Endangered Fish Critical Habitat (2021).

¹⁹⁰ Wyoming Game and Fish Dept, Recommendations for Development of Oil and Gas Resources Within Important Wildlife Habitats (Apr. 2010) at 11.

¹⁹¹ Western Native Trout Campaign, Imperiled Western Trout and the Importance of Roadless Areas (Nov. 2001) at 12.

¹⁹² *Id.*

¹⁹³ Zuckerman, Laura, *ExxonMobil to pay \$12 million in Montana oil spill settlement* Reuters (Sept. 21, 2016), <http://www.reuters.com/article/us-exxon-mobil-montana-spill-idUSKCN11R29O>.

¹⁹⁴ BLM, Update: Salt Wash Oil Spill (2014).

released to the ground and are later released to the river after being carried by an erosion event or carried by rain or snowmelt runoff. As more well and pipeline development occurs in the project area the chance of pollutants reaching the Green River increases, thus increasing the potential of harm to native fish populations.¹⁹⁵

Some spills are not detected for many weeks, if not months, such that runoff could carry contaminants to surface waters. Thus, it is quite possible that large volumes of chemical substances escape undetected until reaching surface sediments or waters. The Gasco Biological Opinion explains that this is especially possible with smaller leaks:

The effects of smaller leaks that may cause chronic, sub-lethal effects to fish populations may be more prevalent. While the oil and gas industry has a wide variety of methods available to detect substantial leaks or integrity breaches, the technology for detection of small “pinhole” leaks is not as advanced. This creates a significant problem in that the current available methodology may allow small leaks to go undetected for extended periods of time often evading detection until they are manifested on the surface sediments or water.¹⁹⁶

In addition, research has specifically demonstrated that exposure to flowback and produced water resulting from hydraulic fracturing results in multiple adverse biological effects on freshwater fish, specifically rainbow trout, including endocrine disruption and oxidative stress.¹⁹⁷

Further, as we previously explained in our previous comments on the DEIS, expanded fracking throughout the Uinta Basin could result in enormous amounts of water depletions, which would reduce healthy flows for the endangered fish.¹⁹⁸ The BiOp must analyze the project’s impacts of inducing increased oil and gas development on water quality and water quantity within the 15-Mile Reach and other critical habitat, and how endangered fish populations and their critical habitat will be impacted. *See Nat’l Wildlife Fed’n v. Coleman*, 529 F.2d 359, 373 (5th Cir. 1976) (requiring consultation over the effects of private development on crane habitat, “which could be expected to result from the construction of [proposed federal] highway”).

Finally, the BiOp fails to analyze climate change and its impact on the Colorado River Basin and the endangered fish in connection with the project. The best available scientific data indicate that climate change is resulting in higher temperatures in the Colorado River Basin, reduced snowpack, reduced runoff, and increased drought, which have already reduced stream flows, and will continue to do so in the Basin. Attachment D details these trends in greater detail.

¹⁹⁵ U.S. Fish and Wildlife Service, Biological Opinion for the Gasco Energy Inc. Field Development Project (“Gasco BO”), Dec. 2011, p. 26, available at http://www.blm.gov/style/medialib/blm/ut/vernal_fo/planning/gasco_eis/gasco_rod.Par.56176.File.dat/Gasco%20ROD%20Attachment%205%20BO.pdf.

¹⁹⁶ Gasco BO, p. 27.

¹⁹⁷ He, Yuhe et al., Effects on Biotransformation, Oxidative Stress, and Endocrine Disruption in Rainbow Trout (*Oncorhynchus mykiss*) Exposed to Hydraulic Fracturing Flowback and Produced Water, 51 Environ. Sci. Technol. 940-947 (2017), DOI: 10.1021/acs.est.6b04695.

¹⁹⁸

¹⁹⁹ For example, researchers have found that “more than half of the decline in the river’s flow is connected to increasing temperatures.”²⁰⁰ As warming continues, the risk of severe water shortages for the millions that rely on Colorado Basin water is expected to grow. “For each 1.8 degrees Fahrenheit of warming averaged across the river’s basin . . . its flow has decreased by nearly 10%. Over the course of the 20th and early 21st centuries, the region has already warmed by an average of roughly 1.6 degrees Fahrenheit.”²⁰¹ The BiOp, however, fails to address climate change impacts in connection with the project’s water depletion impacts. *See Wild Fish Conservancy v. Irving*, 221 F. Supp. 3d 1224, 1234 (E.D. Wash. 2016) (failure to consider climate change impacts on water availability in connection with the project’s impacts on stream flows was a “fail[ure] to consider an important aspect of the problem” rendering the BiOp arbitrary and capricious); *Pac. Coast Fed’n of Fishermen’s Ass’n v. Gutierrez*, 606 F. Supp. 2d 1122, 1184 (E.D. Cal. 2008) (biological opinion was flawed due to “total failure” to discuss climate change effects on fish habitat).

In sum, the STB should reopen consultation with Fish and Wildlife Service to address the effects of downline train operations, oil and gas development, fracking, and climate change on the endangered fish.

IV. The Board Should Deny the Petition for Exemption and Require Full Licensing Proceedings, or Alternatively, Deny the Petition Because the Project’s Environmental Harms Outweigh Its Transportation Merits

As detailed above, the Board cannot grant an exemption and approve the project because the EIS fails to comply with NEPA. However, if the Board still decides to consider the petition for exemption despite these errors, it should still deny the exemption.

At the outset of this discussion it should be noted, as Chairman Oberman recently stated,²⁰² that bifurcation of consideration of a project’s transportation merits and its environmental review is unusual and has long been disfavored by the Board.²⁰³ This is for good reason, as the analysis that the Board must conduct under these two forms of evaluation are inherently interrelated and inform one another. The Board’s own decision in this proceeding preliminarily determining the transportation aspects of the proposal implicitly acknowledged the incomplete nature of its review and promised full and final consideration at a later date.²⁰⁴ Because this subsequent review necessarily informs the project’s qualification for exemption, it

¹⁹⁹ Wolf, Shaye Ph.D. Impacts of Climate Change on the Colorado River Basin, Center for Biological Diversity (March 10, 2016)

²⁰⁰ Kann, Drew, Climate change is drying up the Colorado River, putting millions at risk of ‘severe water shortages,’ CNN, Feb. 22, 2020 (last accessed on May 25, 2021).

²⁰¹ *Id.*

²⁰² *See Ken Tenn Regional Rail Partners, Inc.—Construction & Operation Exemption—IN Fulton County, Ky. And Obion County, Tenn*, STB Docket No. FD 36328, slip op. at 15-19 (Service Date July 23, 2021) (Board Member Oberman dissent).

²⁰³ *Alaska R.R.—Constr. & Operation Exemption—Rail Line Between Eielson Air Force Base (N. Pole) & Fort Greely (Delta Junction), Alaska*, STB Docket No. FD 34658, slip op. at 2 (Service Date Oct. 4, 2007) (“In the absence of a showing of [unique or compelling] circumstances, we believe that the better course is that we not decide the transportation merits of a construction proposal until a complete record, including the environmental record, is before us.”).

²⁰⁴ *See* STB Preliminary Exemption Decision at 9-10 (Jan. 4, 2021).

is therefore not inappropriate at this stage to seek appropriate consideration of the transportation merits through the Board's full application procedures rather than through its exemption procedures.

To grant an exemption under 49 U.S.C. § 10502 and avoid formal licensing procedures for the proposed railway, the Board must find that that a formal application:

(1) is not necessary to carry out the transportation policy of section 10101 of this title; and

(2) either—

(A) the transaction or service is of limited scope; or

(B) the application in whole or in part of the provision is not needed to protect shippers from the abuse of market power.

In addition, an exemption may only be granted if it is “consistent with this part [i.e., sections 10101 to 11908 of ICTTA].” 49 U.S.C. § 10502(a).

We dispute the Board's previous preliminary finding that the proposed exemption is “not necessary to carry out the transportation policy of section 10101.” 49 U.S.C. § 10502(a)(1). That section provides, in relevant part:

In regulating the railroad industry, it is the policy of the United States Government—

(2) to minimize the need for Federal regulatory control over the rail transportation system and to require fair and expeditious regulatory decisions when regulation is required;

...

(4) to ensure the development and continuation of a sound rail transportation system with effective competition among rail carriers and with other modes, to meet the needs of the public and the national defense;

(5) to foster sound economic conditions in transportation and to ensure effective competition and coordination between rail carriers and other modes;

...

(7) to reduce regulatory barriers to entry into and exit from the industry;

(8) to operate transportation facilities and equipment without detriment to the public health and safety

49 U.S.C. § 10101(8).

The Board's decision preliminarily granting an exemption found that the formal licensing procedures were not necessary to carry out the policies of sections (4) and (5) enumerated above, because the proposed rail "would enhance competition by providing shippers in the area with a freight rail option that does not currently exist and foster sound economic conditions in transportation, consistent with § 10101(4) & (5)."²⁰⁵ The Board also found that formal licensing procedures were not necessary to carry out the policies under sections (2) and (7), because "an exemption will minimize the need for federal regulatory control over the rail transportation system and reduce regulatory barriers to entry by minimizing the time and administrative expense associated with the construction and commencement of operations."²⁰⁶ However, the Board did not make any finding with respect to the national transportation policy expressed in section (8), "to operate transportation facilities and equipment without detriment to the public health and safety."

Although the Board need not determine that *all 15* policies enumerated in section 10101 would be carried out by the proposed exemption,²⁰⁷ it does need to adequately consider statutory provisions that are relevant to the exemption sought,²⁰⁸ and should be inclusive rather than exclusive in determining which statutory factors are relevant.²⁰⁹ Given the dramatic adverse impact to public health and safety anticipated by both the *transportation* of crude oil that is anticipated under the proposed rail line, and the adverse impacts caused by the construction and installation of rail-related infrastructure (discussed above and below), consideration of section 10101(8) is necessary here. Unlike the other sections in section 10101, which set forth *affirmative* policies for the promotion of a larger aim, section (8) sets forth a policy that *prohibits or discourages* operation of transportation facilities and equipment that causes "detriment to the public health and safety." Accordingly, where an applicant seeks "to operate transportation facilities and equipment" in a manner that raises considerable concerns regarding the anticipated impacts of the operation, the Board must necessarily determine whether full licensing procedure are needed to ensure that such operations can occur "without detriment to the public health and safety." 49 U.S.C. § 10101(8). *See also Brookhaven R. LLC—Construction and Operation Exemption—In Suffolk County, N.Y., et. al.*, STB Docket No. FD 36398, slip op. at 6 (Service Date Oct. 23, 2020).

²⁰⁵ STB Preliminary Exemption Decision at 9 (Jan. 4, 2021).

²⁰⁶ *Id.*

²⁰⁷ For example, the Ninth Circuit has held: "When the ICC grants an exemption from a portion of the Interstate Commerce Act, the ICC needs to take into account only the purpose of that portion of the statute from which exemption is granted. Otherwise, the ICC would be faced with the impossible task of reconciling a variety of different objectives of the National Transportation Policy. For example, the encouragement of sound economic conditions among carriers required by 49 U.S.C. § 10101(a)(1)(C) may not always coincide with the goal of cooperating with the states required by 49 U.S.C. § 10101(a)(1)(E)." *Or. PUC v. Interstate Commerce Comm'n*, 979 F.2d 778, 781 (9th Cir. 1992).

²⁰⁸ *Ill. Commerce Commerce v. ICC*, 787 F.2d 616, 627 (1986) ("[T]he Commission must consider *all* aspects of the [rail transportation] policy *bearing on the propriety of the exemption* and must supply an acceptable rationale therefor. Only by doing so can the Commission avoid the taint of arbitrariness." (emphases added)); *see also id.* at 630-32 (holding Commission failed to consider three relevant aspects of the rail transportation policy).

²⁰⁹ *See Village of Palestine v. ICC*, 936 F.2d 1335, 1342 (D.C. Cir. 1991).

Here, the Board cannot find that full licensing procedures are not necessary to carry out the section 8 policy. The operation of the rail could result in serious public health and safety impacts, including crude oil train accidents and spills, wildfires, increased local truck traffic, environmental justice consequences for downline communities, worsened air quality, and climate change effects. Full licensing procedures are necessary to ensure that the project is financially viable, and that the Coalition and Rio Grande Pacific could pay for any required public health and safety mitigation measures—that is, that there is little risk of the Coalition and operator cutting corners to the detriment of public health and safety. Indeed, that so many of the mitigation plans are open-ended and lack definite assurances of what measures will be applied, and will not be approved until after the project’s approval, increases the risk that the Coalition will avoid measures by claiming that they are too financially burdensome. The Center for Biological Diversity and other organizations previously raised numerous questions as to the financial viability of the proposed railway in response to the Coalition’s petition for exemption, but the Board declined to look into these questions.²¹⁰ The Board can and should still order full licensing procedures, and should use this process to require more definite mitigation, to make sure that the SCIC is capable of complying with all environmental conditions.

In any event, if the Board declines to require full licensing procedures, the petition should still be denied. As Chairman Oberman observed in his opinion dissenting from the Board’s decision to preliminarily grant the petition for exemption at issue here, the Board must weigh the project’s transportation merits against its environmental harms:

What remains to be determined is whether the mitigation measures identified through the environmental review process will be sufficient to address these impacts, or whether the overall environmental impact of the project will outweigh the project’s transportation merits which, as discussed above, are at this time, at best, uncertain. The likely significant cost of any imposed mitigation measures may also affect the project’s financial viability. The transportation merits and the environmental impacts of this project are inherently interrelated and should be considered in balance with each other *See Alaska R.R.—Constr. & Operation Exemption—A Rail Line Extension to Port MacKenzie, Alaska, FD 35095, slip op. at 22 (STB served Nov. 21, 2011) (Commissioner Mulvey, dissenting) (“[T]he more severe the environmental impacts, particularly those that cannot be fully mitigated, the greater burden on the proponent of the rail line to show that the transportation merits of its proposal outweigh those impacts.”)*²¹¹

Here, the Board cannot properly balance the transportation merits and the project’s environmental harms, because the EIS is inadequate. The incomplete effects analysis and inchoate mitigation outlined in the EIS preclude the Board from fully considering and weighing the project’s effects against its transportation merits. The Board should therefore deny the petition on this basis or defer its consideration until the EIS’s deficiencies are corrected.

²¹⁰ *See* Center for Biological Diversity, Reply to SCIC’s Petition for Exemption at 7-12 (July 7, 2020); STB Preliminary Exemption Decision at 5-8 (Jan. 4, 2021).

²¹¹ STB Preliminary Exemption Decision at 21 (Jan. 4, 2021).

Even if the Board were to consider the merits of the petition, the exemption should still be denied. The following severely disruptive impacts, which are certain to result from the project's construction, greatly outweigh the project's speculative economic benefits:

- disruption of Argyle Canyon communities due to displacement of homes and loss of home values;
- elimination of over 600 acres of "occupied habitat" for the federally listed Barneby Ridge-crest, Pariette cactus, Uinta Basin hookless cactus, and Ute ladies'-tresses;
- loss of six leks for the Emma Park sage-grouse population and potential extirpation of this highly sensitive population;
- destruction and loss of crucial habitat for big game species and disruption of their migratory routes;
- the paving over of more than 420 streams and rerouting of 55 streams; and
- loss of nearly 400 acres of inventoried roadless areas along 12-miles of the Ashley National Forest.

In addition, even if the project's claimed economic benefits were to eventually be realized, they would come at detrimental cost to public health and safety, by increasing the risk of rail accidents, exacerbating unhealthy air quality in the Uinta Basin, and worsening the climate crisis. As discussed earlier, the EIS fails to support its claims that the project's harms to public lands, wildlife, air, water, and public health and safety will be "minor" or "insignificant."

V. Conclusion

Although the EIS's environmental analysis is severely deficient, it is clear that the project would significantly harm air and water resources, irreversibly damage the climate, devastate wildlife habitat and public lands, and endanger residents of the Uinta Basin and downline communities. These serious harms heavily outweigh the project's claimed economic and public benefits, which are highly speculative.

We respectfully request that the Surface Transportation Board deny the SCIC's petition for exemption, because the EIS does not comply with NEPA and the ESA, and full licensing procedures under 49 U.S.C. § 10901 are required before the Board can authorize the project. Further, on the petition's merits, the environmental record shows that the environmental harms heavily outweigh the transportation benefits.

Alternatively, if the Board decides that the project's transportation merits warrant an exemption, we request that approval be subject to the environmental conditions suggested in this letter.

Thank you for considering our objections to the final EIS, BiOp, and proposed exemption.

Sincerely,

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Attachment A:

Fred Millar Comment on the Surface Transportation Board Oct. 30, 2020 Draft Environmental Impact Statement on the Uinta Basin Railway (Jan. 28, 2021)

Attachment B:

Center for Biological Diversity, Development Impacts on Big Game Species (October 2021)

Attachment C:

Ileene Anderson's comment: Review of the DEIS Revegetation Mitigation and Monitoring (February 5, 2021)

Attachment D:

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ATTACHMENT A

**COMMENT ON THE SURFACE TRANSPORTATION BOARD
OCTOBER 30, 2020 DRAFT ENVIRONMENTAL IMPACT STATEMENT
ON THE UINTA BASIN RAILWAY
JANUARY 28, 2021
FRED MILLAR**

I am a policy analyst, researcher, educator, and consultant with more than three decades of experience assessing the risks associated with transporting hazardous materials. Over the course of my career, I have advised governmental bodies, national chemical and oil worker unions, insurance companies, universities, and environmental groups on the unique health and safety hazards of shipping hazardous materials—including crude oil—by rail. I have testified before both houses of the United States Congress, and have presented as an invited lecturer in twelve countries on chemical transportation accident prevention. As a consultant, I have provided analyses of risks associated with transporting crude oil by rail into and around cities across the United States, including Albany, New York, Baltimore Maryland, Washington, D.C., and Benicia California.

I am familiar with the recent developments and national conferences and debates on crude oil rail transportation, and with the major recent research documents in this area. I am familiar with the Seven Counties Infrastructure Coalition (SCIC) proposal to begin crude oil unit train shipments. I have reviewed the Draft Environmental Impact Statement (DEIS) discussion of the potential safety impacts associated with this proposal.

I. INTRODUCTION

The US Surface Transportation Board’s (STB) 2020 Draft Environmental Impact Statement (henceforth “DEIS”) for the Uinta Basin Rail does not adequately consider public safety risks.

The professional formula in risk assessment is Risk = Consequence x Probability. The EIS must consider rigorously both major factors for a valid overall assessment result.

The quantitative risk assessment (QRA) prepared for the DEIS is seriously flawed. The DEIS expends much effort on analyzing the probabilities side of the equation without scientific basis that could produce credible risk assessment results.

Most important, the DEIS neglects important risk factors that would impact the consequences (e.g., fires, explosions) of a crude oil release and fails to discuss potential consequences and their severity in meaningful terms.

II. QUANTITATIVE RISK ASSESSMENT IS INHERENTLY PROBLEMATIC

As an initial matter, quantitative risk assessment (QRA) is a highly controversial tool that is easily manipulated to downplay high-consequence risks with assertions of low probability; this is the wrong approach.

In discussions on the public safety risks of hazardous projects, communities nearly always want to talk about potential high derailment release consequences (“How far away is safe enough?”). In the US, assessment of possible Worst Case Accident Scenarios has a long history. Such assessment was outlined in federal guidance as a key part of the work of the 4,100 US Local Emergency Planning Committees

(LEPCs) since the post-Bhopal 1984 disaster enactment of the 1986/1990 Community Right to Know laws. Since then, 3,500 high-risk chemical facilities have provided the mandated facility Risk Management Plans, including Worst Case Scenario releases and Offsite Consequence Analyses, and updated these consequence assessments every five years.

High-risk project proponents and boosters, on the other hand, usually want to talk about low probabilities of hazardous releases. Risk acceptance regarding high-risk facilities or operations in the US has long been a political matter – often turning on disputes on who gets to choose what is acceptable and what levels of information are available to various stakeholders.

High-risk hazardous materials industrial projects, beginning at least as early as the deployment of US nuclear power facilities and associated nuclear waste transportation, and later with toxic cargoes and Liquefied Natural Gas, have long deployed QRA methodologies. An influential 1997 essay from Robert Kuehn outlined these as a tactic to win public and regulator concurrence with industry-proposed “acceptable risks.”¹

These QRA methodologies aim:

- a. To divert attention from potential high consequences of a hazardous release

¹ Kuehn, Robert R., *The Environmental Justice Implications of Quantitative Risk Assessment*, 1996 U. ILL. L. Rev. <http://publish.illinois.edu/lawreview/archives/volume-1996/>

- b. To stifle discussion of high release consequence potentials with voluminous and elaborate calculations asserting the low probabilities of serious releases
- c. To keep the concerned public at arm's length, since only experts can credibly challenge the methods and findings of a given QRA

Moreover, these assessments are highly unreliable. As one observer of QRA documents has cautioned, “We should remember that risk assessment data can be like a tortured spy: if you torture it long enough, it will tell you anything you want to know.”²

A recent critique of QRA methodology is the Washington State Energy Facility Siting Evaluation Council’s (EFSEC) rigorous and highly critical analysis of the QRA approach adopted by proponents of a proposed crude oil terminal.³ The agency adopted a more reliable approach utilizing real-world evidence.

EFSEC made a detailed critique in this proceeding of the probabilistic modeling presented in support of the safety of crude by rail transportation to the proposed crude oil terminal by University of Illinois Urbana-Champaign’s researchers Dr. Chris Barkan and his team. EFSEC, in its analyses of crude oil train risks, adopted instead the “real-world historical risk” approach of former National Transportation Safety Board expert Robert Chipkevich—which uses data from a robust

² *Id.*

³ Washington State Energy Facility Site Evaluation Council, Adjudication Findings of Fact, Conclusions of Law, and Order to Proceed to Recommendation to the Governor, In the Matter of: Application No. 2013-01 Tesoro Savage, LLC, Vancouver Energy Distribution Terminal, Case No. 15-001 (Dec. 19, 2017) (hereafter “Washington EFSEC 2017”).

database of actual historical crude rail accidents. The terminal project was subsequently rejected as too risky on various grounds by Washington Governor Jay Inslee.

The Uinta Railway Project DEIS has adopted the same QRA methodologies rejected by EFSEC and cited the same experts whose assertions are effectively discredited by the WA EFSEC statement. In the present case, the lack of a historical record specifically of waxy crude oil rail shipper and carrier operations and traffic records, and of accident rates and release behaviors of the specific crude cargoes, renders impossible any definitive assessment by concerned citizens of the likely consequences of a serious oil unit train release involving the crude oils at issue here (i.e., waxy crude and oil shale). But the information gaps also undermine the DEIS's pretense of a reliable QRA, which requires robust and relevant data as opposed to the DEIS's dubiously relevant, cobbled-together data from "all rail operations" and lumping together of data from many kinds of hazardous railcars, routings, and cargoes in various kinds of trains.

III. THE DEIS QRA'S ACCIDENT RATES ARE FLAWED

To calculate the probability of accidents on the proposed rail and downline routes, the DEIS assumes that the specific route hazards on the likely "downline" routes (outside the Uinta Basin vicinity) to major crude oil markets nationwide are accounted for by merely taking into account the national average accident rate data and an accident rate factor for each track class (which indicates the quality of the track). For example, lower class tracks (Class 3), which would be used for the Uinta

Basin Railway, are purportedly twice as likely to involve accidents than the national average for all tracks. Accordingly, the DEIS multiplies the national accident rate by an accident rate factor of “2” to determine the accident rate for the Uinta Basin Railway. However, this approach lumps together recent accident rates data for all localities and types of trains and cargo, despite the fact that this kind of non-relevant data will not support a valid probabilistic risk assessment.

The STB’s OEA DEIS did look more carefully with comparative analyses at some local and geological or infrastructure characteristics of the rail routes that would likely be used by the main few Action Alternatives being considered from the Uinta Basin to nearby junctures with mainline rail tracks. But the DEIS did not extend such analysis to the “downline” routes nationally.

A. The DEIS IGNORES SITE-SPECIFIC RISK FACTORS

The DEIS neglects to analyze “downline” route-specific risk factors for the Uinta Basin Railway and “downline” routes to distant refineries that could contribute to the risk of derailment or accidents. Instead, it attempts to estimate the probability of derailment in a specific local area by in opaque fashion combining the local track class data of tracks within the Study Area, extending as far as the outskirts of Denver, with generic national data on derailment rates derived from previous accidents of all kinds.

From the DEIS:

[STB's] OEA used data on accident rates by track class to generate a base accident rate for all of the Action Alternatives, which would operate on Track Class 3 in the Basin at an average of 15 miles per hour (mph) based on information provided by the Coalition. The allowable operating speeds are up to 40 mph on Track Class 3, but lower anticipated speeds reflect the geometry, tunnels, bridges, and steep grades on the proposed rail line. OEA started with the nationwide rates over the last 2 years of about 2.7 accidents per million train miles for all railroads and types of track (Table E-1) as the basis for predicting accident rates. OEA also reviewed the combined total for main lines and sidings (i.e., not including yards and industry track) for all railroads, which gave an average of 0.97 accident per million train miles for 2018 and 2019. This was rounded to 1 accident per million train miles (the same as the value for 2019). Using the multiplier of two for Track Class 3, as indicated by Anderson and Barkan (2004) and Liu et al. (2011), OEA predicted a rate of 2.0 accidents per million train miles for the Action Alternatives. For the downline analysis, OEA reviewed the maximum allowable speeds on the different segments and found that the likely track classes involved were primarily Track Classes 3, 4, and 5. OEA used Track Class 3 in the analysis for Kyune to Grand Junction and used Track Class 4 or higher for the other downline segments. For the Action Alternatives, Track Class 3 had a rate of 2.0 accidents per million train miles. Using the findings of Anderson and Barkan (2004), OEA estimated the rate for the other downline segments as 0.5 per million train miles, or one-half that for the average across all track classes.

(DEIS at E-2.)

But track class (which indicates the quality of the track) is not the only factor that should be analyzed in the risk of derailment. The DEIS contains no discussion of the many other potential segment-specific infrastructure risk issues associated with the track structures and roadbed present, such as dangerous curves, washout potentials, trestles or tunnels, or migratory wildlife.

A closer look at specific infrastructure features of the planned downline routes is required to reach any fair estimate of probability of derailments and accidental crude oil releases, especially given possible operational challenges caused by the expected heavy volumes of unit trains.

The DEIS's reliance on data from the accident history along all tracks is especially puzzling, given that the past work of one of the EIS's main sources, Dr. Chris Barkan of the University of Illinois Urbana-Champaign (UIUC), acknowledges the importance of looking at local features when assessing risk.⁴

Dr. Barkan's work also highlights that the top risk factors in rail accident causation on a given stretch of track is broken rails and welds and buckled track—the data for neither of which the DEIS analyzes for the downline transcontinental rail network its shipments will traverse.

NTSB accident investigations will frequently take account of the possibility that local route conditions can be a causal factor in serious derailments. For example, it is clear that specific route characteristics were centrally important in the Lac-Megantic, Quebec crude oil train derailment and fire on July 2, 2013. Although the draft EIS dismisses the cause of the Lac- Megantic accident as “human error,” (DEIS at 4.7-19), the disaster was also the result of infrastructure issues involving

⁴ Barkan, Christopher, et al., Railroad Derailment Factors Affecting Hazardous Materials Transportation Risk, Transportation Research Record 1825, Paper No. 03-4429 at 67 (2003) (hereinafter “Barkan 2003”), available at <https://railtec.illinois.edu/wp/wp-content/uploads/pdf-archive/Barkan-et-al-2003.pdf>.

downhill grades and the presence of curves/switches in the downtown area.

Local conditions are a potential factor that experts suggested may have caused or influenced the derailment and oil spill in Lynchburg, Virginia on April 20, 2014. Grady Cothen, a former Federal Railroad Administration official, said “given the recent wet weather in Virginia and the accident's location near a river, it's possible that soft subsoil may have weakened the track.”⁵

Local geological conditions, including landslide hazards are another significant factor to consider. Landslides can and have caused train derailments.⁶

The DEIS should conduct site specific analysis to determine whether local factors could increase the risk of accidents and derailment along the Uinta Basin Rail or the routes downline.

B. THE DEIS IGNORES CARGO AND UNIT TRAIN SPECIFIC FACTORS IN CALCULATING ACCIDENT RATES

In Appendix E's section on “Rail Accident Rates” the DEIS estimates probabilities for rail accident rates for all cargoes per year along the main three proposed Uinta Railway routes. The analysis shows very low expected probabilities of future Uinta crude oil unit train accidents. The

⁵ CBS/AP, Oil Tankers Fall into James River (May 1, 2014), http://www.pennlive.com/midstate/index.ssf/2014/05/oil_tankers_fall_into_james_river.html.

⁶ Washington EFSEC 2017 at 37, 39, 43, 62-63.

DEIS, however, does not rely on data from the most recent historical crude by rail (CBR) accidents, but on “data for all railroads” (DEIS at E-1) and all types of track, and for a much larger range of freight cargoes in commerce instead of for crude oil cargoes overall.

The DEIS makes a crucial methodological decision to base its analyses on “a larger set of accidents” than on the recent record of several major crude oil accidents (DEIS at E-4). The DEIS defends this choice only summarily, with the unsupported assertion that “the specific cargo type does not determine the chance of a train accident.” (DEIS at E-4.)

The DEIS must examine the specific risks of the planned unit train operational business plan for the Uinta Basin Rail cargoes. As explained by the Pipeline Hazardous Material and Safety Administration, crude oil unit trains (i.e., trains exclusively carrying crude oil, which the project proposes, as opposed to “manifest” (mixed cargo) trains) have a higher risk of derailment:

There is reason to believe that derailments of [High-Hazard Flammable Trains] will continue to involve more cars than derailments of other types of trains. There are many unique features to the operation of unit trains to differentiate their risk. The trains are longer, heavier in total, more challenging to control, and can produce considerably higher buff and draft forces which affect train stability. In addition, these trains can be more challenging to slow down or stop, and can be more prone to derailments when put in emergency braking, and the loaded tank cars are stiffer and do not

react well to track warp, etc., which when combined with high buff/draft forces can increase the risk of derailments.⁷

Multiple professional outlets have recognized the differences in risk between transporting crude oil by unit train and traditional rail shipment, including the Association of American Railroads' August 2013 Circular OT-55N⁸ and the National Traffic Safety Board's April 2014 Safety Forum.⁹ Various federal safety studies and federal agency directives have also cited **crude oil** unit trains as a key safety concern.

Dr. Barkan's own "preliminary" report comparing the risks of unit trains and manifest trains concludes that special characteristics of unit trains are important to assessing risk.¹⁰ Unit trains pose more of the risk of what the report terms High Consequence Low Probability derailment releases. Adequately predicting the probability of accidental release of crude oil from a rail line would require an assessment of the particular operations, behavior, and risk of unit trains made up entirely of flammable crude oil cars, especially given their recent history and demonstrated potential for multi-car derailments. However, the DEIS's analysis of probability of derailment (and release) is based on examining the accident history of freight trains generally and not on

⁷ Dept. of Transportation, Pipeline and Hazardous Materials Safety Administration, Draft Regulatory Impact Analysis for Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains; Notice of Proposed Rulemaking, July 2014 ("Draft RIA") at 24.

⁸ Association of American Railroads' August 2013 Circular OT-55N (August 5, 2013).

⁹ NTSB Rail Safety Forum: Transportation of Crude Oil and Ethanol, Washington, D.C., April 22, 2014, transcript at 30, available at <https://data.nts.gov/Docket/?NTSBNumber=DCA14SS004>.

¹⁰ Li, Weixi and Barkan, Christopher P L, Comparative Risks of Transporting Hazardous Materials by Unit Train and Manifest Train, [Transportation Research Board 97th Annual Meeting](#) (2018) ("Li and Barkan 2018"), abstract available at <https://trid.trb.org/view/1496768>.

crude oil trains, which are proposed to make up the vast majority of traffic along the rail line.

The DEIS fails to explain its methods and assumptions for determining the probability of a range of volume of spills that could occur in a derailment and fails to demonstrate that those methods are sound and rational. Appendix E simply summarizes several datasets that the DEIS appears to rely on, including:

(1) historical data regarding train accidents in Utah in 2019, a very narrow sample which DEIS does not try to argue is representative of a larger range of years or states, including number of derailments, mainline accidents, and collisions;

(2) five large-release rail accidents involving crude oil or other hazardous materials which occurred between 2013 and 2015 in the U.S. and Canada, including the amount of crude oil released;

(3) data from the *Washington State 2014 Marine and Rail Oil Transportation Study* reporting the number of derailed tank cars per major crude oil accidents in 2013 and 2014; and

(4) data from the RPI-AAR Railroad Tank Car Safety Research and Test Project on the probabilities of release for rail cars of different designs and analyzing the chance of different numbers of cars derailing and releasing different quantities of the product carried.

The DEIS then states without explanation and with little transparency regarding its numerous engineering judgments that it used in

combining this data and “other” unidentified data to determine the probability of releases as follows:

OEA used a combination of these and other data to determine representative distributions of release sizes for the types of rail cars addressed in the assessment of the Action Alternatives, given that a derailment or collision has occurred on the proposed rail line.

- Minor spill from collision/derailment (1,000 gallons): 7 percent
- Collision/derailment release of 30,000 gallons: 17 percent
- Collision/derailment release of 90,000 gallons: 2 percent
- Collision/derailment release of 150,000 gallons: 0.07 percent
- Extreme collision/derailment release of 450,000 to 900,000 gallons: 0.005 percent

Taken together, this distribution suggests that 26 percent or roughly one in four accidents, most of which would be derailments, would have some sort of release, and most of the time the release would be equivalent to one car or less.

(DEIS at E-4.) Release size is in effect the end point of the DEIS probabilistic analysis.

How the DEIS weighted and factored in the above summarized data and “other” unidentified data to determine these probabilities is entirely opaque, illustrating the problems with QRA analysis described above. The EIS must disclose all data sources and the details of combining them. The DEIS also fails to consider or disclose whether some risk factors should be weighted more heavily than others in assessing the probability of hazardous impact.

**C. THE DEIS FAILS TO CONSIDER AND WEIGH FACTORS THAT
COULD PRODUCE POTENTIALLY HIGH RELEASE PUBLIC SAFETY
CONSEQUENCES**

According to recent risk discussions from the Federal Railroad Administration and PHMSA (tellingly, both agencies here are relying on a “real world” approach to risk analysis versus a QRA), factors that “have given rise to both higher expected damages and probability of a catastrophic event” from an oil train derailment in recent years include:

- (1) “the volumes of crude oil and ethanol carried by rail are relatively large when compared to rail shipments of other flammable liquids. In particular, the volume of crude oil shipped by rail has been increasing rapidly during the past several years; and
- (2) “crude oil and ethanol are shipped in [high hazard flammable trains], compounding the risk when an accident does occur.”¹¹

Rail safety expert Robert Chipkevich’s “real world” analysis of what accidents have occurred has also highlighted important factors contributing to increased risk of train derailments today:

- (3) larger blocks of tank cars are being grouped in trains in large numbers; and

¹¹ Draft RIA at 20.

(4) the larger sizes of oil tank cars.¹²

Chipkevich underscores the basic professional critique of defective QRA analyses: “To use . . . [data from] all variety of freight trains to characterize the [high hazard flammable train] experience, creates a fundamentally flawed risk picture.”¹³ The railroads’ and carriers’ specific use of unit train configuration for crude by rail shipment (as planned for the project here) contributes significantly to fire and explosion events.

Since 2006, train derailments have experienced a high rate of failure of crude oil and ethanol tank cars in accidents. Below are examples:

- New Brighton, Pennsylvania, 20 of 23 tank cars failed (86.9%);
- Cherry Valley, Illinois, 15 of 19 tank cars failed (78.9%);
- Arcadia, Ohio, 31 of 31 tank cars failed (100%);
- Plevna, Montana, 12 of 17 tank cars failed (70.5%);
- Aliceville, Alabama, 25 of 26 tank cars failed (96.1 %);
- In two separate accidents in Gogama, Ontario, 19 of 29 tank cars failed (65.5%) and 36 of 39 tank cars failed (92.3%);
- Mount Carbon, West Virginia, 20 of 27 tank cars failed (74%); and,
- Casselton, North Dakota, 18 of 20 tank cars failed (90%).¹⁴

¹² See Prefiled Testimony of Robert Chipkevich Filed by the City of Vancouver, In the Matter of Application No. 2013-01, Tesoro Savage, LLC, Vancouver Energy Distribution Terminal, Case No. 15-001 at 10 (May 9, 2016) (hereafter “Chipkevich Testimony”).

¹³ *Id.*

¹⁴ *Id.* at 8-9.

Further, a 2016 analysis performed by Chipkevich showed that, based on 24 derailments, 442 tank cars derailed and 314 tank cars released cargo (71 %). (See Table 1 below.) The average number of cars derailed in the 24 accidents is 18.4 and the average number of cars that breached is 13.¹⁵

Table 1 - Crude Oil and Ethanol Train Derailments

	Location	Date	Railroad	tc derailed	tc release	Fire	Product	Speed	Released gallons
1	Bon Homme County, SD	9/19/2015	BNSF	7	3	Y	Ethanol	10	49,748
2	Heimdal, ND	5/6/2015	BNSF	6	5	Y	Crude oil	24	98,090
3	Gogama, Ontario	3/7/2015	CN	39	36	Y	Crude oil	43	500,000
4	Galena, IL	3/5/2015	BNSF	21	10	Y	Crude oil	23	110,543
5	Mount Carbon, WV	2/16/2015	CSX	27	20	Y	Crude oil	33	378,034
6	Gogama, Ontario	2/14/2015	CN	29	19	Y	Crude oil	38	264,172
7	LaSalle, CO	5/9/2014	UP	6	1	N	Crude oil	9	7,932
8	Lynchburg, VA	4/30/2014	CSX	17	1	Y	Crude oil	23	29,416
9	Vandergrift, PA	2/13/2014	NS	21	4	N	Crude oil	31	4,310
10	New Augusta, MS	1/31/2014	IC/CN	15	7	N	Crude oil	47	50,450
11	Plaster Rock, NB	1/7/2014	CN	6	2	Y	Crude/ethanol	47	60,759
12	Casselton, ND	12/30/2013	BNSF	20	18	Y	Crude oil	42	436,437
13	Aliceville, AL	11/8/2013	AGC	26	25	Y	Crude oil	39	630,000
14	Lac Megantic, Quebec	7/6/2013	MMA	63	59	Y	Crude oil	65	1,580,000
15	White River, Ontario	4/3/2013	CP	7	2	Y	Crude oil	35	26,600
16	Parkers Prairie, MN	3/27/2013	CP	14	3	N	Crude oil	40	30,000
17	Plevna, MT	8/5/2012	BNSF	17	12	Y	Ethanol	23	245,336
18	Columbus, OH	7/11/2012	NS	3	3	Y	Ethanol	25	54,748
19	Tiskilwa, IL	10/7/2011	IIRR	10	9	Y	Ethanol	37	162,000
20	Arcadia, OH	2/6/2011	NS	31	31	Y	Ethanol	46	834,840
21	Cherry Valley, IL	6/19/2011	CN	19	15	Y	Ethanol	36	323,963
22	Luther, OK	8/22/2008	BNSF	8	5	Y	Crude oil	19	80,746
23	Painesville, OH	10/10/2007	CSX	7	4	Y	Ethanol	48	55,200
24	New Brighton, PA	10/20/2006	NS	23	20	Y	Ethanol	37	485,278
Totals				442	314				6,498,602

The average spill size releases were 270,775 gallons, which is equivalent to about 30 gasoline cargo tank trucks. Further, ten of the 24 accidents had releases of 245,336 gallons or greater, the equivalent of 27 gasoline cargo tank trucks.¹⁶

¹⁵ *Id.* at 13.

¹⁶ *Id.*

The Washington EFSEC, in considering an application for a crude rail terminal in 2017, similarly observed that since 2006 releases from actual crude oil derailments have averaged 270,000 gallons.¹⁷ In doing so, the EFSEC rejected Dr. Barkan's alternative QRA approach, which downplays the CBR risk and consequences of a derailment, when compared against Chipkevich's more robust use of real-world historical data. EFSEC instead adopted the "real world" historical data analysis:

Dr. Barkan's projection of the amount of crude oil would be released from derailed cars is unreasonable. He projected that a derailment in Washington would spill 92,000 or larger gallons only once in 110 years or in one out of 17 future spills. However, almost two-thirds of recent crude and ethanol accidents (16 out of 24) spilled more than a quarter of the derailed tank car contents. By this measure, Dr. Barkan projected future tank cars will perform ten times better than they have actually performed in recent incidents. Dr. Barkan also projects DOT-117 tank cars are 83 percent less likely to release crude oil than unjacketed DOT-111s and 35 percent less likely to release than jacketed CPC-1232s, but PHMSA and FRA assume risk reductions of 50 percent and 16 percent, respectively.

The Council believes there are more defensible alternative estimates that are supported by the record. For example, one method is to apply the average of 51 percent of derailed tank car contents being released to Dr. Barkan's estimated average derailment of 12.7 tank cars. This yields an average spill of 165,013 gallons. A further reduction of 50 percent to account for safety improvements attributable to use of DOT-117 tank cars, as estimated by PHMSA, results in a projected average spill of 82,500 gallons, which is similar to PHMSA's projected average spill size of 83,602 gallons per mainline derailment. Consideration of tank car releases in North

¹⁷ Washington EFSEC 2017 at 51.

America since 2006 suggests that actual releases could average 270,000 gallons.¹⁸

Furthermore, Table 1 above also shows that crude oil disasters sometimes occurred at quite low train speeds, which the DEIS fails to acknowledge. According to Chipkevich: “Many of the catastrophic crude oil and ethanol train accidents between 2006 and 2015 were operating at speeds below maximum speeds established by PHMSA in the [2015] rulemaking; in fact, 17 of 24 serious accidents that I reviewed happened at speeds of 40 mph or less and 8 of those accidents occurred at speeds of 25 mph or less.”¹⁹

A recent 2018 “preliminary” paper co-authored by Dr. Barkan confirmed that unit crude trains present higher risks. The paper concluded on the basis of abstract modeling that general hazmat unit train derailments, which could produce much larger total releases in a serious event, presented a higher risk per trip than “manifest” (mixed cargo) trains, i.e., higher annual risk of “high consequence” events due to more tank cars per train.²⁰

IV. The DEIS FAILS TO MEANINGFULLY CONSIDER THE POTENTIAL CONSEQUENCES OF DERAILMENT

¹⁸ Washington EFSEC 2017 at. 51. *See also id.* at 44-46.

¹⁹ Chipkevich Testimony at 16.

²⁰ Li and Barkan 2018. *See also* Chapter 3 of Dr. Li’s previous thesis at UIUC under Dr. Barkan’s supervision: Li, Weixi, Quantitative Analyses of Unit Train Safety and Railroad Tank Care Implementation Policy, Thesis, University of Illinois at Urbana-Champaign (2018), <https://www.ideals.illinois.edu/bitstream/handle/2142/101380/LI-THESIS-2018.pdf?sequence=1&isAllowed=y>.

The DEIS's quantitative analysis of the "consequences" of derailment narrowly limits the analysis to their selected end points of predicted "spill" sizes and frequency. As a result, the DEIS's quantitative analysis as to the consequences of a rail accident is risk-minimizing and limits the consideration of consequences to only the occurrence of spills, presented in a chart showing quite small probabilities. (DEIS at E-4.)

The DEIS offers no quantitative indications or estimations of the range of fire/explosion impacts that representative crude releases could produce nor of the fatalities/injuries that could be correlated with each size of release generically (e.g., area of evacuation), much less a range of the potential Worst Case Scenario public safety fire/explosion impacts along specific routes with their differing hazards regarding trackside populations, buildings nearby, etc.

Further, the DEIS fails to disclose or analyze the reasonably foreseeable local consequence impacts of a comparable release accident in areas of very different population densities along the far-flung transcontinental routes for crude oil unit trains stretching from the Uinta Basin to the most likely national markets. It does not consider either the absolute or relative public safety risks of the different routings. In 2013, in the small town of Lac-Mégantic, Canada, 63 tank cars derailed at night, releasing 1.6 million gallons of crude oil, which then ignited, killing 47 people. Some cities on the downline routes for the rail project would no doubt have populations many times greater than Lac-Mégantic, and much denser populations especially during daytime hours.

The FEIS must disclose what impacts on public safety a high impact crude unit train release could have in representative urban areas along the transcontinental “downline” routes to US coastal refineries. In addition, the EIS must consider the crude unit train risks to public safety from releases caused by terrorism, particularly in high population areas.

The DEIS highlights only the largest five of the dozen significant CBR North American derailment releases in the traumatic 2013-2016 era, but cherry-picks the data mainly to support a minimization of CBR derailment risks. (DEIS E-2-E-3.)

The DEIS makes no mention, for example, of the public evacuations seen in these emergencies. Nor does the DEIS consider the emergency response decisions made by the responding fire services which mainly involved not trying to “mitigate” the ongoing fires and explosions, but (as advised by the US DOT Emergency Response Guidebook) mounting only “defensive firefighting”, i.e., expeditiously getting residents and fire service personnel away from the scene. Emergency response experts note that not a single historical example exists in which the fire service succeeded in “suppressing” a serious crude oil derailment fire event.

In discussing the five historical accidents, the DEIS makes risk-minimizing conclusions. The DEIS cites the five CBR cases as having only one with public safety disaster impacts (Lac-Mégantic), while neglecting to estimate what could have happened in different CBR accident conditions (e.g., if the April, 30 2014 Lynchburg CBR train or the 2016 Mosier, OR train had derailed into the city instead of on the other side

into the river). Shaken local fire chiefs and other officials and the public were quick to express in the media after several of the classic CBR derailment disasters how “lucky” the spared populations had been.

The DEIS also suggests that these accidents were in a distant early era, “involving tank cars that do not meet present-day standards,” but admits that the earlier defective tank cars will remain in service into the future until 2025. (DEIS at E-3.) These tank cars could also remain in service longer if the crude oil industry wins another delay from Congress for updating tank car standards.

The DEIS also implies without evidence that new federal regulations (presumably from the 2015 High Hazard Flammable Train regulations which DEIS does not cite explicitly nor evaluate rigorously) will be effective in reducing future crude oil accidents. (DEIS at E-3.) As discussed further below (section VI), upgraded DOT-117 tank car standards are only marginally better in preventing releases. The PHMSA prediction of a significant risk reduction due to the use of the new DDOT-117 standard cars cannot be relied upon in the absence of an adequate historical record of CBR movements using that car, which in any case has released its contents in actual derailments subsequent to the optimistic PHMSA prediction.

V. THE DEIS DOWNPLAYS THE RISK OF UINTA BASIN CRUDE OILS

The specific rail cargo type (e.g., in a tank car derailment, crude oils vs. syrup) clearly impacts the consequences of an accident. But the DEIS fails to analyze the risks of transporting the specific crudes at issue, including Uinta Basin waxy crude and oil shale/kerogen, as well as the

risks of the other major flammable rail cargoes that may travel by rail from the Basin (e.g., refined oil products). Presumably the latter will travel in manifest trains and will not be mixed in with the waxy crude railcars, but close encounters between these products and other hazmat cargoes (including crude oil) in rail siding areas is possible.

The DEIS slips in an important conclusory statement, without evidence, that because Uinta waxy crude is less volatile than crudes involved in previous high-consequence derailments, “explosions are much less likely even in the event of large spills.” (DEIS at E-3.)

But the DEIS has neither produced nor cited any rigorous or comprehensive research report or historical data about the fire or explosion risks specifically of waxy crude or oil shale in unit train rail transportation. And the DEIS lacks any evaluation of the public safety of the proposed Uinta shipments based on:

- (a) the chemical characteristics of waxy crude or oil shale
- (b) expert analysis of how these characteristics lead to various flammable and/or explosive behavior consequences.

Indeed, very little information on the risks of the specific crude oils being widely transported in North America has been publicly available. Railroads’ historical secrecy regarding their own data on high-risk operations has hampered assessment of risks by public agencies, the media and the at-risk public. The belated US DOT/DOE-commissioned Sandia National Labs Report to Congress on Crude Oil Characterization Research Study analyzes a wide range of US crude oils in commerce,

and it does provide research on (a) and (b) above.²¹ The Sandia Literature Survey Executive Summary outlines authoritatively the kinds of significant information gaps researchers found regarding risks even with the long-transported lighter types of tight crude oils and what kinds of future research is vitally needed to fill the gaps.

In their initial Literature Survey Report, the researchers found that there was virtually no comprehensive historical research for US crude oils on their features and fire/fireball behaviors in a release.²² The researchers noted:

Relationships between crude oil properties and probability or severity of combustion events in rail car spill scenarios have not been established.

Although it is likely that a combination of crude oil properties—especially those associated with potential for flammable vapor formation—could be used to predict combustibility, no specific, objective data were found that correlated known crude oil properties with the likelihood or severity of rail transport-related combustion events. While industry groups actively working on this problem have been identified, their progress and results have not yet been released to the public.²³

²¹ See generally, Department of Energy, Report to Congress on Crude Oil Characterization Research Study, <https://www.energy.gov/fe/report-congress-crude-oil-characterization-research-study>.

²² Sandia National Laboratories, Literature Survey of Crude Oil Properties Relevant to Handling and Fire Safety in Transport (March 2015), available at <https://doi.org/10.2172/1177758> (“Sandia Literature Survey”).

²³ *Id.* at 12.

While not directly dealing with waxy crude, the report strongly suggests that even the most basic and widely accepted data on crude oil characteristics generally, including of waxy crude oil, is lacking.

In a matter of considerable high-level debate, the Literature Survey also suggested that the volatility of the crude oil involved may not be as important as previously thought. The Sandia reports on crude oils' characteristics and flammability impacts indicates that the energy created in an accident may contribute more significantly to the flammability impact of an accident:

No single parameter defines the degree of flammability of a fuel; rather, multiple parameters are relevant.

While a fuel with a lower flashpoint, wider range of flammability limits, lower auto-ignition temperature, lower minimum ignition energy, and higher maximum burning velocity is generally considered more flammable, the energy generated from an accident has the potential to greatly exceed the flammability impact of these and any other crude oil property-based criteria.²⁴

The Sandia report notes other key factors that may operate in determining fire event outcomes from crude oil derailments:

Numerous combustion events can occur from an accident involving hydrocarbons and hydrocarbon mixtures including crude oils, with severity dependent on the amount of fuel involved, surrounding infrastructure, and [the particular accident] environment.²⁵

²⁴ Sandia Literature Survey at 13-14.

²⁵ *Id.* at 13.

In light of the existing information gaps, the Sandia researchers performed the most basic research, rigorously analyzing various crude oils' features and assessing their relation to fire and fireball outcomes with relatively small-scale field experiments. Sandia studied three selected types of "representative" US crudes (including "light" crude oil from tight shale formations and conventional crude oil), but (it is important to note) not waxy crude. Waxy crude has been only a minor player in the overall North American energy picture.

The Sandia "Characterization" survey of the available research on crude oils generally indicates that there has been no rigorous established research in the public domain providing a scientific basis for an acceptable safety level of crude oil transportation generally.²⁶ The Sandia researchers concluded that volatility alone is not a sufficient basis for regulation of crude oil cargoes, a finding seized upon by opponents of the volatility regulations enacted by Washington State.²⁷

The current situation with waxy crude and shale oil research is therefore similar to the earlier history with the 2013-2020 North American Bakken crude oil unit train (and ethanol railcar) disaster era. The Sandia public domain federal crude oils characterization research was done only after the 2013-2014 spate of fiery derailments roused media and public concerns. While waxy crude behavior (solidification potential) in pipelines has been studied, even the most basic steps in waxy crude rail safety research have apparently not been planned nor

²⁶ Sandia National Laboratories, Pool Fire and Fireball Experiments in Support of the US DOE/DOT/TC Crude Oil Characterization Research Study (Aug. 2019), <https://doi.org/10.2172/1557808>.

²⁷ *Id.*

conducted, much less any later stage actual field tests which FRA might conduct with waxy crude-loaded railcars which should be tested for collision and fire survivability.

VI. THE NEW TANK CAR STANDARDS WILL BE ONLY marginally EFFECTIVE

The DEIS downplays the potential for future CBR high-consequence events by suggesting that new safety standards requiring DOT-117 cars or retrofits by 2025 will effectively reduce release risks significantly. (DEIS at E-3.) The DEIS fails to analyze how effective these new standards will be or disclose the uncertainty of their effectiveness.

The DEIS omits to mention that the DOT-117 design (and other features of the Obama Administration's 2015 Final Rule on "High Hazard Flammable Trains" which covers crude oils) will provide only marginal disaster risk-reduction improvements. The PHMSA estimates that the DOT-117 will only provide a 21% risk reduction over theunjacketed CPC-1232 and only a 10% risk reduction over the jacketed CPC-1232.²⁸ And DOT-117s reportedly have an estimated puncture velocity of only 12.3 miles per hour and are designed to withstand pool fires for only up to 100 minutes and torch fires for up to 30 minutes.²⁹ Chlorine tank cars with 3/4-inch shells similar to the DOT-117 model punctured in accidents in South Carolina and Texas.³⁰ Thus, there will be substantial risks of releases, even if the new requirements can be fully implemented.

²⁸ Draft RIA at 120.

²⁹ Washington EFSEC 2017 at 39-40, 346.

³⁰ *Id.*

Further, experts have questioned whether any train traveling at the speed of 30 mph could withstand the impact from derailment: “When you begin to look at cars that are derailing at speeds of 30, 40 miles an hour, it’s very difficult, it’s a big ask, to expect that a tank car get hit [and] not be breached,” Karl Alexy, staff director of the Federal Railroad Administration’s Office of Safety, bluntly stated in a 2014 forum convened by the National Transportation Safety Board.³¹ The DEIS should consider the effectiveness of the existing tank car safety requirements at these higher speeds, and that crude oil unit trains from the Uinta Basin will certainly be traveling on the downline transcontinental routes at the railroads’ current standard of 50 mph.

In any case, DOT-117 tank car design standards will not fully take until effect for crude oil tankers until May 2025.³² Even then, the deadline for compliance could be extended by Congress, as that body has seen fit to do before.³³

Until these new standards take effect, the admittedly defective CPC-1232 cars will be allowed to remain in service. Information gaps exist with respect to the performance of CPC-1232 tank cars in a derailment. In 2014, discussion at the National Transportation Safety Board’s April 2014 Safety Forum highlighted the need for multi-year robust historical

³¹ Ailworth, Erin, Local fuel distributor to require safer rail cars at its terminals, Boston Globe (May 8, 2014), available at <https://www.bostonglobe.com/business/2014/05/08/local-fuel-distributor-require-safer-rail-cars-its-terminals/QfkKMda2NmE6OC0tUpWWiK/story.html>.

³² Pub. L. 114–94, div. A, title VII, §7304, Dec. 4, 2015, 129 Stat. 1596 (codified at 49 USC 20155(b)).

³³ *Id.*

data in assessing CBR release risks, and that there is simply not enough data from CBR crashes involving the railroad-industry designed CPC-1232 tank cars, which are only marginally safer than the workhorse DOT-111 tank cars, to constitute a strong empirical basis for calculating estimations of future release events. At that forum, Todd Treichel, the director of the RSI-AAR Railroad Tank Car Safety Research and Test Project stated, “The 1232 cars, the CPC-1232 cars in particular, remain fairly scarce in our [historical accident] data, so the specific question how have they performed in accidents so far doesn't really confirm or dispute help us...[in performing probabilistic analyses predicting CBR derailment risks] until there are many more cars that have been derailed in many more types of accidents.”³⁴

Since then, some limited but suggestive real-world data on the crashworthiness of CPC-1232 cars has emerged. In 2016, rail safety expert Robert Chipkevich’s review of 13 accidents involving DOT-111 and CPC-1232 tank cars releasing more than 92,000 gallons of cargo in the 9 year period between 2006 and 2015. Cargo release in these 13 accidents totaled 5,950,603 gallons of cargo, an average of 457,738 gallons per accident. Four of these accidents involved CPC-1232 tank cars: two accidents in Gogama, Ontario and one accident each in Mount Carbon, West Virginia and Galena, Illinois.³⁵ Five of the most recent spills involving 1232 cars (including one jacketed car with a safety profile similar to DOT-117 cars) failed in significant numbers, averaging 209,000 gallons per spill.³⁶ Chipkevich’s “real world” analysis

³⁴ NTSB Rail Safety Forum: Transportation of Crude Oil and Ethanol, Washington, D.C., April 22, 2014, transcript at 82, available at <https://data.nts.gov/Docket/?NTSBNumber=DCA14SS004>.

³⁵ Chipkevich Testimony at 27.

³⁶ EFSEC 2017 at 45.

seemingly discredited in EFSEC's eyes Dr. Barkan's QRA predictions that crude oil spills involving these tank cars would occur at much lower frequency and with much lower oil volume releases.³⁷

VII. THE DEIS LACKS ADEQUATE DISCUSSION OF EMERGENCY RESPONSE CAPABILITIES

The DEIS proposes a Mitigation Measure that involves the local SCIC staff preparing a voluntary emergency response plan, while proposing no other significant mitigation for potential crude oil release events, but the DEIS does not assess how effective such a plan could be. The most important and sobering evidence from the historical crude by rail derailment disasters is that "offensive firefighting" emergency response was never successful in preventing often repeated hours-long fire/explosion consequences. The DEIS lacks any discussion of this issue.

The DEIS should discuss the capabilities of local emergency responders in difficult-to-evacuate populated cities as well as in rural counties, both types of at-risk communities with limited resources to respond to disasters.

VIII. CONCLUSION: THE FEIS NEEDS ROBUST DATA, PARTICULARLY ON POTENTIAL CONSEQUENCES OF RELEASES, AND A MORE RELIABLE RISK ANALYSIS METHODOLOGY

As suggested by the discussions in the Sandia reports, a very long list of information is needed when raising questions to assess risk. And as this report has shown, most of the needed data is completely unavailable

³⁷ Chipkevich Testimony at 27.

for Uinta waxy crude oils or of dubious reliability. This information includes:

- Inherent properties of the cargo – vapor pressure, flash point, pour point, etc.
- Unit train operations and safety protocols for shippers loading the cargoes and for carrier railroads
- Unit train handling and behavior in various terrains and weather (railcar cargo sloshing, tracks losing integrity in very cold or hot weather, trains leaving the tracks under unit train force stresses, etc.)
- Railcar behaviors in potential multi-car derailments in some representative rail cargo environments
- Derailment crush and puncture forces
- Potential kinds of releases from collision; puncture, thermal tears of railcars, BLEVE explosions in long-lasting fire involvement of tank cars
- Cargo behavior (size, intensity, ability to be extinguished) in representative derailments: release-correlated ignition, fires, “rivers of fire,” fireballs, pool fires, explosions if in confined space
- Railcar and cargo behaviors in potential multi-car events
- Possible mitigation strategies
- Guidance for emergency response agencies
- Information available for emergency response in emergencies
- Government reactions towards reducing disaster risks: targeted research, proposed regulations or voluntary guidance for shippers and carriers, enforcement

The STB FEIS should adopt a valid risk assessment methodology which would, among other things:

- (a) Take account of potential consequences of serious derailment releases with Uinta waxy crude and shale oil shipments, including a presentation of representative potential Worst Case Scenarios
- (b) Abandon the reliance on dubious Quantitative Risk Assessment (QRA) methodologies and on dubiously relevant generalized data vs. data on waxy crude and shale oil cargoes
- (c) Instead utilize “real world” assessment of derailment disaster risks, as superior to dubious QRA methodologies, as seen in the recent WA State EFSEC Adjudication decision documents assessing the risks of a proposed hazardous facility in that state
- (d) Expand the STB’s “study area” of the likely main unit train transportation routes for Uinta waxy crude cargoes beyond “the outskirts of Denver” to consider the risks of all the routings likely to be traversed by Uinta waxy crude unit trains, with any special environmental and geologic hazards, etc. for each route and with attention to risks to densely populated areas
- (e) Assess the limitations and inadequacies of current federal and state regulations and the preemption impact of the federal regulatory regime on state or local regulation
- (f) Assess the capabilities of local emergency responders along the routes to deal with serious derailments

A technical appendix at the end of this comment cites transportation release-related information sources on waxy crude oil, which sources have not specifically been considered by the DEIS.

**TECHNICAL APPENDIX:
OTHER DOCUMENTS RELEVANT TO WAXY CRUDE OIL RISKS
BUT NOT CONSIDERED BY DEIS**

Official federal documents have long dealt with crude oils as a class of “flammable” hazardous cargoes, but have not singled out “waxy crude” oils or oil shale as a less dangerous cargo for separate consideration, no doubt primarily because of its minor economic importance in the US energy picture.

1. All crude oil cargoes have long been officially **classified by** DOT regulations in 49 CFR Part 179 as “flammable.” No mention has been made of waxy crudes or oil shale as an outlier requiring separate, less stringent regulatory mandates. Waxy crude is “flammable” because when a flame is passed over it, it catches fire.
2. Waxy crude currently travels under a **red “flammables” placard** on every truck or railcar – “1267” is the number in the placard, but crude oils are in hazard class 2.



3. The **venerable and heavily relied upon North American 2020 US DOT Emergency Response Guidebook (the Orange Book or ERG)** is placed in every emergency response vehicle and provides key information for actions to take in the first 20 minutes of

dealing with a hazmat transportation release event.³⁸ ERG never mentions waxy crude as some kind of outlier, and includes all “Petroleum Crude Oil” including waxy crude within **Guide 128** for the class of hazmat cargoes listed as “Flammable Liquids (Water-Immiscible).” Guide 128 cites this whole class of flammable liquids as “highly flammable...easily ignited by heat, sparks or flames.” [see online, pp. 193-194] And Guide 128 cites other serious fire and/or explosion hazards.

ERG 2020 **Guide 128** recommends several sobering immediate precautionary measures, in case of a transportation vehicle in a fire:

- “ISOLATE for 800 meters [1/2 mile] in all directions. And consider **initial evacuation for ½ mile** in all directions.”
- “Fight fire from maximum distance or use unmanned master stream devices...”
- “ALWAYS stay away from tanks engulfed in fire.”

4. The oil shipper industry’s own Safety Data Sheets (SDS) (I found only two in the public domain) that must accompany each hazmat shipment state that Black Wax Crude is “highly flammable,” and they outline several serious recommended safety measures, but the SDSs are incomplete, vague and inconsistent in the information supplied on the cargo’s basic

³⁸ U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration and Transport Canada, 2020 Emergency Response Guidebook, <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2020-08/ERG2020-WEB.pdf>.

characteristics. The industry SDSs reviewed here never suggest that any type of crude oil should be considered less than dangerous.

These SDS documents are created by various consultant firms for shipper clients and cover mandated subjects needed for transportation employees and communities in case of emergency.

Some SDS examples reviewed for this report suggest that crude oil is “extremely flammable,” but all note that (as federal regulations have long indicated) it is “flammable”, and all recommend to transportation companies several sets of rigorous safety measures for handling the cargoes and minimizing harm from emergency releases.

For example, Whiting Oil and Gas Corporation’s SDS for “Crude Oil (Sweet)”, a report dated as last reviewed in October 2013, cautions vaguely that crude oil’s ingredients include “variable amounts” of natural gas, benzene, and hexanes.

Even from the same oil field or even the same well, the composition of a sample of crude oil can vary significantly from others. Industry-provided risk-related estimates of measured (usually without specifying the methods used) **flash point** for crude oils sometimes indicate data that can vary in a wide range :

Some examples from existing SDSs:

The Whiting Oil and Gas Corporation’s SDS, 2013 for “Crude Oil (Sweet)”: -60 degrees F to 200 degrees F -- using the Pensky-Martens Closed Cup Tester method

The Linn SDS for Yellow Wax Crudes 6 3 16 also indicates a broad range for Yellow Wax Crudes: -40 degrees C to 65 degrees C

The Ovintiv SDS issued 9 9 19 states vaguely [p.9 – no method stated] that the flash point for "Black Wax Crude Oil" is a range: "<28.8 to 37.7 degrees C" (84-100 degrees F)

Whereas the Linn SDS 8 2 13 states that Uinta Basin Black Wax Crude Oil flash point is a simple specific "42 degrees C" [or 108 degrees F]. [no method specified]

This small sample of Industry-supplied Safety Data Sheets [federally mandated for inclusion in official shipping papers accompanying hazmat shipments, etc.] shows that SDS data for crude oils can differ in key ways:

- can leave unreported seemingly important data on the form even when asked to provide data regarding categories such as flammability, ignition temperature, decomposition temperature, explosion limits, etc. [cf. p. 7 of Linn SDS 8 2 13]
- can have various estimates of key flash point estimation for crude oils [[e.g., yellow waxy vs. black waxy]
- can indicate waxy crudes variously as "flammable liquid" [yellow wax crude] or as "flammable solid" [black wax crude] or as in Ovintiv SDS 2019, as a "flammable liquid and vapor" [black wax crude].

All include blunt recommendations for rigorous fire- and explosion-related safety measures for handling cargoes. But some reveal a risk-minimizing tendency. Cf. Linn SDS 8 2 13 re Uinta Black Wax Crude Oil which states disingenuously [p. 7] “Danger of explosion: “Product is not explosive. However, formation of explosive air/vapour mixtures are possible.”

Key data in the existing reports:

- **Linn Energy [2013 SDS]:**

Vapour pressure at 20°C: <20hPa

Flash Point: 42°C [108°F]

Flammability (solid, gaseous): Not applicable

Ignition temperature: Not determined.

Self-igniting: Not determined

Danger of explosion: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.³⁹

- **Ovintiv [2019 SDS]:**

³⁹ Linn Energy, Safety Data Sheet for Uinta Basin Black Wax Crude Oil (Aug. 2, 2013), <https://linenergy.com/wp-content/uploads/2016/06/Uinta-Basin-Black-Wax-Crude-Oil-LINN-Operating.pdf>.

Ovintiv 9/9/19 is an industry SDS which specifically addresses “black wax crude oil”⁴⁰ and characterizes it as a “flammable liquid and vapor”;

- listing many of the crude’s component flammable hydrocarbons with variable percentages by weight [p.3]
- listing many rigorous fire- and explosion-related safety measures [pp. 4-6]:

Vapor Pressure: Variable

Flash point: >28.8-37.7°C [so less than about 80-100° F]

Lower explosive limit: Variable

Higher explosive limit: Variable

Decomposition temperature: Not available

⁴⁰ Ovintiv, Safety Data Sheet (U.S.) for Black Wax Crude Oil (Sept. 9, 2019), available at <https://www.ovintiv.com/wp-content/uploads/2019/10/black-wax-crude.pdf>.

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U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Draft Regulatory Impact Analysis for Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains; Notice of Proposed Rulemaking, July 2014 (“Draft RIA”)

ATTACHMENT B

Attachment B

The Impacts of Development on Big Game Species

Big game species demonstrate avoidance of roads and oil and gas infrastructure, which may have consequences for migration, energy budgets, adult and fawn survival, and population levels.

A. Roads and other Linear Development

Roads are one of the most pervasive impacts of human development on natural landscapes. Their greatest impact, by far, lies in the indirect effects of habitat fragmentation and avoidance by wildlife. An extensive literature review was conducted by Rowland in 2005 concerning elk avoidance of roads.¹ Numerous studies document that elk avoid roads and do not use habitat adjacent to roads to its full potential. For example, when road densities are as low as one mile per square mile, elk habitat effectiveness is reduced by 25 percent.²

In another literature review prepared in 2008, Hebblewhite referenced almost 200 resources relating to this topic. In eight studies that measured the distance of ungulate avoidance from roads, the average “zone” of influence extended approximately 1000 meters from roads and wells.³ In another study, human access facilitated by road development indirectly resulted in a 43 to 50 percent loss of high-use elk habitat in Wyoming.⁴ For example, in the sage-steppe ecosystem of Wyoming’s Jack Morrow Hills, elk avoided roads the most during summer months, strongly selecting habitats greater than 2,000 meters from these features. In addition, elk in the study continued to show avoidance of wellsites long after the construction phase had been completed.⁵ In a major volume reviewing elk ecology and management, Lyon and Christensen state: “Access—mainly that facilitated by roads—is perhaps the single most significant modifier of elk habitat and a factor that will remain central to elk management on public and private lands. It is possible that in areas with no cover, road densities less than one mile per square mile may eliminate effective habitat.”⁶

B. Oil and Gas Infrastructure

In a study of Rocky Mountain elk that occupy a region where 2900 natural gas wells have been drilled, researchers found a strong avoidance by elk of the industrial development footprint

¹ Mary M. Rowland et al., *Effects of Roads on Elk: Implications for Management in Forested Ecosystems* (2005).

² Chris Weller *et al.*, *Fragmenting Our Lands: The Ecological Footprint From Oil And Gas Development* (Sept. 2002) at 26 (emphasis added) (emphasis added).

³ Mark Hebblewhite, *A Literature Review of the Effects of Energy Development on Ungulates: Implications for Central and Eastern Montana* (Prepared for Montana Fish, Wildlife and Parks) at 85 (2008).

⁴ Clay B. Buchanan et al., *Seasonal Resource Selection and Distributional Response by Elk to Development of a Natural Gas Field*, 67 *RANGELAND ECOLOGY AND MGMT.* 369, 377 (2014).

⁵ Hebblewhite at 23.

⁶ Janice L. Thomson et al., *Wildlife at a Crossroads: Energy Development in Western Wyoming* (2006) at 209.

in the gas field during the day. Human activity played a larger role than maternal status in shaping the elks' resource use.⁷

Some of the best available long-term, controlled studies evaluate mule deer population density before and after oil and gas development in the Sublette mule deer herd near Pinedale, Wyoming.⁸ The Sublette mule deer study compared mule deer density in control and development zones, and found mule deer densities declined 30% in the development area, as opposed to 10% in the control area.⁹ Sawyer and Strickland found that “the observed decline of mule deer in the treatment area was likely due to gas development, rather than drought or other environmental factors that have affected the entire Sublette Herd unit.”¹⁰

The Sublette example is particularly important when considering energy development's effects on mule deer populations, their winter range, and their migration patterns. Even in its relatively early stages compared to Wyoming, the most recent spatial analysis of already-occurring effects on mule deer in western Colorado finds energy development has the second-largest effect on deer recruitment, exceeded only by residential development.¹¹

It is well-documented that human development causes direct habitat loss and fragmentation through the construction of infrastructure, and indirect habitat loss through deer avoidance of infrastructure and related activities; these consequences likely reduce the carrying capacity of the landscape.¹² A recent study shows that oil and gas development causes significant habitat loss in the Piceance Basin of Colorado:

Energy development drove considerable alterations to deer habitat selection patterns, with the most substantial impacts manifested as avoidance of well pads with active drilling to a distance of at least 800 m. Deer displayed more nuanced responses to other infrastructure, avoiding pads with active production and roads to a greater degree during the day than night. In aggregate, these responses equate to alteration of behavior by human development in over 50% of the critical winter range in our study area during the day and over 25% at night.¹³

Additionally, mule deer may suffer higher mortality rates in developed landscapes because of increased vehicle collisions and accidents (i.e., entrapment in fences); moreover,

⁷ Dzialak M.R., S.M. Jarju, R.G. Osborn, J.J. Wondzell, L.D. Hayeden-Wing, J.B. Winstead, et al. (2011). Prioritizing conservation of ungulate calving resources in multiple-use landscapes. Plos One 6(1): e14597. doi:10.1371/journal.pone.0014597.

⁸ Hall Sawyer, et al., Sublette Mule Deer Study (Phase II): Final Report 2007 (2009).

⁹ *Id.*

¹⁰ *Id.*

¹¹ Heather E. Johnson, et al., Increases in Residential and Energy Development Are Associated with Reductions in Recruitment for a Large Ungulate, Global Change Biology, doi: 10.1111/gcb.13385 (2016) (“Johnson 2016”).

¹² *Id.*

¹³ Northrup, J. M. et al. Quantifying spatial habitat loss from hydrocarbon development through assessing habitat selection patterns of mule deer, Global Change Biology (Aug. 2015), available at <http://onlinelibrary.wiley.com/doi/10.1111/gcb.13037/epdf>.

increased road densities expose mule deer to more hunters, poachers and predatory domestic pets.¹⁴

For mule deer, there are two additional potential concerns. First, the avoidance or lower probability of use of areas near wells creates indirect habitat losses of winter range that are substantially larger in size than the direct habitat losses incurred when native vegetation is removed during construction of the well pad. Habitat losses, whether direct or indirect, have the potential to reduce carrying capacity of the range and result in population-level effects. Second, if deer do not respond by vacating winter ranges, distribution shifts will result in increased density in remaining portions of the winter range, exposing the population to greater risks of density-dependent effects.¹⁵ Lower predicted probabilities of use within 2.7 to 3.7 km of well pads suggested indirect habitat losses may be substantially larger than direct habitat losses.¹⁶ Following three years of gas development in western Wyoming, 41 percent of areas classified as high deer use prior to development changed to medium-low or low-use areas. This change in distribution occurred with only two percent direct habitat loss. Relatively small amounts of direct habitat loss can affect winter distribution patterns of mule deer and the effects of direct habitat loss may be long term for species like mule deer that rely on native shrubs (i.e., sagebrush) because reclamation of native shrubs in arid environments is difficult.¹⁷

The Sublette mule deer studies discussed above show that drilling and production of natural gas on crucial winter range significantly affect mule deer, with dramatic decreases in wintering populations within the developed area. In 2007, Sawyer et al. published a report on 8 years of research that attributed 27 percent of the decline in mule deer on the Pinedale Anticline to energy development.¹⁸ Over the course of the Pinedale study, areas that were classified as high quality habitat before development changed to low quality, and vice-versa, showing that mule deer shifted habitats away from favored high-quality habitats because of energy development.¹⁹ Based on the annual estimates, mule deer abundance was 56 percent lower in 2010 compared to 2001. The 12-year (2001-2012) trend in mule deer abundance on the Mesa was negative and indicates an overall decline of 42 percent. This decline was concurrent with documented behavioral changes of mule deer avoiding well pads.²⁰

Mule deer also need migration corridors that are protected from human development. An ongoing mule deer study by members of the Wyoming Migration Initiative has found that mule deer migration patterns are altered by human development – herds will move faster, stop less to feed, and detour around developed portions of their route.²¹ Moreover, herds that can't migrate in

¹⁴ Johnson 2016.

¹⁵ Hall Sawyer et al., Winter Habitat Selection of Mule Deer Before and During Development of a Natural Gas Field 70 J. OF WILDLIFE MGMT. 396, 402 (2006) (“Sawyer 2006”).

¹⁶ *Id.* at 396.

¹⁷ Hall Sawyer, Final Report for the Atlantic Rim Mule Deer Study (Apr. 2007) at 25.

¹⁸ Sawyer 2006 at 396-403.

¹⁹ Hebblewhite at 51-52.

²⁰ Hall Sawyer & Ryan Nielson, Mule Deer Monitoring in the Pinedale Anticline Project Area, 2013 Annual Report Update (Aug. 2013) at 9.

²¹ Hall Sawyer, et al., A Framework for Understanding Semi-permeable Barrier Effects on Migratory Ungulates, *Journal of Applied Ecology* 2013:50, doi:10.1111/1365-2664.12013 (2013) (“Sawyer 2013”).

search of the most nutritious grasses just end up smaller in number.²² As a result, Wyoming Game and Fish Department is working to further protect migration routes in the state, for instance, no more than four oil and gas well pads allowed in a migration corridor and no development allowed in corridors narrower than a quarter mile. Although initial Colorado Parks and Wildlife research suggests that existing Piceance development levels are largely influencing the timing (not the fact) of deer migration,²³ CPW acknowledges that a “threshold in development intensity” may have greater effects on migration behavior.²⁴

Multiple studies have also documented that migrating pronghorn avoid oil and gas development, which has resulted in the loss of migration corridors or migration bottlenecks. In one study, migrating pronghorn exhibited high use of the undeveloped portion of an area of western Wyoming during all 5 years of a pronghorn migration study, while avoiding surrounding oil and gas fields.²⁵ In addition, pronghorn spent 78% of their time at stopovers along the migration route during spring migration; these stopovers were not related to higher-quality habitat but instead to migration obstructions, leading the researchers to conclude, “migrating pronghorn may experience trophic mismatch leading to reduced fitness of summering herds.”²⁶ According to the study:

Two possibilities should be considered with regard to the movement corridors between stopovers, where animals travel quickly. These areas may represent the limited capacity of local resources to support large numbers of animals. Alternatively, they may contain stressful or distracting localized hazards that cause animals to forgo use of their high-quality resources. In either case, an unmitigated migration impediment could eventually extirpate such a route and lead to loss of migration.²⁷

In addition, oil and gas development has caused pronghorn to abandon their crucial winter ranges.²⁸ A study of the effects of two large gas fields in Wyoming that occur in the wintering home range of the pronghorn found that the habitat choices of female pronghorn

²² Edwards, M., Mule Deer Struggling To “Surf The Green Wave” Of Migration (Nov. 20, 2015) available at <http://wyomingpublicmedia.org/post/mule-deer-struggling-surf-green-wave-migration>.

²³ Charles R. Anderson & Chad J. Bishop, Migration Patterns of Adult Female Mule Deer in Response to Energy Development, Transactions of the 79th North American Wildlife and Natural Resources Conference 47-50 (2014) (“Anderson & Bishop 2014”).

²⁴ Charles R. Anderson, Piceance Mule Deer & Energy Development: Demographic Influences and Mitigation, Colorado Parks and Wildlife Presentation to Garfield County, Colorado (2016), available at http://www.garfield-county.com/oil-gas/documents/energy-advisory-board/2016/F-D-EAB%20Chuck%20Anderson_Piceance%20deer-energy%20development_Oct%202016.pdf (“Anderson 2016”); Sawyer 2013.

²⁵ Seidler, R.G., R.A. Long, J. Berger, S. Bergen, and J.P. Beckmann. 2014. Identifying impediments to long-distance mammal migrations. *Conserv. Biol.* 29: 99-109.

²⁶ *Id.* at 107.

²⁷ *Id.*

²⁸ Berger, J., S.L. Cain, and K.M. Berger. 2006. Connecting the dots: An invariant migration corridor links the Holocene to the present. *Biol. Lett.* 2: 528-531; Beckmann, Jon et al., Human-mediated shifts in animal habitat use: Sequential changes in pronghorn use of a natural gas field in Greater Yellowstone, 147 *Biological Conservation* 222 (2012), doi:10.1016/j.biocon.2012.01.003

demonstrated a fivefold decrease in the use of high-quality habitat patches and the abandonment of areas with the greatest habitat loss and industrial footprint. These results indicate a decline in the availability of high-quality habitat for pronghorn due to the behavioral impacts of habitat alteration associated with gas field development.²⁹

Another study found that steep declines in pronghorn populations from 2008 to 2012 could be explained primarily by winter weather conditions, and by land-use related to oil and gas development, which increased rapidly in the later years of the study.³⁰ The study observes declines from increased development are “likely due to a combination of increased vehicle traffic and habitat fragmentation associated with oil development. Parts of North Dakota with high oilwell densities have extremely high traffic volume, thereby posing a barrier to seasonal movements as well as a source of additional mortality.”³¹ It further notes the “interactive effects of severe winters and increased fragmentation of the landscape by well pads and associated roads may be significant, and are cause for concern for pronghorn”:

In winters with heavy snowfall or extreme temperatures, pronghorn populations are buffered by their tendency to migrate to areas with more accessible forage, warmer temperatures, and/or less snow. However, in areas with high densities of wells and roads, their migration may be impeded and the total area of winter habitat available to them is reduced.³²

Another study found increased summer mortality of female pronghorn following harsh winters.³³ While the study did not observe an indirect effect of oil and gas development on summer mortality of female pronghorn, it noted that “any negative influences of oil and natural gas development on pronghorn fitness may lag behind the observed behavioral changes in resource selection and movement associated with infrastructure” (which have been documented), such that a longer monitoring period may be needed to detect demographic effects.³⁴ It further emphasized the importance of pronghorn access to high-quality resources “during periods of high energetic demand or harsh environmental conditions,” which roads and fences could prevent. Moreover, “[t]he ability to move to areas that offer better resources, such as higher quality forage, may be even more important for pronghorn, as an animal potentially employing more of an income strategy (Clancey et al. 2012), than many other ungulates in western North American that may rely more heavily on previously accrued energy reserves.”³⁵

²⁹ Beckmann, J.P., K. Murray, R.G. Seidler, and J. Berger. (2012). Human-mediated shifts in animal habitat use: Sequential changes in pronghorn use of a natural gas field in Greater Yellowstone. *Biological Conservation* 147(1): 222-3.

³⁰ Christie, K.S., et al., Long-term changes in pronghorn abundance index linked to climate and oil development in North Dakota, *Biological Conservation*, vol. 192, 445-453 (Dec. 2015) (“Christie 2015”), doi.org/10.1016/j.biocon.2015.11.007.

³¹ Christie 2015.

³² *Id.*

³³ Reinking, Adele K. et al., Intrinsic, environmental, and anthropogenic factors related to pronghorn summer mortality, *Journal of Wildlife Management*, vol. 82, 608-617 (April 2018) (“Reinking 2018”), available at doi.org/10.1002/jwmg.21414

³⁴ *Id.*

³⁵ *Id.*

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ATTACHMENT C

Review of the DEIS Revegetation Mitigation and Monitoring

By Heene Anderson

February 5, 2021

I work for the Center for Biological Diversity as the Public Lands Desert Director and as a senior scientist, where I provide scientific expertise necessary for the conservation of unique flora and fauna in a variety of public and private land use arenas. My professional background and qualifications are summarized at the end of this comment.

After reviewing the DEIS Chapter 4 Mitigation regarding revegetation mitigation and monitoring, I have found its analysis to be incomplete and not standard revegetation procedure. The mitigation and monitoring plan for vegetation impacts states:

VM-22: The Coalition will revegetate disturbed areas, where practical and in consultation with the Ute Indian Tribe as applicable, when construction is completed. The goal of reclamation will be the rapid and permanent re-establishment of native groundcover on disturbed areas to prevent soil erosion, where feasible. If weather or seasonal conditions prevent vegetation from being quickly re-established, the Coalition will use measures such as mulching, erosion-control blankets, or dust-control palliatives to prevent erosion until vegetative cover is established. The Coalition will monitor reclaimed areas for 3 years. For areas where efforts to establish vegetative cover have been unsuccessful after 1 year, the Coalition will reseed annually for up to 3 years as needed.

The EIS should provide the Coalition's comprehensive revegetation plans, including concrete measures and specific performance criteria, for public review and comment. Mitigation to revegetate disturbed areas should be based on best practices and local ecological processes, or efforts to revegetate the "temporarily impacted" areas are not likely to succeed.

Revegetation plans should require planning and collection of seeds in advance of soil disturbance. The planting palette should include seeds appropriate to the environment and climate conditions. Only local native plant propagules should be used and the plantings/seedlings should be administered in an ecologically successional way – introducing early successional species first, followed sequentially over a multiple year process with mid-successional species and finally late-successional species. A frequent weeding schedule particularly during the growing season (removal before seeds are produced is best) should be implemented, particularly in the first three years to reduce non-native and invasive species from proliferating, which would doom revegetation efforts.

Revegetation plans should include short-term and robust "establishment" criteria, so that problems can be identified and remedied early (e.g., protection from herbivory, adequate soil moisture, stopping weed invasions before they start). Long-term success criteria should also be included (e.g., monitoring shows that the revegetation site is statistically similar to a reference

(undisturbed) site by looking at cover, density, diversity). The project developer should be held to all revegetation plan requirements and success criteria. Otherwise, revegetation is unlikely to be successfully implemented. The DEIS does not specify whether and how the STB or other agencies would monitor compliance. To the extent any state or federal agency or tribal authority has management authority over disturbed areas, the agency or tribal authority should be required to monitor compliance with all revegetation requirements for those lands. For example, the Army Corps should enforce mitigation for riparian vegetation impacts.

Finally, required revegetation periods and monitoring in the Coalition's mitigation plan falls short of what's needed to be successful. Most agencies require five years of monitoring with the last two years not having any "interventions" (no additional irrigation, weed removal, augmentation of revegetation). If additional remediation/revegetation is required, then the clock should restart in those areas with five more years of monitoring. For example, if most of the revegetation area is meeting success criteria (which should be clearly identified in the revegetation plan), but one area is not meeting the success criteria, then additional revegetation augmentation should be done in the "unsuccessful" area and the monitoring continues for five years after the augmentation, which is standard practice.

The better practice, however, would be to require long-term monitoring up to ten years (with a reduced monitoring schedule in years 6-10 – once every 2 years) to assure that the success criteria are met. There is not much data on long-term outcomes of revegetation, so ultimately the long-term success for most projects is unknown. Thus, long-term monitoring is advisable.

From revisiting and observing revegetation projects that I worked on from twenty plus years ago, I do believe if you get the revegetation process started right, in the first 2-3 years (following a natural "successional" model of introducing early, mid and late successional species sequentially) functional habitat can be "created." It is never as diverse even after twenty years as undisturbed habitat of course, but it is on its way.

Professional Background

Ileene Anderson works for the Center for Biological Diversity as the Public Lands Desert Director and as a senior scientist, where she provides scientific expertise necessary for the conservation of unique flora and fauna in a variety of public and private land use arenas. Ms. Anderson received a Master of Science in Biology from the California State University at Northridge. Ms. Anderson studied and surveyed for native species in the western U.S. for over 30 years. Ms. Anderson researches and keeps abreast of the latest science on many rare and listed plants and animals and their habitat needs as well as more common plants and animals and natural communities.

Before her tenure at the Center for Biological Diversity, Ms. Anderson was the Southern California Regional Botanist for the California Native Plant Society (CNPS) from 1997 to 2005 and continues to volunteer with CNPS on conservation and litigation issues. Ms. Anderson has been a member of CNPS since 1992. From 1995-2005, she also worked as an independent biological consultant throughout the southwestern United States.

Relevant Experience:

Ms. Anderson has worked on numerous reclamation, revegetation and restoration projects in California and Arizona including coastal, mountain and desert landscapes. Activities included pre-disturbance/baseline quantitative vegetation assessments, producing site specific reclamation, revegetation and restoration plans, implementing reclamation, revegetation and restoration plans, post-installation monitoring of the reclamation, revegetation and restoration sites, remediation memos and plans when the sites were failing to meet success criteria. Many of the projects were implemented as threatened or endangered species habitat mitigation and/or wetland mitigation overseen by trustee agencies including the U.S. Fish and Wildlife Service, Army Corps of Engineers or state and local jurisdictional agencies.

Ms. Anderson served on the Bureau of Land Management's California Desert District Advisory Council as a Department of Interior Appointee Representing Renewable Resources from 1996-2002 including 2001 as chairperson. She also co-led the Society for Ecological Restoration's Coastal Sage Scrub Guild from 1995 to 2001 where she organized field trips, lectures and symposia on cutting edge revegetation projects.

Professional Courses:

Methods of Habitat Restoration - University of California, Riverside, Winter 1993

Desert Restoration - SERCAL, October 1993

Habitat Restoration Evaluation - University of California, Riverside, Winter 1994

Basic Wetlands Delineation - Wetland Training Institute, Inc. November 1995

Mycorrhizae in Habitat Restoration - University of California, Riverside, Winter 1995

Soils Workshop – Natural Resources Conservation Service, November 1998

Plant Community Characterization and Series Identification– Native Plant Society, June 1999

ATTACHMENT D

Impacts of Climate Change on the Colorado River Basin

Shaye Wolf, Ph.D., Climate Science Director, Center for Biological Diversity

March 10, 2016

Anthropogenic climate change is profoundly impacting the Colorado River in ways that are altering temperature, streamflow, and the hydrologic cycle. As detailed below, changes observed to date include rising temperatures, earlier snowmelt and streamflow, decreasing snowpack, and declining runoff and streamflow. Modeling studies project that these changes will only worsen, including continued declines in streamflow and intensification of drought. Climate change is likely to have significant effects on endangered fish species in the Colorado River basin – the Colorado pikeminnow, razorback sucker, bonytail chub, and humpback chub – and the Colorado River ecosystem.

Rising temperatures

The Colorado River basin has warmed significantly during the past century, with average increases in surface temperature of 1.6°F (0.9°C) over the Southwest during 1901-2010 (Hoerling et al. 2013). The greatest warming has occurred in spring and summer, and in daytime high temperatures and nighttime low temperatures (Bonfils et al. 2008, Hoerling et al. 2013). Surface temperatures in the Southwest are projected to increase steeply in this century by an average of 4.5 to 7.9° F depending on the emissions scenario, with an average of 2.5 to 3°F of warming projected for 2021-2050 alone (Cayan et al. 2013). As explained below, warming temperatures are having significant effects on streamflow, drought severity, and the hydrologic cycle in the Southwest (Barnett et al. 2008, Woodhouse et al. 2016).

Earlier snowmelt and streamflow

In much of the Colorado River basin, snowmelt, snowmelt runoff, and streamflow timing have trended earlier since the mid-1950s, in parallel with warming temperatures (Hamlet et al. 2005, Stewart et al. 2005, Barnett et al. 2008, Hoerling et al. 2013, Garfin et al. 2014). The Colorado River basin's spring pulse from 1978-2004 shifted to two weeks earlier compared to flows before 1978 (Ray et al. 2008). Although there are both natural and human influences on these hydrologic trends, studies indicate that anthropogenic greenhouse gases began to impact snow-fed streamflow timing during 1950-1999 (Barnett et al. 2008, Hidalgo et al. 2009, Hoerling et al. 2013). Modeling studies have projected that snowmelt, spring runoff, and streamflow timing will continue to shift earlier across much of the Southwest (Stewart et al. 2004, Rauscher et al. 2008, Dettinger et al. 2015).

Decreasing snowpack

The Colorado River receives most of its water from winter snowpack from the Rocky Mountains, where 15% of the total basin areas generates 85% of the river flow (Dettinger et al. 2015). Across much of the Colorado River basin, the spring snowpack is decreasing and more winter precipitation is falling as rain instead of snow (Hamlet et al. 2005, Pierce et al. 2008, Das et al. 2009). Approximately half of the observed decline in snowpack in the western United States during 1950-1999 has been attributed to the effects of anthropogenic greenhouse gases,

ozone and aerosols (Pierce et al. 2008). Modeling studies project a continued reduction of Southwest mountain snowpack during February through May during this century, largely due to the effects of rising temperatures (Cayan et al. 2013, Dettinger et al. 2015).

Declining Runoff and Streamflow

Annual runoff in the Colorado River basin appears to be declining (USBR 2011), with significant consequences for reduced streamflow. During 2001–2010, warm temperatures and dry conditions reduced average naturalized flows in the Colorado River (measured at Lees Ferry) to the second-lowest-flow decade since 1901, to 12.6 million acre-feet per year compared to the 1901–2000 average of 15.0 million acre-feet per year (Hoerling et al. 2013).

Modeling studies project that runoff and streamflow will continue to decrease substantially in the Colorado River basin during this century (Ray et al. 2008, Das et al. 2011, USBR 2011, Cayan et al. 2013, Georgakakos et al. 2014, Dettinger et al. 2015). Barnett and Pierce (2009) concluded that anthropogenic climate change is likely to reduce runoff in the Colorado River basin by 10-30% by 2050. Projected reductions in runoff range from 6-7% (Christensen and Lettenmaier 2007) to 45% (Hoerling and Eischeid 2007) depending on the models and methods used in each study (see Barnett and Pierce 2009 at Table 2). In the short term, Hoerling and Eischeid (2007) predict streamflow to decrease by 25% during 2006-2030, and by 45% during 2035-2060.

Importantly, numerous studies show that warming temperatures alone will cause runoff and streamflow declines in the Colorado River basin. For example, in a recent review, Vano et al. (2014) estimated that future streamflow in the Colorado River basin will be reduced by 5% to 35% due to rising temperature alone. When precipitation change is considered, a 5% decrease in precipitation would further reduce streamflow by 10% to 15% (Vano et al. 2014).

Moreover, warming temperatures will play an increasingly important role in causing runoff to decline in the Colorado River basin, and must be factored into streamflow forecasts (Woodhouse et al. 2016). An empirical study of the influence of precipitation, temperature, and soil moisture on upper Colorado River basin streamflow over the past century found that warmer temperatures have already resulted in flows less than expected based on precipitation levels (Woodhouse et al. 2016). Consistent with past research, the study found that cool season precipitation explains most of the variability in annual streamflow. However, temperature was highly influential in determining streamflow under certain conditions. The study concluded that “[s]ince 1988, a marked increase in the frequency of warm years with lower flows than expected, given precipitation, suggests continued warming temperatures will be an increasingly important influence in reducing future UCRB water supplies.” The researchers warned that “streamflow forecasts run the risk of overprediction if warming spring and early summer temperatures are not adequately considered.”

Increasing Drought Severity

Historically, droughts in the Colorado River basin were primarily driven by precipitation deficits. However, studies indicate that rising temperatures have begun to play a more important

role in driving droughts (Hoerling et al. 2013, Vano et al. 2014). Importantly, rising temperature superimposed on natural drought variability is expected to exacerbate the impacts of droughts (Seager et al. 2012, Cook et al. 2015). Modeling studies project that droughts in Southwest will intensify due to longer periods of dry weather and more extreme heat, leading to higher evapotranspiration and moisture loss (Seager et al. 2007, Cayan et al. 2010, Trenberth et al. 2013). In the Colorado River basin, future droughts are projected to be substantially hotter, and drought is projected to become more frequent, intense, and longer lasting than in the historical record (Garfin et al. 2014).

Reduced reservoir levels and unsustainable demand for water

Of the more than 90 reservoirs on the river and its tributaries, the two largest are Lake Mead and Lake Powell which together can store up to 85% of the total flow for the basin combined (Christensen et al. 2004). Reservoirs in the Colorado River basin are highly vulnerable to climate change, particularly because the amount of storage in reservoirs is sensitive to runoff changes (Barnett and Pierce 2008). Even small decreases in runoff have caused average reservoir levels to markedly decrease (Christensen et al. 2004). Christensen et al. (2004) predicted that climate change impacts on the hydrology of the Colorado River system would result in water demand (deliveries and evaporation) exceeding reservoir inflows (which would also be decreased), resulting in a degraded system. Likewise, Barnett and Pierce (2008) projected that a 10% reduction in runoff would result in requested water deliveries surpassing sustainable deliveries by 2040, while a 20% reduction in runoff would cause unsustainable water demands by 2025. A greater demand than supply makes the system more prone to long-term sustained droughts, as reservoirs will not have sufficient time to be naturally replenished and more water will be extracted from a dwindling supply than is sustainable (Christensen and Lettenmaier 2007). Reservoirs would spend additional time in a depleted state, weakening the system's buffering ability in years where there is low precipitation (Barnett and Pierce 2009).

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