CIRCULATION DRAFT FOR SIGN ON

GROUPS

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Submitted via email and online ePlanning project website

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Comments re: Notice of Availability of the Draft Coastal Plain Oil and Gas Leasing Program Supplemental Environmental Impact Statement, 88 Fed. Reg. 62,104 (Sept. 8, 2023).

Dear Ms. Sweet and Ms. Skibo:

On behalf of the above-listed organizations and our many millions of members and supporters nationwide and across the globe, we submit the following comments in response to the September 8, 2023 Notice of Availability of the Draft Coastal Plain Oil and Gas Leasing Program Supplemental Environmental Impact Statement, 88 Fed. Reg. 62,104 (Sept. 8, 2023).

We remain opposed to all oil and gas activities on the Coastal Plain of the Arctic National Wildlife Refuge (Arctic Refuge or the Refuge). We stand with the Gwich'in Nation and support their efforts to protect their human rights and food security by protecting the Coastal Plain. Our organizations have dedicated decades to defending the Coastal Plain from oil and gas exploration and development, and we will continue to do so. These unparalleled public lands, and the wildlife that depend on them, are an international treasure that must be conserved for future generations. We are deeply grateful for this Administration's action to cancel the Alaska Industrial Development and Export Authority's (AIDEA) seven remaining leases on the Coastal Plain on the basis of the legal deficiencies with the lease sale.

Agency efforts to adopt the 2020 Leasing Program fell far short of what is legally required, as recognized by President Biden's January 21, 2021 Executive Order, Secretary of the Interior (Secretary) Haaland's June 1, 2021 Secretarial Order, and the recent decision to cancel the remaining seven leases on the Coastal Plain. We are grateful for these actions and this Administration's efforts to protect the Coastal Plain. We call on this Administration to continue its efforts to safeguard this area and on Congress to reverse the Tax Cuts and Jobs Act (Tax Act) and restore protections for the Coastal Plain.

The Secretary specifically identified legal deficiencies under the National Environmental Policy Act (NEPA) and the Tax Act. Building on the issues identified in the Secretarial Order, the Assistant Secretary of Land and Minerals Management suspended the leases, and identified additional legal deficiencies, including the greenhouse gas analysis and Alaska National Interest Lands Conservation Act (ANILCA) section 810 subsistence analysis. These findings underscore the need for broad revision of the previous analysis.

We recognize the considerable work that went into the draft supplemental environmental impact statement (draft SEIS or DSEIS) and we are glad for the Bureau of Land Management's (BLM) and the U.S. Fish and Wildlife Service's (FWS) efforts. We appreciate the agencies' attempt to carefully review the impacts of the oil and gas program on the Coastal Plain and to remedy legal, scientific, and technical deficiencies with the first environmental impact statement (EIS). Unfortunately, the draft SEIS remains deficient in key areas, including the range of alternatives, the descriptions of the baseline information about resources, the analysis of the impacts of an oil and gas program on Coastal Plain resources and users, and the mitigation measures proposed. These issues are described in detail below. As explained, the final SEIS, including the alternatives analyzed and the analysis of impacts, must be strengthened to ensure compliance with NEPA, ANILCA, the Arctic Refuge's purposes, and many other laws.

While we oppose any attempts to allow oil and gas activities on the Coastal Plain, we provide these detailed comments on various legal, policy, and resource issues to ensure that the analysis of the impacts is robust, scientifically accurate, and fully considers all of the adverse impacts of an oil and gas program and meets all legal mandates.

We believe that a robust, scientific review will show that oil and gas activities on the Coastal Plain will have unavoidable and unmitigatable destructive impacts on Arctic Refuge wildlife and habitat and on the climate, threatening the food security of the Gwich'in and Iñupiat. Simply put, the Coastal Plain is no place for oil and gas activities. We remain dedicated to ensuring that none ever occur.

Sincerely,

I. OVERVIEW

Our organizations have dedicated decades to defending the Coastal Plain of the Arctic National Wildlife Refuge (Arctic Refuge or Refuge) from oil and gas development, and we will continue to do so. These unparalleled public lands, and the wildlife that depend on them, are an international treasure that must be conserved for future generations. In adopting the 2020 Coastal Plain Leasing Program (Leasing Program or Program), BLM took a short-sighted approach. The hastily adopted 2020 Leasing Program opened the door to extensive oil and gas development that threatened the health of the wildlife and communities that rely on the Refuge. The destructive Program is the subject of four legal challenges.[1] In light of the legal deficiencies raised in these various challenges, President Biden called for a temporary halt of the Program on his first day in office.[2] The Secretary of the Interior then reviewed the Leasing Program and issued her findings in Secretarial Order No. 3401 on June 1, 2021.[3] In that order, the Secretary stated that she found multiple legal flaws with the Leasing Program, including under NEPA for "failure to adequately analyze a reasonable range of alternatives" and the Tax Act for "failure to properly interpret Section 20001."[4] The Secretary then directed the Department of the Interior (DOI) to undertake a "new, comprehensive analysis of the potential environmental impacts of the Program and address the identified legal deficiencies."[5] She also imposed a temporary halt on all activities under the Leasing Program — including on- and off-lease seismic — until the required analysis is complete.[6] The Assistant Secretary of Land and Minerals Management suspended activities on the leases as a result of these legal flaws.[7] The lease-suspension letters reiterated the NEPA and Tax Act legal deficiencies, and identified that there may be additional legal failings, including the BLM's analysis of greenhouse gases under NEPA and subsistence evaluation under ANILCA Section 810.[8] A subsequent addendum to the lease suspension orders confirmed that the NEPA analysis of greenhouse gases was in fact legally deficient.[9] These actions were recently upheld

[1] *GSC v. Haaland*, Case No. 3:20-cv-00204-SLG (D. Alaska); *National Audubon Society v. Haaland*, No. 3:20-cv-00205-SLG (D. AK); *Native Village of Venetie Tribal Government v. Haaland*, No. 3:20-cv-00223-SLG (D. AK); *State of Washington v. Haaland,* No 3:20-cv-00224-SLG (D. AK).

[2] Exec. Order No. 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, sec. 4(a), 86 Fed. Reg. 7,037, 7,039 (Jan. 25, 2021).

[3] Secretarial Order No. 3401, Comprehensive Analysis and Temporary Halt on all Activities in the Arctic National Wildlife Refuge Relating to the Coastal Plain Oil and Gas Leasing Program (June 1, 2021).

[4] *Id.* at 1.

[5] *Id*.

[6] *Id.* at 2.

[7] *See, e.g.*, Department of the Interior, Decision, Suspension of Operations and Production to Alaska Industrial Development and Export Authority (June 1, 2021).

[8] *Id.*

[9] Department of the Interior, Addendum to Suspension of Operations and Production to Alaska Industrial Development Authority (August 19, 2022).

by the Alaska District Court.[10] As a result of these legal deficiencies, the Department of the Interior recently cancelled AIDEA's leases.[11]

On September 8, 2023, the BLM and FWS issued their draft SEIS. While we oppose any attempts to allow oil and gas activities on the Coastal Plain, we provide detailed comments addressing many legal, policy, and resources issues for the agencies to consider as they move forward to finalize the analysis and adopt a new, legally valid Leasing Program. These comments set out in detail the history of conservation of the Coastal Plain; its current management; the provisions of Tax Act and how they restrict oil and gas; the failed 2021 lease sale; and the 2020 Leasing Program's legal deficiencies. We then address legal mandates guiding the Leasing Program including the Tax Act, NEPA, National Wildlife Refuge mandates, and other relevant laws such as the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA); and provide comments on the agencies' analysis of the impacts of an oil and gas program on the exceptional resources of the Coastal Plain. Finally, we address the critical issues of subsistence protection under ANILCA Section 810; Indigenous-led conservation, and co-management. Our goal in providing these detailed comments is to ensure that the analysis of the impacts in the final SEIS is robust, scientifically accurate, and fully considers all of the adverse impacts of an oil and gas program and meets all legal mandates.

II. THE LONG HISTORY OF ARCTIC REFUGE PROTECTION.

The Arctic Refuge has been protected for decades and holds a special place in the hearts and minds of the American public. BLM's prior EIS failed to acknowledge the conservation history of the Arctic Refuge and strong public support for its protection. The history of the Arctic Refuge and its importance to Indigenous people and the public is essential to be able to fully understand the impacts of oil and gas development on the Coastal Plain.

A. THE ARCTIC REFUGE AND ITS COASTAL PLAIN HAVE BEEN PROTECTED FOR DECADES BECAUSE OF THEIR EXCEPTIONAL ECOLOGICAL VALUES.

Groups provided significant background on the Coastal Plain of the Arctic Refuge, including the long history of its conservation, in prior comments.[12] As we explained most recently in our Scoping Comment Letter, the Arctic Refuge is the crown jewel of the National Wildlife Refuge System.[13] Because of the remoteness of its intact ecosystems, the Arctic Refuge is unique in the entire National Wildlife Refuge System. It functions as a model for wild nature and for what it contributes to the entire National Wildlife Refuge System, especially in protecting and fostering the health and productivity of migratory species. Groups have been

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[10] *Alaska Industrial Development and Export Authority v. Biden (AIDEA v. Biden)*, 2023 U.S. Dist. LEXIS 136474 (Aug. 7, 2023)

[11] Department of the Interior, Decision, Lease Cancellation to Alaska Industrial Development and Export Authority (Sept. 6, 2023).

[12] Letter from Kristen Miller, Alaska Wilderness League *et al.*, to Serena Sweet, Bureau of Land Management at 3–6 (October 4, 2021) [hereinafter 2021 Scoping Comment Letter].

[13] *Id*. at 3–4.

closely engaged in the EIS process to date because the Tax Act and BLM's 2020 Leasing Program represent a profound departure from historical efforts to protect the Refuge and its unparalleled resources. In our first scoping comments on the DEIS, Groups cautioned against BLM's rushed process and pressed the importance of thorough analysis.[14] We also submitted comments outlining numerous analytical failings in the draft EIS and called for revised analysis.[15] After former Secretary of the Interior David Bernhardt selected the most damaging and impactful alternative — opening the entire Coastal Plain to oil and gas leasing[16] — many groups filed lawsuits challenging that decision.[17] Among other deficiencies, the legal challenges allege that BLM failed to consider and protect all of the Refuge's purposes.[18] Those purposes are outlined below.

Long before it was ever designated as a protected public land unit by the Federal government, Indigenous peoples used and relied on the Coastal Plain and the resources it supports. They continue to do so today. Alaska Natives living both north and south of the Brooks Range, as well as First Nations in Canada depend on the fish and wildlife species that the Coastal Plain supports. This land was never ceded by Alaska Native peoples who rely on it.

Leading up to Alaska's statehood, the celebrated conservationists Olaus and Margaret Murie and U.S. Supreme Court Justice William O. Douglas visited the area that is now the Arctic Refuge, recognized its outstanding biological values and wilderness qualities and embarked on an effort to protect the area under federal law.[19] As a result of their and others' efforts, President Eisenhower's Secretary of the Interior designated the Coastal Plain and a large area to its south as the Arctic National Wildlife Range (Range) in 1960.[20] The Range was protected specifically "for the purpose of preserving unique wildlife, wilderness and recreational values" of the area.[21] Designation of the Range "was unique among Alaska conservation units because it was the first for which ecological thinking and concern for maintaining natural processes were significant

[14] Letter from Adam Kolton, Executive Director, Alaska Wilderness League *et al.*, to Nicole Hayes, Bureau of Land Management (June 19, 2018) [hereinafter 2018 Scoping Comment Letter].

[15] Letter from Kristen Miller, Alaska Wilderness League *et al.*, to Nicole Hayes, Bureau of Land Management (March 13, 2019) [hereinafter 2019 DEIS Comment Letter].

[16] Coastal Plain Oil and Gas Leasing Program Record of Decision (Aug. 2020) [hereinafter ROD].

[17] *GSC v. Haaland*, Case No. 3:20-cv-00204-SLG (D. Alaska); *National Audubon Society v. Haaland*, No. 3:20-cv-00205-SLG (D. AK); *Native Village of Venetie Tribal Government v. Haaland*, No. 3:20-cv-00223-SLG (D. AK); *State of Washington v. Haaland,* No 3:20-cv-00224-SLG (D. AK).

[18] *See generally, id.*

[19] WILLIAM O. DOUGLAS, MY WILDERNESS: THE PACIFIC WEST 10–31 (Doubleday & Co., Inc. 1960).

[20] Public Land Order 2214, Establishing the Arctic National Wildlife Range at 1 (Dec. 6, 1960) [hereinafter PLO 2214].

[21] PLO 2214 at 1.

factors in its establishment."[22] These protections stood for two decades before additional protections were added.

Considering it "one of the most important pieces of conservation legislation ever passed," President Carter signed ANILCA into law in 1980.[23] In passing ANILCA, Congress "preserve[d] for the benefit, use, education and inspiration of present and future generations certain lands and waters in the State of Alaska that contain nationally significant natural, scenic, historic, archeological, geological, scientific, wilderness, cultural, recreational, and wildlife values."[24] Through ANILCA, Congress re-designated the Range as the Arctic National Wildlife Refuge.[25] Congress added acreage south and west of the Range to the newly designated Arctic Refuge.[26] In addition to the purposes previously recognized for the Range, Congress identified additional purposes for this unique and spectacular area of America's Arctic. The ANILCA purposes for the Arctic Refuge are:

> (i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds and Arctic char and grayling;
> (ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;
> (iii) to provide, in a manner consistent with the purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents, and
> (iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in paragraph (i), water quality and quantity within the refuge.[27]

These four purposes, along with the original three purposes set out for the Range, apply to the Coastal Plain today.[28]

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[22] Arctic National Wildlife Refuge, Fairbanks, AK, 75 Fed. Reg. 17,763, 17,764 (Apr. 7, 2010).

[23] Alaska National Interest Lands Conservation Act: Remarks on Signing H.R. 39 into Law, Dec. 2, 1980, 16 WEEKLY COMP. PRES. DOCS. 2755 (Dec. 8, 1980).

[24] ANILCA § 101(a), 16 U.S.C. § 3101(a).

[25] ANILCA § 303(2).

[26] *Id.* § 303.

[27] *Id.* § 303(2)(B).

[28] ANILCA § 305; FWS Refuge Management Part 601 National Wildlife Refuge System, 601 FW 1 at 1.16 (July 26, 2006); U.S Fish and Wildlife Service, Arctic National Wildlife Refuge, Revised Comprehensive Conservation Plan Final Environmental Impact Statement, Chapter 1 at 1-21 [hereinafter CCP EIS]; *see also infra* Section IV.C.2 (describing the purposes of the Coastal Plain and BLM's failure to accurately identify and account for them).

Under ANILCA, DOI was required to conduct studies and provide a recommendation to Congress regarding whether the Coastal Plain should be opened to oil and gas development.[29] To be clear, ANILCA did not open the Coastal Plain to oil and gas. In 1980, with the passage of ANILCA, Congress designated the Coastal Plain as a National Wildlife Refuge and expressly prohibited oil and gas development while allowing only a time-limited exploration program.[30]

In the 1987 Report to Congress, DOI stated that the Coastal Plain "area is the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity."[31] Despite the many flaws with the analysis in the Report, it nevertheless concluded that oil and gas production would likely have major effects on the Porcupine Caribou Herd and muskoxen. Specifically, with regards to caribou, those effects include "widespread, long-term change in habitat availability or quality which would likely modify natural abundance or distribution of species."[32] The Report also found that full or even limited leasing would have major impacts on water resources, subsistence for residents of Kaktovik, and recreation, wilderness, and aesthetics.[33] BLM previously failed to explain their contrary findings in the final EIS. Where the agencies' findings in this draft SEIS differ from DOI's findings in the legislative EIS (LEIS), the agencies should explain the basis for this difference. Despite the impacts predicted in the LEIS, the Secretary of the Interior recommended leasing the entire Coastal Plain area.[34] For decades, Congress and the President declined to do so.

The agencies must recognize and describe this history in the final SEIS to ensure that they are fully considering the purposes and resources of the Coastal Plain, as well as accurately acknowledging the public support for its protection. Accounting for these elements is an essential step in addressing the many legal deficiencies identified in the 2020 Leasing Program, including violations of the Tax Act, NEPA, and ANILCA, and ensuring that any program adopted fully complies with the law.[35]

B. CURRENT MANAGEMENT OF THE COASTAL PLAIN AND THE WILDERNESS RECOMMENDATION TO PROTECT ITS RESOURCES.

[29] 16 U.S.C. § 3142.

[30] ANILCA §§ 303, 1003.

[31] U.S. Dep't of the Interior, Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement at 46 (Apr. 1987) [hereinafter LEIS].

[32] LEIS at vii, 123, 187.

[33] LEIS at 166.

[34] LEIS at vii, 188–89, 192.

[35] *See also* Secretarial Order No. 3401, Comprehensive Analysis and Temporary Halt on all Activities in the Arctic National Wildlife Refuge Relating to the Coastal Plain Oil and Gas Leasing Program at 1 (June 1, 2021).

The FWS currently administers and manages the entire Arctic Refuge — including the Coastal Plain — under the Comprehensive Conservation Plan (CCP) adopted on April 3, 2015.[36] The CCP establishes "management goals and objectives," "define[s] compatible use," "[u]pdate[s] management direction related to national and regional policies and guidelines used to implement Federal laws governing Refuge management," and "[e]stablish[es] broad management direction for Refuge programs and activities," among other things.[37] Currently, the Coastal Plain is managed under the Minimal Management category as set out in the CCP.[38]

In the CCP, FWS articulated the vision for the Arctic Refuge as follows:

> This untamed arctic landscape continues to sustain the ecological diversity and special values that inspired the Refuge's establishment. Natural processes continue and traditional cultures thrive with the seasons and changing times; physical and mental challenges test our bodies, minds, and spirit; and we honor the land, the wildlife, and the native people with respect and restraint. Through responsible stewardship, this vast wilderness is passed on, undiminished, to future generations.[39]

Throughout the CCP process, whether to recommend Wilderness for the Coastal Plain was one of the main issues considered by the agency and commented on by the public. In 2015, following a multi-year process where nearly one million people submitted comments in support of protecting the Coastal Plain as Wilderness, the FWS recommended Wilderness for the Coastal Plain.[40] In adopting Alternative E (which included a Wilderness recommendation for the majority of the Coastal Plain and the lands to the south added by ANILCA), FWS stated that Wilderness for the Coastal Plain:

> [B]est meets the Service's purpose and need to manage the Arctic Refuge to achieve the mission of the National Wildlife Refuge System and to meet the purposes for which the Refuge was established. This alternative conserves the fish, wildlife and habitats of the Arctic Refuge and facilitates subsistence and recreation in settings that emphasize natural, unaltered landscapes and natural processes.[41]

The agency also stated that:

> [The] Arctic Refuge is nationally recognized for its unique and wide range of arctic and subarctic ecosystems that retain a high degree of biological integrity and natural diversity. The Refuge exemplifies the idea of wilderness embodying tangible and

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[36] U.S Department of the Interior, Fish and Wildlife Service, Region 7, Record of Decision, Revised Comprehensive Conservation Plan, Arctic National Wildlife Refuge (Apr. 3, 2015) [hereinafter CCP ROD].

[37] CCP EIS at ES-9.

[38] CCP EIS at 3-34; CCP ROD at 5.

[39] CCP ROD at 4.

[40] CCP ROD at 3.

[41] CCP ROD at 3–4, *see also* CCP ROD at 12.

> intangible values including natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and immersion in the natural world. The Refuge represents deep-rooted American cultural values about frontiers, open spaces, and wilderness. It is one of the finest representations of the wilderness that helped shape our national character and identity.[42]

In advancing the Wilderness recommendation to Congress, the President stated that the Arctic Refuge "is one of the most beautiful, undisturbed places in the world. It is a national treasure and should be permanently protected through legislation for future generations."[43]

Throughout the CCP process, FWS properly declined to consider oil and gas development on the Coastal Plain.[44] Specifically regarding the management of the Arctic Refuge and the lack of consideration of oil and gas development in the CCP process, the CCP states:

> Until Congress takes action to change the provision of ANILCA 1003 or to implement the 1987 report, the Service will not and cannot permit oil and gas leasing in the Refuge under any of the alternatives in the Plan. When Congress makes a management decision, that action will be incorporated into the Plan and implemented.[45]

Oil and gas leasing and any related activities on the Coastal Plain are, therefore, inconsistent with the CCP and present management of the Coastal Plain. The draft SEIS acknowledges that FWS will continue to managing the Arctic Refuge under the existing CCP and any amendments.[46] Groups previously asked BLM and FWS to explain how FWS's management under the CCP would be accounted for in the Leasing Program and whether an amendment to the CCP was required. We encourage FWS to provide additional detail on this question in the final SEIS, particularly how FWS will account for inconsistencies between any final leasing program and the CCP, including how the oil and gas program impacts current Refuge management.

C. TITLE II OF THE TAX CUTS AND JOBS ACT (PUB. L. 115-97, H.R. 1) AND AN OIL AND GAS PROGRAM FOR THE COASTAL PLAIN.

Despite decades of support for protecting the Arctic Refuge's Coastal Plain from oil and gas, Congress included a provision in the Tax Act to open the Coastal Plain to oil and gas development. This law was adopted through the budget reconciliation process under restrictive

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[42] CCP ROD at 11–12.

[43] Ltr. From the President to the Speaker of the House of Representatives and the President of the Senate (Apr. 3, 2015).

[44] *See, e.g.*, CCP EIS at 3-6.

[45] CCP EIS at 1-1; *see also* Arctic National Wildlife Refuge, Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, Wild River Plans Final, Dear Reader Letter at 2 (Sept. 1988) (stating, "[w]hen Congress makes a management decision [re: oil and gas], that action will be incorporated into the Plan implemented").

[46] DSEIS at ES-1.

Senate procedures that only required a simple majority vote. Senator Murkowski was clear that she only used this legislative vehicle because there was not the support necessary to open the Refuge through the normal legislative process.[47] Throughout the legislative process, Senator Murkowski clearly stated that no laws would be waived or bypassed, no process would be short-cut, that the agencies would take their time and go through the process step-by-step to ensure the protection of the wildlife, fish, habitat, and other values of the Coastal Plain. The agencies must uphold these commitments.[48]

Following passage of the 2017 Tax Act, BLM published its Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program in April 2018.[49] In our scoping comments, Groups cautioned against a rushed EIS process and emphasized the importance of thorough and thoughtful analysis.[50] Later that same year, BLM released its DEIS.[51] We again urged BLM not to rush past necessary analysis and outlined significant analytical failings necessitating a significantly revised and reissued draft EIS.[52] Instead, BLM pushed forward to ensure it could issue leases by the end of the Trump Administration. Secretary Bernhardt issued the Record of Decision (ROD) — selecting the most damaging and impactful alternative and opening the entire Coastal Plain to oil and gas leasing — in August 2020.[53] Multiple lawsuits followed.[54] These lawsuits set out substantive and procedural violations of ANILCA, NEPA, the Tax Act, the National Wildlife Refuge System Administration Act (NWRSAA), the Wilderness Act, the National Historic Preservation Act (NHPA), and the ESA.

The current effort to supplement the prior faulty and rushed analysis must be thorough and reaching to remedy the problems and shortcomings with the 2020 Leasing Program, as explained in greater detail below.

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[47] Margaret Kriz Hobson, *Road map for ANWR drilling gets clearer*, E&E NEWS, Mar. 12, 2018 [hereinafter Hobson I].

[48] *See, e.g.*, Senator Lisa Murkowski, Floor Speech on Reconciliation Legislation (November 30, 2017), www.murkowski.senate.gov/press/speech/floor-speech-reconciliation-legislation-tax-reform.

[49] Notice of Intent to Prepare an Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska, 83 Fed. Reg. 17562 (Apr. 20, 2018).

[50] *See generally* 2018 Scoping Comment Letter.

[51] Notice of Availability of the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program and Announcement of Public Subsistence-Related Hearings, 83 Fed. Reg. 67,337 (Dec. 28, 2018).

[52] *See generally* 2019 DEIS Comment Letter.

[53] *See generally* Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Record of Decision (Aug. 2020) [hereinafter ROD].

[54] *Gwich'in Steering Committee v. Haaland (GSC v. Haaland),* Case No. 3:20-cv-00204-SLG (D. Alaska) *National Audubon Society v. Haaland*, No. 3:20-cv-00205-SLG (D. AK); *Native Village of Venetie Tribal Government v. Haaland*, No. 3:20-cv-00223-SLG (D. AK); *State of Washington v. Haaland,* No 3:20-cv-00224-SLG (D. AK).

D. STRONG PUBLIC SUPPORT FOR PROTECTING THE COASTAL PLAIN.

Consistent with historical strong public support for protecting the Coastal Plain, during the comment period on the draft EIS, BLM received over 1 million comments, nearly all of which expressed support for protecting the Coastal Plain.[55] During the scoping period for the draft SEIS, the Agencies received hundreds of thousands of comments.[56] Many commenters raised specific concerns about BLM's interpretation of the Tax Act in the 2020 Leasing Program.[57] The volume of comments received demonstrates that there is significant controversy and interest in the proposal. And by continuing to identify the need to protect the area from oil and gas activities, commenters made clear that the agencies must propose and adequately consider a highly restrictive program with significant protections for the Refuge.

III. THE UNLAWFUL 2020 LEASING PROGRAM AND 2021 LEASE SALE, AND THE BIDEN ADMINISTRATION'S EFFORTS TO ADDRESS THEM.

A. THE TRUMP ADMINISTRATION'S UNLAWFUL CALL FOR NOMINATIONS PROCESS AND THE FAILED 2021 LEASE SALE.

A few months after Secretary Bernhardt signed the ROD adopting the 2020 Leasing Program, BLM published its Call for Nominations for the Coastal Plain Oil and Gas Leases Sale.[58] Throughout the EIS process, BLM made contradictory statements regarding the lease sale process it intended to pursue. Prior to issuing the draft EIS, BLM's website indicated the call for nominations would be issued concurrent with the notice of the draft EIS or prior to the final EIS and that the ROD would be issued concurrently with a lease sale notice.[59] However, the Assistant Secretary for Land and Minerals Management at the time, Joseph Balash, contradicted those statements and indicated that the call for nominations would be issued concurrently with the final EIS.[60] Despite Groups' comments requesting clarification, BLM failed to clarify its intentions for the lease sale in the final EIS. Like the draft EIS, BLM's final EIS adopted the assumption that the first lease sale would take place within a year of adoption of the ROD and that the ROD would authorize multiple lease sales.[61] The final EIS also failed to clarify how and when specific tracts would be identified for lease. While BLM indicated that some lands

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[55] Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Environmental Impact Statement at ES-3, App. S. at S-3 (Sept. 2019) [hereinafter FEIS].

[56] Bureau of Land Mgmt., Coastal Plain Oil and Gas Leasing Program Final Scoping Report at 2-1 (Nov. 2021).

[57] *Id*. at 3-33.

[58] 85 Fed. Reg. 73293 (Nov. 17, 2020).

[59] U.S. Department of the Interior, Bureau of Land Management, Frequently Asked Questions, *available at*: https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=152117 (last visited January 10, 2019).

[60] Shady Grove Oliver, The Arctic Sounder, BLM seeks comments on leasing alternatives (Dec. 30, 2018), *available at*: http://www.thearcticsounder.com/article/1852blm_seeks_comments_on_leasing_alternatives (last visited January 10, 2019),

[61] FEIS 1-5, 3-324.

identified in the ROD may not be offered for lease,[62] in outlining the decisions to be made, BLM stated that the decision in the ROD would "include which tracts of land will be offered for lease."[63] While ultimately BLM finalized the ROD in advance of starting the separate lease sale process, BLM's conflicting statements about its plans throughout the process — many of which would have been at odds with how leasing decisions are made in the Reserve — created significant confusion.

The Trump Administration then took unlawful short-cuts that stifled public participation after issuing its call for nominations. The call for nominations stated that BLM was soliciting comments and information on tracts "that may be offered for lease" and specifically requested comments on "tracts which should receive special concern and analysis as well as the size of the tracts."[64] BLM provided the public with thirty days to submit comments.[65] Then, instead of waiting for the short call for nominations period to conclude and allowing time for the agency to review all of the information received during the nominations period to inform a lease sale, BLM noticed a lease sale on December 7, 2020, during the call for nominations period.[66] BLM identified tracts that were available for bid, provided the stipulations each tract would be subject to, and set out the terms for leases.[67] As groups explained in their prior comments, noticing a lease sale during an open public comment and call for nominations period is inconsistent with BLM's regulations, how BLM manages the leasing program in the National Petroleum Reserve-Alaska, and contrary to the mandate in the Tax Act.[68]

Despite BLM's every effort to cut corners and rush to issue leases before the end of the Trump Administration, the resulting January 2021 lease sale was a complete flop.[69] No major oil company submitted a bid and revenues were far below promised levels.[70] During the legislative process leading up to the passage of the Tax Act, the Congressional Budget Office estimated that a lease sale would generate nearly $2 billion, with almost $1 billion going to the federal

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[62] *Id*. at 1-5.

[63] *Id*. at 1-2.

[64] *Id*.

[65] Call for Nominations and Comments for the Coastal Plain Alaska Oil and Gas Lease Sale, 85 Fed. Reg. 73,293 (Nov. 17, 2020).

[66] Notice of 2021 Coastal Plain Alaska Oil and Gas Lease Sale and Notice of Availability of the Detailed Statement of Sale, 85 Fed. Reg. 78,865 (Dec. 7, 2020).

[67] *Id*.; Department of the Interior, Bureau of Land Management, Coastal Plain Alaska, Oil and Gas Lease Sale 2021, Detailed Statement of Sale, Exh. A & B (Dec. 7, 2020).

[68] Letter from Bernadette Demientieff, Gwich'in Steering Committee, to Chad Padgett, State Director, Bureau of Land Management, Comments re: Call for Nominations and Comments for the Coastal Plain Alaska Oil and Gas Lease Sale, 85 Fed. Reg. 73292 (Nov. 17, 2020) at 5–6 (Dec. 17, 2020) [hereinafter Call for Nominations Comments].

[69] *Leases Issued for ANWR Coastal Plain Oil & Gas Program*, BUREAU OF LAND MANAGEMENT (Jan. 19, 2021), https://www.blm.gov/press-release/leases-issued-anwr-coastal-plain-oil-gas-program (last visited Feb. 25, 2022); Henry Fountain, *Sale of Drilling Leases in Arctic Refuge Fails to Yield a Windfall*, NEW YORK TIMES, Jan 6, 2021, available at https://www.nytimes.com/2021/01/06/climate/arctic-refuge-drilling-lease-sales.html.

[70] *Id*.

treasury.[71] While this figure was greatly overestimated,[72] Congress passed the Tax Act with the understanding that would be the amount of revenue recovered from the mandated lease sales. BLM offered 22 lease tracts for bid, and received bids on only 11 of them, only nine of which were finalized. And instead of generating $2 billion, the lease sale initially generated less than $12 million dollars from bids, half of which had to be turned over to the State of Alaska. That means that the bids generated 0.67% of the revenues expected to be generated from the Tax Act. Ironically, most of the bid funds returned to the State of Alaska were received from the Alaska Industrial Development and Export Authority (AIDEA), a State of Alaska corporation that purchased seven of the nine leases.[73] Only two companies participated. One bid for the smallest lease offered was from 88 Energy, a minor energy company, and the other was from Knik Arm Services, a then newly formed entity that had no experience in the oil and gas field.[74] However, these companies' tepid interest quickly dissipated — in less than a year both relinquished their leases and received their bid and rental monies back.[75] This means that the results of the lease sale were even more paltry; it ultimately generated only $9.7 million, or 0.54% of the revenues expected from the Tax Act.

Once touted as an economic boon that would generate billions in tax revenue, exploration and development of the Arctic Refuge has instead proven economically infeasible.[76] Dozens of

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[71] Letter from Keith Hall, Director, Congressional Budget Office, to Kevin Brady, Chairman, Committee on the Ways and Means, U.S. House of Representatives (Dec. 15, 2017).

[72] Henry Fountain and Steve Eder, The White House Saw Riches in the Arctic Refuge, but Reality May Fall Short, The New York Times (Aug. 21, 2019), available at: https://www.nytimes.com/2019/08/21/us/oil-drilling-arctic.html; Center for American Progress, Arctic National Wildlife Refuge 101: Protecting America's Last Great Wilderness from Being Sold Out for a Congressional Tax Scam, Matt Less-Ashely and Jenny Rowland-Shea (Oct. 10, 2017), available at: https://www.americanprogress.org/issues/green/news/2017/10/10/440559/arctic-national-wildlife-refuge-101/.

[73] *Id*.

[74] *Id*.

[75] Alex DeMarban, *Private Company Gives up Oil and Gas Lease in Arctic Refuge, Leaving Alaska Agency as Lone Leaseholder*, ANCHORAGE DAILY NEWS, Aug, 22, 2022, available at https://www.adn.com/business-economy/energy/2022/08/22/private-company-gives-up-oil-and-gas-lease-in-arctic-refuge-leaving-alaska-agency-as-lone-leaseholder/; Alex DeMarban, *Another Oil Company Backs out of Leases in Alaska's Arctic National Wildlife Refuge*, ANCHORAGE DAILY NEWS, June 1, 2022, available at https://www.adn.com/business-economy/energy/2022/06/01/another-oil-company-backs-out-of-leases-in-alaskas-arctic-national-wildlife-refuge/; Lease Rescission and Refund Agreement between Regenerate Alaska Inc. and BLM (April 28, 2022); Lease Rescission and Refund Agreement between Knik Arm Services LLC and BLM (Aug 16, 2022).

[76] *See* Brad Plumer & Coral Davenport, *Trump Budget Proposes Deep Cuts in Energy Innovation Programs*, NEW YORK TIMES, May 23, 2017, available at https://www.nytimes.com/2017/05/23/climate/trump-budget-energy.html; *see also* Sen. Lisa Murkowski, *Oil Drilling in Arctic Refuge can be Done Safely*, SEATTLE TIMES, June 13, 2018,

major banks across the world, including the six largest in the United States and five largest in Canada, have issued policies refusing to finance drilling in the Arctic Refuge.[77] Twenty international insurance companies have followed suit.[78] The oil industry has also balked at the prospect of drilling in the Refuge. Every oil company that once held leases within the Arctic Refuge has since walked away — some at great expense. After investing millions of dollars and decades maintaining leases on private Arctic Slope Regional Corporation lands within the Refuge, Chevron and Hilcorp paid an additional $10 million to be released from their leases.[79] The message from industry is clear — those promising tremendous revenues and economic development through oil and gas development of the Arctic Refuge have been peddling a delusion.[80]

B. PRESIDENT BIDEN'S EXECUTIVE ORDER, SECRETARY HAALAND'S SECRETARIAL ORDER, LEASE SUSPENSIONS, AND LEASE CANCELLATION.

After its adoption in August 2020, the flawed and harmful 2020 Leasing Program became the subject of numerous legal actions and was subsequently halted by the Biden Administration to allow for comprehensive review. As a result, the Secretary of the Interior identified significant legal deficiencies in BLM's analysis, including violations of NEPA and the Tax Act. Further possible violations were flagged for review by the Assistant Secretary of Land and Minerals Management including issues with BLM's greenhouse gas emission analysis and ANILCA 810 analysis. As a result of the legal flaws, the leases were suspended and recently cancelled.

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available at https://www.seattletimes.com/opinion/sen-lisa-murkowski-oil-drilling-in-arctic-refuge-can-be-done-safely/.

[77] Arctic Refuge Defense Campaign, *Drilling in the Arctic Refuge is High Risk, Low Reward*.

[78] *Id*.

[79] Nathaniel Herz, *2 Oil Companies Quietly Spent $10 Million to Exit Arctic Refuge Leases*, ANCHORAGE DAILY NEWS, May 27, 2022, available at, https://www.adn.com/business-economy/energy/2022/05/27/two-oil-companies-quietly-spent-10-million-to-exit-arctic-refuge-leases/.

[80] *See* Tegan Hanlon, *Major Oil Companies Take A Pass On Controversial Lease Sale In Arctic Refuge*, N.P.R., Jan. 6, 2021, available at https://www.npr.org/2021/01/06/953718234/major-oil-companies-take-a-pass-on-controversial-lease-sale-in-arctic-refuge ;*see also* Brad Plumer & Coral Davenport, *Trump Budget Proposes Deep Cuts in Energy Innovation Programs*, NEW YORK TIMES, May 23, 2017, available at https://www.nytimes.com/2017/05/23/climate/trump-budget-energy.html; Sen. Lisa Murkowski, *Oil Drilling in Arctic Refuge can be Done Safely*, SEATTLE TIMES, June 13, 2018, available at https://www.seattletimes.com/opinion/sen-lisa-murkowski-oil-drilling-in-arctic-refuge-can-be-done-safely/.

On his first day in office, President Biden issued Executive Order 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis.[81] The Executive Order committed to "promote and protect public health and the environment; and conserve our national treasures and monuments, places that secure our national memory" as well as to "advance environmental justice."[82] In doing so, the President explained that decisions "must be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making."[83] The President then announced his policy:

> 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.[84]

In section 4 of this order, titled "Arctic Refuge," the President identified the legal deficiencies of the Leasing Program and directed the Secretary of the Interior to review the program:

> In light of the alleged legal deficiencies underlying the program, including the inadequacy of the environmental review required by the National Environmental Policy Act, the Secretary of the Interior shall, as appropriate and consistent with applicable law, place a temporary moratorium on all activities of the Federal Government relating to the implementation of the Coastal Plain Oil and Gas Leasing Program, as established by the Record of Decision signed August 17, 2020, in the Arctic National Wildlife Refuge. The Secretary shall review the program and, as appropriate and consistent with applicable law, conduct a new, comprehensive analysis of the potential environmental impacts of the oil and gas program.[85]

Following through on this directive, Secretary Haaland undertook a review of the 2020 Leasing Program and issued her findings and actions in Secretarial Order No. 3401. In that order, the Secretary stated that she found multiple legal flaws with the 2020 Leasing Program, including NEPA and Tax Act violations:

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[81] Executive Order 13990 Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, sec. 1, available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/.

[82] *Id.*

[83] *Id.*

[84] *Id.*

[85] *Id.* sec. 4(a).

> My review of the Coastal Plain Oil and Gas Leasing Program (Program) as directed by EO 13990 has identified multiple legal deficiencies in the underlying record supporting the leases, including, but not limited to: (1) insufficient analysis under the National Environmental Policy Act (NEPA), including failure to adequately analyze a reasonable range of alternatives in the environmental impact statement (EIS); and (2) failure in the August 17, 2020, Record of Decision (ROD) to properly interpret Section 20001 of Public Law 115-97 (Tax Act).[86]

The Secretary then directed DOI to undertake a "new, comprehensive analysis of the potential environmental impacts of the Program and address the identified legal deficiencies."[87] She also imposed a temporary halt on all activities under the 2020 Leasing Program until the required analysis is complete, which includes both on- and off-lease seismic.[88]

Finally, as a result of the legal flaws impacting the leases, the Assistant Secretary of Land and Minerals Management suspended activities on the nine issued leases. The lease-suspension letters reiterated and expanded upon the agency's identified NEPA and Tax Act legal deficiencies.[89] Regarding BLM's violation of the Tax Act, the letters state that interpreting the phrase "up to 2,000-acres" in section 20001(c)(3) as a mandate requiring authorization of no less than 2,000-acres of development, was "both implausible and contrary to Congressional intent."[90] In addition to this legal error, the lease suspension letters state that BLM violated NEPA by failing to analyze an alternative, beyond the no-action alternative, that allowed for fewer than 2,000-acres of development.[91] The lease suspension letters also indicated that there may be further legal failings in the 2020 Leasing Program, including BLM's analysis of greenhouse gases under NEPA and the agency's ANILCA section 810 subsistence evaluation.[92] In a subsequent addendum to the lease suspension orders, the Assistant Secretary of Lands and Minerals Management confirmed that BLM's NEPA analysis of greenhouse gases was also legally deficient.[93] The President's and Secretary's actions to suspend the leases and pause permitting were recently upheld and the District Court decisively rejected AIDEA and the State of Alaska's arguments challenging these actions.[94]

[86] Secretarial Order 3401, sec. 3 (June 1, 2021).

[87] *Id.* sec. 4.

[88] *Id.* secs. 4 & 5.b.

[89] *See, e.g.*, Department of the Interior, Decision, Suspension of Operations and Production to Alaska Industrial Development and Export Authority.

[90] *Id*. at 2.

[91] *Id*.

[92] *See, e.g.*, Department of the Interior, Decision, Suspension of Operations and Production to Alaska Industrial Development and Export Authority.

[93] Department of the Interior, Addendum to Suspension of Operations and Production to Alaska Industrial Development Authority.

[94] *AIDEA v. Biden*, 2023 U.S. Dist. LEXIS 136474.

When the draft SEIS was released, Secretary Haaland also announced that she was cancelling the remaining seven leases held by AIDEA.[95] The Department explained that the draft SEIS developed information that indicated that the lease sale:

> was seriously flawed and based on a number of fundamental legal deficiencies, including: insufficient analysis under the National Environmental Policy Act, including failure to adequately analyze a reasonable range of alternatives and properly quantify downstream greenhouse gas emissions; and failure to properly interpret the Tax Act.[96]

As a result, the Secretary determined "that the leases issued by the previous administration in the Arctic Refuge shall be cancelled."[97] The memorandum supporting the decision to cancel the leases further explained that Secretary has inherent authority to cancel oil and gas leases for legal errors, and that BLM does not need to try to fix the errors via a new decision-making process prior to cancellation.[98] The memorandum explained that AIDEA's leases were improperly issued because of serious legal problems with the Leasing Program EIS, summarized above.[99] The Secretary also explained that the disruptive consequences of cancelling the leases are minimal because AIDEA held the leases for only a short time, the lease terms and lease rentals had been suspended, and AIDEA will receive a full refund of all bids and rentals paid to date.[100] We applaud this decision and believe that it is not only legally defensible, it is the only legally defensible way to proceed given the failings with the Leasing Program.

C. AIDEA IS NOT AN ELIGIBLE BIDDER AND SHOULD NOT BE ISSUED LEASES.

In the event AIDEA bids again on leases, BLM should reject AIDEA's bids because AIDEA is an ineligible bidder.[101] AIDEA is a state-owned financing corporation that is not an oil and gas company and is not in a position to meet the terms of the leases. When bidding on leases for the first lease sale, AIDEA made it clear that it was bidding on behalf of itself and as a "backstop" in case oil companies did not bid in the sale.[102] AIDEA itself was not in a position to

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[95] Press Release, Biden-Harris Administration Takes Major Steps to Protect Arctic Lands and Wildlife in Alaska (Sept. 6, 2023).

[96] *Id.*

[97] *Id.*

[98] Department of the Interior, Decision, Lease Cancellation to Alaska Industrial Development and Export Authority (Sept. 6, 2023).

[99] *Id.*

[100] *Id.*

[101] BLM has broad authority to not accept bids on leases. 43 C.F.R. § 3132.5(b).

[102] Tegan Hanlon, *Drilling Boosters, Opponents Consider Next Steps After First Arctic Refuge Lease Sale*, ALASKA PUBLIC MEDIA, Jan. 11, 2021, https://alaskapublic.org/2021/01/11/drilling-boosters-opponents-consider-next-steps-after-first-arctic-refuge-lease-sale (indicating AIDEA bid in the lease sale as a "backstop" in case industry did not show up and that AIDEA would likely need to partner with industry to explore for or

develop the leases and publicly identified that it would need to partner with other companies to actually develop the leases.[103] AIDEA's recent request for proposals for seismic permitting resulted in no proposals being received and AIDEA cancelling the request.[104] The terms of the lease itself obligates the lessee to exercise reasonable diligence in developing and producing.[105] These facts demonstrate that AIDEA does not have the ability to develop or produce oil from any leases on its own, and therefore, cannot meet the diligent development requirements. Any potential bids from AIDEA should be rejected on these grounds.

It is also not in the public interest for BLM to issue leases to AIDEA.[106] AIDEA has a long history of speculative and reckless spending in Alaska.[107] AIDEA's historic actions of bidding on the Coastal Plain leases without those expenditures being fully approved by the Alaska Legislature are contrary to the Alaska Constitution.[108] The questionable financial foundation for AIDEA's bids raises significant questions about AIDEA's ability to comply with the terms of the leases, including its ability to ensure that any resources on the Coastal Plain are protected from damaging activities and harm. It is not clear that AIDEA is in a financial position to ensure adequate funding for protecting those resources or remediating any damage, should it occur. As such, AIDEA's bids should be rejected as contrary to the public interest.

IV. COMPLIANCE WITH LEGAL MANDATES.

Given the extent of legal issues identified by the Biden Administration and DOI including violations of the Tax Act, NEPA, and ANILCA,[109] Secretary Haaland called for a "new, comprehensive analysis."[110] Overall, the DSEIS attempts to address many of these errors,

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develop oil); Tegan Hanlon, *Alaska's State Development Corporation Approved to Spend Up to $20M on ANWR Oil Leases*, ALASKA PUBLIC MEDIA, Dec. 24, 2020, https://alaskapublic.org/2020/12/24/alaskas-state-development-corporation-can-now-spend-up-to-20m-on-anwr-lease-sale (indicating that AIDEA decided to bid on tracts to "make sure the land is set aside for oil development in case no one else bids on the leases" and that, if AIDEA wins the tracts, it would then "partner with companies to do the actual drilling").

[103] Hanlon, *see also AIDEA Request for Proposals Package*, RFP No. 24045 (Aug. 16, 2023).

[104] AIDEA Notice of Cancellation (Oct. 10, 2023).

[105] *See, e.g.*, BLM Offer to Lease and Lease for Oil and Gas No. AA095889 (Jan. 12, 2021) (AIDEA's cancelled lease).

[106] *See, e.g.*, *Duesing v. Udall*, 350 F.2d 748 (D.C. Cir. 1965) (recognizing longstanding authority to reject bids where not in the public interest), *cert. denied*, 383 U.S. 912 (1966).

[107] *See, e.g.*, MB BARKER, LLC ET AL., ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY: COST & FINANCIAL PERFORMANCE – A LONG, HARD LOOK (2022), *available at* https://static1.squarespace.com/static/62cca323b85faf15e3ca3ce8/t/63320dbc1620c750ff2654f5/1664224705415/FINAL_AIDEA+Cost+and+Financial+Performance+Report_+2022.pdf.

[108] Letter from Trustees for Alaska on Behalf of the Gwich'in Steering Comm. to Dana Pruhs, Board Chair, AIDEA, Regarding AIDEA's Approval of Up to $20 Million in Spending on Oil and Gas Leases for the Coastal Plain of the Arctic National Wildlife Refuge (Jan. 11, 2021).

[109] Exec. Order No. 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, sec. 4(a), 86 Fed. Reg. at 7,039; Secretarial Order No. 3401

[110] Secretarial Order No. 3401.

but before the DOI can adopt a program that is consistent with the myriad laws applicable to the Coastal Plain, additional analysis should be undertaken.

Applicable obligations under various legal mandates, including the directives of the Tax Act, NEPA, National Wildlife Refuge laws and policies, other relevant statutes including the ESA and the Marine Mammal Protection Act (MMPA), as well as with international obligations, are addressed below, with areas identified where additional analysis is warranted.

A. CONSISTENCY WITH THE DIRECTIVES IN THE TAX ACT.

Properly interpreting and applying multiple directives in the Tax Act, including the "2,000-acre limitation" on surface development, the directive to manage the oil and gas program "in a manner similar to how BLM manages lease sales under the Naval Petroleum Reserve Production Act of 1976 [] (including regulations),"[111] and the right-of-way provision, are vital to ensuring that the Leasing Program complies with the law, especially considering that these are areas of recognized legal deficiency in the 2020 Leasing Program. These mandates are addressed below.

1. Approach to the 2,000-Acre Limitation.

Many groups joining these comments challenged BLM's interpretation of section 20001(c)(3) of the Tax Act based, in part, on BLM's prior determination that it was required to authorize no less than 2,000-acres of development and for adopting a Leasing Program that allowed for far more than 2,000 acres of development.[112] BLM now presents a new interpretation of this provision, which is different from what was in the final EIS and "substantially different" than the interpretation advanced in the ROD.[113]

Section 20001(c)(3) of the Tax Act provides that "up to 2,000 surface acres" may be covered by "production and support facilities."[114] In the 2020 Leasing Program, BLM interpreted this language to exclude facilities that do not qualify as both production *and* support facilities.[115] BLM therefore excluded numerous aspects of oil and gas operations such as airstrips, pipelines, barge landings, roads, and gravel mines from the 2,000-acre limit.[116] The agency indicated that it might also exclude infrastructure related to rights-of-way.[117] This interpretation contravened Congressional intent. In the proceedings leading up to passage of the Tax Act, the 2,000-acre

[111] Pub. L. 115-97, Title II, sec. 20001(b)(3).

[112] *See, e.g.*, First Am. Compl., *GSC v. Haaland* at 67–68; Pub. L. 115-97, Title II, section 20001(c)(3).

[113] DSEIS at 1-9.

[114] 115 P.L. 97, Title II, sec. 20001(c)(3).

[115] *See, e.g.*, First Am. Compl., *GSC v. Haaland* at 68.

[116] ROD at 9–13.

[117] *Id*.

provision was described as providing a cap on all surface development on the Coastal Plain.[118] By excluding significant infrastructure from the 2,000-acre limit, BLM rendered this overall cap meaningless. Further, in the final EIS and ROD, BLM defined the Tax Act's 2,000-acre limit on surface development as "the total number of surface acres . . . which may be covered by production and support facilities *at any given time.*"[119] This interpretation is at odds with protecting the Coastal Plain and Congress' intent behind the provision. At no point in the legislative history is there any indication Congress intended for this number to be a rolling total.

BLM's current interpretation is much more consistent with the plain language and Congressional intent but still falls short of being fully consistent with Congressional intent. The 2,000-acre limit was repeatedly discussed during proceedings leading to the passage of the Tax Act as a way to prevent harm to Coastal Plain resources.[120] While Groups believe that this limitation will not achieve this stated goal, BLM must nevertheless interpret and apply the limitation consistent with this overarching protective goal.

BLM now recognizes that this provision is a cap on overall development and makes clear that once that cap is reached, no additional lands can be developed, regardless of reclamation efforts.[121] BLM properly recognizes that the limit on development applies equally to leased and unleased lands.[122] BLM also now applies a proper definition of "facility" as something that is "built, installed, or established" for the purpose of "development, production, and transportation of oil and gas in and from the Coastal Plain," including all areas covered by gravel and gravel mines.[123] These components of its interpretation are better aligned with Congress' intent and should carry forward in the final SEIS and new ROD.

Additionally, BLM should clearly state that the acreage considered under each alternative is a hard limit for the surface disturbance that could be allowed under that alternative if selected, and that when that acreage is reached, no additional surface disturbance will be permitted. Right now, it is unclear if BLM is treating it as a limit that will be capped at the amount in the adopted

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[118] Chairman Lisa Murkowski, Opening Statement, Full Committee Reconciliation Markup, U.S. Senate Committee on Energy and Natural Resources (Nov. 15, 2017) ("We have also limited surface development to just 2,000 federal acres."), *available at*: https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=5B08FB7E-B82C-488F-9627-D78DEAF2EBC1.

[119] FEIS at 1-7 (emphasis in original).

[120] Chairman Lisa Murkowski, Opening Statement, Full Committee Reconciliation Markup, U.S. Senate Committee on Energy and Natural Resources (Nov. 15, 2017) ("Alaskans know that we must balance the potential impacts of development. And I will be the first to agree that the environment and local wildlife will always be a concern, and that's why we have not avoided environmental review. . . . And that's why we have limited surface development to a total of just 2,000 federal acres."), *available at*: https://www.energy.senate.gov/public/index.cfm/files/serve?File_id=5B08FB7E-B82C-488F-9627-D78DEAF2EBC1.

[121] DSEIS at 1-9.

[122] DSEIS at 1-9.

[123] DSEIS at 1-9 to 1-10.

alternative (i.e., 2,000, 1,464, or 1,040 acres) or if those different acreages are presented only as a point of comparison for the SEIS analysis.[124] It should be the former, not the latter. BLM should revise its interpretation to make clear that the agency does not need to allow up to 2,000 acres of surface development under the leasing program and can impose a limit below 2,000 acres, consistent with the alternative it adopts.[125] Critical to ensuring that no more acreage is developed than the amount included in the selected alternative is ensuring that the agency retains the authority to impose and enforce a limit on the total amount of surface disturbance. It is unclear what mechanism BLM proposes to do so. BLM should ensure the terms of any leases expressly retain the authority to fully restrict and deny any amount of surface disturbance. To the extent BLM is intending to retain that authority using the NSO provisions, it needs to make that clear and ensure it retains that authority.

Unfortunately, BLM still fails to account for some facilities in its interpretation that should be included, including those portions of raised pipelines that do not directly touch the ground.[126] By excluding the raised portions of pipelines, BLM's interpretation fails to account for the fact that Congress intended the list in the Tax Act to be inclusive, not exclusive. Pipelines are unquestionably production and support facilities developed on the surface of the Coastal Plain and impact resources like vegetation and caribou, even if they do not directly touch the ground. As such, all areas impacted by elevated pipelines should count toward this limitation, including the full length of the pipelines themselves as well as the vertical supports. Interpreting the limitation to apply to pipelines in this way is consistent with the overarching goal that this provision be a protective measure for the Coastal Plain. By interpreting the limitation to ignore the miles of actual pipelines, BLM is ignoring considerable acreage directly impacted by pipelines.

BLM indicates that it interprets the limitation to not apply to areas indirectly disturbed, such as areas impacted by dust shadows, or to snow or ice roads and pads.[127] Both of these examples cause impacts to Coastal Plain resources, which is what the limitation aims to protect. As such, the limitation should apply. BLM should amend its interpretation in the final SEIS to apply the limitation more broadly to include all areas that are directly and indirectly impacted.

BLM also states that it does not interpret this limitation to apply to the private lands on the Coastal Plain (i.e., the KIC/ASRC lands and Native Allotments).[128] This limitation is a legal requirement to conserve the Arctic Refuge Coastal Plain. As such, it should apply to all private lands in the Refuge pursuant to section 22(g) of the Alaska Native Claims Settlement Act, as well as to ASRC/KIC lands under the terms of that Land Exchange Agreement. BLM should better explain its reasoning for not applying this limitation to nonfederal lands to ensure that it consistent with Congressional intent.

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[124] DSEIS at 2-2, 2-4.

[125] DSEIS at 1-9 (explaining that BLM's interpretation of the 2,000-acre limit limits surface development to 2,000 acres but not explaining that it allows the agency to limit it to less than 2,000 acres)

[126] DSEIS at 1-9.

[127] DSEIS at 1-9.

[128] DSEIS at 1-9.

2. *Administering the Oil and Gas Program and Lease Sales in a Manner Similar to the NPRPA and Its Regulations.*

The Tax Act directs the Department of Interior to "manage the oil and gas program on the Coastal Plain in a manner similar to the administration of lease sales under the Naval Petroleum Reserves Production Act of 1976 (42 U.S.C. 6501, et seq.) (including regulations)."[129] To date, BLM has not clearly or comprehensively set out how it interprets or applies this mandate. In some areas, BLM has followed lease-related provisions of the NPRPA and its regulations; in others, it has deviated from the regulations and past practice. The Alaska District Court recently held that the suspension provisions in the statute and regulations apply to the Coastal Plain Leasing Program, determining that they are "an essential component of the 'administration of lease sales.'"[130] Building on the District Court's decision, BLM should comprehensively set out what provisions of the NPRPA and is regulations apply to the Leasing Program for all phases of oil and gas development. Where BLM believes that it can deviate from its interpretation and application of the NPRPA and its regulations, BLM should set that out so that the public is fully aware of the process BLM will follow as well as how the agency understands it authority to ensure that it is consistent with Congressional intent.

3. *Existing Legal Mandates for Rights-of-Way and Implementation of the Right-of-Way Directives in the Tax Act.*

The draft SEIS, like the 2020 Leasing Program, fails to fully recognize BLM's obligations and authority to grant rights-of-way under ANILCA XI — the "single comprehensive statutory authority for the approval or disapproval" of transportation and utility systems on conservation system units in Alaska.[131] While the final EIS indicated rights-of-way would be processed under ANILCA XI, the agency failed to explain how its interpretation of BLM's authority to grant rights-of-way under the Tax Act is consistent with Title XI. In both the final EIS and the ROD, BLM repeatedly stated that it lacks authority post-leasing to deny authorization for any on-the-ground activity, such as constructing a road or pipeline or undertaking any other "necessary" activity to access leased oil and gas. Throughout the final EIS, BLM stated that section 20001(c)(2) of the Tax Act prevents it from denying a permit where the access is necessary for oil and gas development.[132] BLM interpreted this requirement to mean that BLM is obligated to authorize rights-of-way for essential roads and pipeline crossings, and other necessary access, even in areas closed to leasing or within the No Surface Occupancy restriction.[133] The ROD similarly stated that BLM lacked discretion to deny such rights-of-way not only for lease holders, but any request for "access" deemed necessary to carry out the leasing program.[134] This interpretation was far broader than Congress intended and failed to account for

[129] Pub. L. 115-97, Title II, sec. 20001(b)(3).

[130] *AIDEA v. Biden*, 2023 U.S. Dist. LEXIS 136474, *24 (quoting Tax Act § 10001(b)(3)).

[131] 16 U.S.C. § 3161(c).

[132] FEIS at 2-4.

[133] *Id*. at 2–3 to 2–4; FEIS App. S at S-1017 (Response to Public Comment Row #5).

[134] *Id*.

BLM's discretion to determine whether the access sought was in fact necessary and otherwise complied with the mandates of Title XI. Indeed, as Interior has acknowledged, BLM has broad discretion in how it carries out any issuance of rights-of-way or easements under the Tax Act. "Issuing an easement implicates administrative discretion involving numerous terms including location, width, manner and timing of access, mitigation measures, and similar topics that frequently require additional reviews under environmental statutes including NEPA."[135] And the fact that subsection (c)(2) addresses easements "necessary to carry out this section" further clarifies the administrative discretion inherent in such a task. Agency personnel must not only determine what is "necessary" but must do so within the broad context of administering the Leasing Program and accounting for all Refuge purposes.

Troublingly, the draft SEIS appears to take the same or a similar approach to BLM's unlawful interpretation from the 2020 Leasing Program. While Appendix D acknowledges that "[a]pplications for transportation and utility systems in conservation system units are processed under ANILCA Title XI," there is no mention of Title XI's requirements elsewhere in the draft SEIS. As before, BLM exclusively refers to the Tax Act when describing how it would process rights-of-way across the Coastal Plain.[136] Nothing in BLM's analysis addresses how this interpretation is consistent with ANILCA XI given that the Tax Act did not waive or alter any other applicable laws. Contrary to BLM's interpretation, ANILCA requires BLM to make specific findings prior to granting a right-of-way including a finding that any grant be "compatible with the purposes for which the unit was established."[137] As a result of BLM's interpretation, the leases issued in the first lease sale included a broad right of access and use of the Coastal Plain — going far beyond what is normally granted as part of an oil and gas lease. Those provisions and rights never should have been included as part of the leases. It is critical that BLM not repeat these mistakes.

BLM should acknowledge in the final SEIS that any and all rights-of-way granted for its oil and gas program would be subject to ANILCA Title XI's requirements and affirm Title XI's applicability in any ROD or future leases. BLM should also expressly recognize its discretion to deny applications that the agency deems not necessary to carry out the leasing program.[138] The final SEIS should also make clear that BLM retains broad discretion in administering any rights-of-way and easements and may condition any permits as it deems necessary to protect the Refuge and its purposes. Importantly, the ROW provision cannot be interpreted to overcome the 2,000-acre limit in a way that would allow greater than 2,000 acres of development. The 2,000-acre provision was intended as a hard cap on development and the final SEIS must acknowledge that it limits BLM's ability to grant ROW.

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[135] *AIDEA v. Biden*, Defendants' Response in Opp. To Mots. For Summary Judgment (Feb. 3, 2023), ECF No. 63.

[136] *See e.g.*, DSEIS at 2-5 ("Note that PL 115-97 requires that the BLM authorize ROWs for essential roads and pipeline crossings, and other necessary access, even in areas closed to leasing or with a NSO stipulation.").

[137] 16 U.S.C.S. § 3165.

[138] *AIDEA v. Biden*, 2023 U.S. Dist. LEXIS 136474, *24–25.

B. COMPLIANCE WITH NEPA.

NEPA is "our basic national charter for protection of the environment."[139] NEPA's analysis and disclosure goals are two-fold: (1) to ensure informed agency decision making, and (2) to ensure public involvement.[140] NEPA requires that federal agencies prepare a detailed EIS for any major Federal action that may significantly affect the quality of the human environment.[141] By focusing the agency's attention on the environmental consequences of its proposed action, NEPA "ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast."[142] NEPA "is not designed to postpone analysis of an environmental consequence to the last possible moment;" it is "designed to require such analysis as soon as it can reasonably be done."[143]

1. Overall Adequacy of the Draft SEIS.

Groups recognize that BLM and FWS have put in considerable time and effort to the SEIS process to address the deficiencies with the prior EIS and leasing program and appreciate the effort. The agencies have made important improvements to the draft SEIS, including having FWS in a co-lead role, correcting the unlawful 2,000-acre limitation interpretation, and considering more protective measures for the Coastal Plain's exceptional resources. Groups identify these and additional areas that should be carried forward in the comments below. Groups also identify areas where the analysis and protective measures are still lacking to help the agencies focus their efforts as they move forward to finalize the SEIS. While we oppose any attempts to allow oil and gas activities on the Coastal Plain, the following comments are meant to ensure that the analysis of the impacts is robust, scientifically accurate, and fully considers all of the adverse impacts of an oil and gas program and meets NEPA's mandates. Such an analysis will also ensure that the agencies adopt the strongest program possible to protect the Coastal Plain and comply with the numerous laws that apply to the Coastal Plain and the Arctic Refuge.

2. Applicability of CEQ NEPA Regulations.

It is unclear what NEPA regulations BLM and FWS are applying to this SEIS process. As discussed in more detail in our scoping comments,[144] and consistent with Secretarial Order No. 3399, BLM and FWS should apply the 1978 Council on Environmental Quality (CEQ) NEPA regulations and the Department of the Interior's 2008 NEPA regulations at 43 C.F.R. part 46 to the SEIS because it represents an ongoing activity begun before the effective date of the 2020 CEQ NEPA regulations. While CEQ has finalized its "Phase 1" NEPA rule restoring certain elements of the 1978 regulations[145] and issued a proposed "Phase 2" rule that will, if finalized, make further changes to the NEPA regulations, including restoring additional elements of the

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[139] 40 C.F.R. § 1500.1(a).
[140] *Robertson v. Methow Valley Citizen Council*, 490 U.S. 332, 349 (1989).
[141] 40 C.F.R. § 1508.18(b)(4).
[142] *See also Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 371 (1989).
[143] *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1072 (9th Cir. 2002).
[144] 2021 Scoping Comment Letter at 22–24.
[145] 87 Fed. Reg. 23453 (April 20, 2022).

1978 regulations, retaining certain elements of the 2020 regulations, and implementing the Fiscal Responsibility Act's amendments to NEPA,[146] these actions should not impact this particular SEIS process. Thus, the introductory language in Chapter 2 of the draft SEIS suggesting that CEQ's ongoing regulatory actions are relevant to this process is misleading, confusing, and should be removed from the final SEIS.[147] No other sections of the draft SEIS suggest application of the 2020 regulations, as amended by the 2022 Phase 1 rule. The final SEIS should clarify that BLM and FWS are applying the 1978 regulations, as well as the 2008 departmental regulations that remain in full force and effect.

3. *Range of Alternatives and Protective Alternative or Alternatives.*

In Secretarial Order 3401, Secretary Haaland expressly found that the FEIS failed to consider a reasonable range of alternatives. Ensuring that this SEIS remedies that legal violation is, therefore, crucial. NEPA requires that an EIS include "alternatives to the proposed action."[148] The analysis of alternatives is the "heart" of an EIS.[149] An agency must "[r]igorously explore and objectively evaluate all reasonable alternatives" to a proposed action.[150] The purpose of the alternatives requirement is to analyze a variety of impacts and present a range of choices to the decision maker.[151] The "touchstone" of the inquiry is "whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation."[152] Accordingly, an EIS must include an evaluation of "all reasonable alternatives," and provide the decision maker with a "range of alternatives" from which to select.[153] Consistent with NEPA's basic policy objective to protect the environment, this includes more environmentally protective alternatives.[154] It also includes reasonable alternatives submitted by the public at scoping.[155] "The existence of a viable but unexamined alternative renders an [EIS] inadequate."[156] While Groups do not support any action alternatives, Groups provide the following comments to ensure that BLM and FWS comply with their legal obligations under NEPA.[157]

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[146] 88 Fed. Reg. 49924 (July 31, 2023).

[147] DSEIS at 2-1 (first paragraph of section 2.1).

[148] 42 U.S.C. § 4332(2)(C)(iii).

[149] 40 C.F.R. § 1502.14.

[150] 40 C.F.R. § 1502.14(a).

[151] 40 C.F.R §§ 1502.14, 1505.1(e).

[152] *State of Cal. v. Block*, 690 F.2d 753 (9th Cir. 1982) (citation omitted).

[153] 40 C.F.R. §§ 1502.14(a), 1505.1(e).

[154] 40 C.F.R. § 1500.2(e) (agencies must "[u]se the NEPA process to identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment"); *see also, e.g.*, *Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1121-22 (9th Cir. 2002) (citing cases), *abrogated on other grounds by The Wilderness Soc'y v. U.S. Forest Serv.*, 630 F.3d 1173, 1178-80 (9th Cir. 2011) (en banc).

[155] *See* 40 C.F.R. §§ 1501.7, 1502.1.

[156] *Mont. Wilderness Ass'n v. Connell*, 725 F.3d 988, 1004 (9th Cir. 2013) (quotations and citation omitted).

[157] *See also* 2021 Scoping Comment Letter at 26–30; DEIS Comment Letter at 23–31' 2018 Scoping Comment Letter at 25–27.

BLM and FWS consider four alternatives in the draft SEIS: the no-action alternative and three action alternatives.[158] In reconsidering the alternatives from the prior EIS, the agencies identified that there were three components that needed to be considered in the development of the alternatives: lease stipulations and required operating procedures (ROPs), the proper interpretation and application of the 2,000-acre limitation, and which areas would be open to seismic.[159] Given the problems with the prior EIS, the agencies properly determined that the lease stipulations and ROPs would need to be revised.[160] The agencies also addressed the problems with the prior interpretations of the 2,000-acre limitation and considered alternatives that varied the acreage disturbed under that provision.[161] They also limited seismic exploration to only those acres open to leasing.[162]

The agencies also developed three screening criteria to help them develop alternatives. These are: (1) does it "meet the purpose and need for the program," (2) is it "economically, technologically, and logistically feasible," and (3) does it "address substantive issues identified through SO 3401 and public scoping?"[163] This last criterion presumably refers to the "three key components to the alternatives" that would be reconsidered in the SEIS. Generally, Groups support these criteria and components, with one exception and one area of emphasis. It is not clear why the agencies incorporated a screening criterion that focuses on economic, technological, and logistical feasibility. What is or is not feasible will be decided by various independent entities who may consider bidding on leases based on many factors outside of the agencies' control, expertise, or knowledge. This criterion should be reconsidered and eliminated. Additionally, compliance with all seven of the Coastal Plain's conservation and subsistence purposes is vitally important for developing, analyzing, and ultimately selecting an alternative. While BLM and FWS include the recognition that the oil and gas program must consider the ANILCA purposes of the Coastal Plain,[164] this criterion should be expressly included in the alternatives screening criteria. Additionally, it should be expanded to also include the original three Arctic Range purposes.[165]

a. BLM and FWS's alternatives are not sufficiently protective of the Coastal Plain.

Groups previously explained that the no-action alternative needed to consider no leasing on the Coastal Plain and continuing management under the CCP.[166] BLM and FWS properly set out the no-action alternative in that way.[167] Interior's cancellation of AIDEA's leases is

[158] DSEIS at 2-1.
[159] *Id.*
[160] *Id.* at 2-2.
[161] *Id.*
[162] *Id.*
[163] *Id.*
[164] DSEIS at 1-3.
[165] *See infra* Section IV.C.2.
[166] 2021 SEIS Scoping Comments at 25.
[167] DSEIS at 2-3 to 2-4.

consistent with the need for the agency to properly consider the no action alternative and establish a baseline based on the assumption of there being no leasing program in place.

Alternative B is largely the same as in the FEIS, and would open the entire Coastal Plain to oil and gas leasing with the least protections.[168] While it would no longer allow areas to be reclaimed and new areas to be disturbed as before under BLM's incorrect interpretation of the 2,000-acre limitation, it would still allow 2,000 acres of surface disturbance and allow seismic exploration across the entire program area.[169] Groups extensively criticized this alternative as being inconsistent with Refuge purposes and other protective mandates and incorporate those criticisms here. Simply put, BLM and FWS cannot select this alternative.

Alternative C is largely the same as Alternative D1 in the prior EIS. It estimates that there will be around 1,464 acres of surface disturbance under the 2,000-acre limitation and only allows seismic exploration on areas available for lease.[170] Groups also criticized this alternative as not being sufficiently protective and it too cannot be selected.

Alternative D is a new alternative and is put forward to "address[] the NEPA deficiency identified by the Secretary in SO 3401 regarding failure of the Final Coastal Plain EIS [] to adequately analyze a reasonable range of alternatives."[171] It estimates surface development would be around 1,040 acres and restricts seismic to only those acres available for leasing.[172] It also purports to "stress[] protection of the four conservation-oriented statutory purposes of the Arctic Refuge" and incorporate more restrictive lease stipulations and ROPs.[173] We recognize that BLM and FWS propose this new alternative as a more-protective alternative than those previously analyzed. However, there are significant issues with this alternative that need to be addressed in the final SEIS, including clarifying that the 1,040 acres of surface disturbance is a hard limit on the amount of acres that will be disturbed under this alternative[174] and adding additional and stronger mitigation measures necessary to protect the Coastal Plain.[175] The meaningfulness of the NSO stipulations in light of how the agencies interpret the ROW provision is also in question and needs to be clarified in the final SEIS.[176] BLM should ensure that the NSO protections are maintained and not undermined by the ROW provision.[177] As drafted, this alternative is not sufficiently protective of Coastal Plain resources, nor does it comply with the seven conservation and subsistence purposes of the Coastal Plain. It must be further strengthened, and the issues and deficiencies identified below must be addressed in the final SEIS.

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[168] DSEIS at 2-4.
[169] *Id.*
[170] *Id.*
[171] *Id.*
[172] *Id.*
[173] *Id.*
[174] *See supra* Section IV.A.1.
[175] *See generally supra* Section VI.
[176] *See supra* Section IV.A.3 & IV.B.4
[177] *See supra* Section IV.B.5.

Under all the alternatives, it is unclear if BLM is treating the number of acres that will be impacted by surface disturbance as a hard limit or as an estimate for understanding how impacts might vary between alternatives. BLM needs to clarify this in the final SEIS and should adopt hard limits on the number of acres that can be impacted based on the acres analyzed under each alternative. If BLM considers the acreage as an estimate to aid the agency in understanding impacts but then allows development of the full 2,000 acres there is no difference between alternatives. The 2,000-acre limitation is a ceiling, not a mandate. BLM is not obligated to authorize 2,000 acres of impacts under any alternative and should, in fact, impose more restrictive mandates to ensure the protection of the other purposes of the Refuge. BLM should clarify in the final SEIS that it is treating the acreage analyzed under the alternatives as a hard cap on development for the Leasing Program.

b. BLM and FWS should consider additional protective alternatives or alternative components.

In addition to strengthening and clarifying elements of Alternative D, BLM and FWS should consider an alternative that only makes 400,000 acres available for leasing. Under the Tax Act, BLM only needs to offer 400,000 acres of the highest hydrocarbon potential areas for lease in each lease sale. The first lease sale offered more than 400,000 acres. With the relinquishment and cancellation of the nine leases, there are no leases on the Coastal Plain. Therefore, to comply with the Tax Act, BLM only needs to offer 400,000 acres of the highest hydrocarbon potential areas for the second lease sale and an alternative that considers only making 400,000 acres is reasonable and consistent with the law.[178]

Another alternative component that BLM and FWS should consider is one that restricts seismic exploration to only those areas that are leased and prohibit pre-leasing seismic exploration.[179] The SEIS's treatment of pre-leasing seismic exploration and whether that will be allowed is unclear; BLM should clarify that it will not allow pre-leasing seismic exploration. This would provide additional protection for areas that may be available for lease but are not leased. BLM and FWS recognize that activities will likely occur in a specific sequence in the Estimate Hypothetical Development Time Frames, which does not include pre-lease seismic.[180] The agencies should also consider an alternative that prohibits seismic exploration from areas where damage is likely to be exacerbated because of the topography or other foreseeable resource impacts and should include timing, geographic, and other restrictions on seismic exploration even in leased areas to ensure resource protection.[181]

Groups also encourage BLM and FWS to reconsider the alternatives eliminated from consideration. BLM and FWS eliminated from consideration an alternative that would limit the

[178] Because a 400,000-acre alternative is between the acreage considered in the no-action and Alternative D, it lies within the existing range of alternatives and its addition would not require a supplemental SEIS.

[179] *See infra* Section IV.B.7

[180] DSEIS App. B at B-11 to B-12.

[181] *See infra* Section IV.B.7 & SectionVI.K.2.b.

types of infrastructure allowed.[182] Regarding Groups' previous suggestion that the agencies consider an alternative that places infrastructure outside of the Coastal Plain, BLM and FWS's response as to why that cannot be considered is faulty. The agencies state that such an alternative is not consistent with the Tax Act, that lessees have the right to develop oil and gas on their lease, and that such an alternative would prohibit development.[183] Groups' suggestion was not that BLM and FWS prohibit development per se, but that specific infrastructure not be permitted on the Coastal Plain, including a central processing facility, production pads, gravel mines, and pipelines. Groups explained that oil and gas resources could be produced through directional drilling from outside the Coastal Plain and/or transported via pipeline for processing at another location. Such an alternative could decrease impacts to surface resources on the Coastal Plain by limiting surface disturbance and human activity associated with oil and gas activities. The explanation for rejecting this alternative as inconsistent with the Tax Act and lease rights is also at odds with BLM and FWS's recognition under Alternative D that oil and gas could be produced via directional drilling, and that a central processing facility and well pads could be placed outside of the Coastal Plain.[184]

BLM and FWS also rejected an alternative that would not allow any waivers, exceptions, or modifications to the lease stipulations and ROPs, stating that "it was not reasonable or practicable."[185] The agencies then state that there are "several" stipulations and ROPs that cannot be waived, excepted, or modified.[186] It is not clear at all which stipulations and ROPs cannot be waived, excepted, or modified. If there are specific stipulations and ROPs that BLM and FWS will not consider granting any waivers, exceptions, or modifications of, that must be made clear in the SEIS. Additionally, this statement is at odds with BLM and FWS's other justification for rejecting such an alternative: that in some cases "it is not practicable to comply with all lease stipulations and required operating procedures."[187] If BLM and FWS believe that some stipulations and ROPs cannot be changed but also believe that there will be cases where not all stipulations and ROPs can be met, it is unclear what BLM and FWS expect to occur. The agencies should reconsider rejecting this proposed alternative. This alternative would ensure that the protections ascribed to the stipulations could actually be relied upon to safeguard resources. Regardless, the agencies should clarify which stipulations and ROPs cannot be waived, excepted, or modified and how it will address instances where potentially un-waivable stipulations and ROPs cannot be otherwise met. If BLM and FWS expect that there are stipulations and ROPs that cannot be met or to the extent that BLM and FWS will consider waivers, exceptions, and modifications to stipulations and ROPs, the agencies should analyze the impacts of the program based on granting these exemptions and revise its alternatives to include that discussion.

BLM and FWS also eliminated an alternative that deferred leasing by saying that such an alternative would not be consistent with the Tax Act.[188] This misunderstands the suggestion. The

[182] DSEIS at 2-88.
[183] DSEIS at 2-88.
[184] DSEIS at 2-4, App. B at B-24.
[185] DSEIS at 2-88.
[186] DSEIS at 2-88.
[187] DSEIS at 2-88.
[188] DSEIS at 2-88.

suggested alternative would be to defer the issuance of leases or suspend activities, not to defer holding a lease sale. The Tax Act leaves the agency with ample discretion to delay issuance of or suspend any leases. Indeed, by suspending leases in the interest of conservation of natural resources, BLM can toll the terms of leases and obligations of leaseholders to make rental payments. The agencies should reconsider their elimination of this alternative. Groups also recommended that BLM and FWS consider an alternative that deferred development.[189] BLM and FWS's explanation regarding a deferred-leasing alternative does not address the suggestion that the agencies consider an alternative that defers development based on option or informational value principles.[190] BLM and FWS have the authority to deny permits for activities, which is consistent with this alternative component suggestion. Additionally, BLM and FWS's statement that considering such an alternative would be similar to the no-action alternative but with delayed impacts ignores that the analysis of deferred lease issuance and activities may be meaningfully different in the future given the intense and accelerating impacts of climate change on the Arctic. What is expected now based on climate projections may be very different than what could be expected at a future point in time based on then-projected climate impacts.

Finally, Groups asked BLM and FWS to consider an alternative that would add no new greenhouse gas (GHG) emissions and that achieved net zero emissions.[191] BLM and FWS interpreted this as a "alternative or renewable energy alternative" and eliminated it because it would not achieve the purpose and need or comply with the Tax Act.[192] This misunderstands the suggested alternative. There are more ways to achieve net-zero emissions than by developing renewable energy. The agencies should consider an alternative that aligns the oil and gas program with climate goals. For instance, a net-zero alternative could require avoidance of most GHG emissions through minimal leasing and development, stringent emissions management controls to minimize emissions associated with minimal leasing and development, and mitigation through offsets or other strategies that address remaining emissions.[193]

4. Overall Approach to Impacts Analysis, Including Cumulative Impacts Analysis.

a. BLM and FWS's Approach to the Cumulative Impacts Analysis Is Flawed.

The approach to cumulative actions and impacts is flawed. NEPA requires that BLM and FWS "consider the cumulative impacts of [this] project together with 'past, present and reasonably foreseeable future actions.'"[194] "Cumulative actions" are those "which when viewed with other proposed actions have cumulatively significant impacts."[195] "Cumulative impact" is

[189] 2021 Scoping Comment letter at 29–30.
[190] *See also infra* Section VIII.A
[191] 2021 Scoping Comment Letter at 29.
[192] DSEIS at 2-88.
[193] *See infra* Section VI.A.7
[194] *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895 (9th Cir. 2002) (quoting 40 C.F.R. § 1508.7).
[195] 40 C.F.R. § 1508.25(a)(2).

defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."[196] Such impacts can result from individually minor but collectively significant actions taking place over a period of time.[197] To comply with NEPA's mandate to consider the cumulative impacts of a project, a cumulative impacts analysis requires "some quantified or detailed information; ... [g]eneral statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided."[198] Additionally, agencies cannot defer analysis of the cumulative impacts if meaningful analysis can be conducted when considering a project.[199] Agencies "must do more than just catalogue 'relevant past projects in the area.'"[200] This means a discussion and an analysis in sufficient detail to assist "the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts."[201]

Overall, and as explained in greater detail below for specific resources, the cumulative impacts analysis does not contain sufficient "quantified or detailed information." It still largely consists of general statements regarding potential effects and contains very little substantive information. In large part, the draft SEIS's presentation of past, present, and reasonably foreseeable future actions consists of a table generally describing categories of activities and actions and a bulleted list of reasonably foreseeable future projects.[202] It also includes a list of identified projects, but again with an inadequate analysis of the actual cumulative impacts from the identified project and an oil and gas program on the Coastal Plain.[203] However, there is very little discussion with any level of specificity of the past, present, and reasonably foreseeable future actions.[204]

In the resource sections, the agencies at times avoid discussing the cumulative impacts associated with reasonably foreseeable post-lease oil and gas activity by suggesting those would be discussed in later NEPA analysis or indicating there is not sufficient information to analyze the impacts.[205] In others, it avoids the discussion by making mere conclusory statements about the cumulative impacts. These statements acknowledge the potential for cumulative impacts, but

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[196] *Id*. § 1508.7.

[197] *Id.*

[198] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.,* 137 F.3d 1372, 1379–80 (9th Cir. 1998); *see also Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 810 (9th Cir. 1999).

[199] *See Neighbors of Cuddy Mountain*, 137 F.3d at 1380; *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1312–13 (9th Cir. 1990).

[200] *Churchill Cty. v. Norton*, 276 F.3d 1060, 1080 (9th Cir. 2001) (*quoting City of Carmel–by–the–Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1160 (9th Cir.1997)).

[201] *Id.*

[202] DSEIS App. F at F-7 to F-8.

[203] *Id.* at F-8 to F-11.

[204] *Id.* at F-7 to F-11.

[205] *See, e.g.*, DSEIS at 1-3.

fail to provide any explanation or analysis of what they would be.[206] At most, in many of the resource sections, the cumulative impacts analysis consists of pointing out that alternatives allowing the most land development would have the most cumulative impacts, which fails to meaningfully explain any cumulative impacts. As discussed in other sections of these comments, the agencies also fail throughout the draft SEIS to analyze how climate change will have cumulative impacts on various resources in their cumulative impacts sections. At times, the draft SEIS points to other analyses (e.g., the GMT2 decision in the Reserve) without further explaining impacts or provides conclusory statements that climate change will exacerbate any cumulative impacts.[207] That is not a sufficient analysis of those cumulative impacts and also ignores that there may be differences based specifically on the unique conditions on the Coastal Plain versus the NPRA. Overall, this approach is insufficient to satisfy NEPA and fails to acknowledge and account for the considerable cumulative impacts of oil and gas activities.[208] The agencies must identify and describe, with specificity, the projects and impacts.

The draft SEIS defines the geographic scope of the cumulative impacts analysis as the program areas and the North Slope of Alaska, but notes that for some resources the impacts areas is broader.[209] But in setting out the agency's approach to impacts analysis, it is clear that the agencies are limiting the impacts analysis improperly in places to the program area, i.e., the Coastal Plain.[210] BLM and FWS must properly define the geographic scope of its impacts

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[206] *See, e.g.*, *id.* at 3-50 (stating potential cumulative impacts on the acoustic environment "would affect the community of Kaktovik and individuals throughout the program area, as well as noise-sensitive resources along aircraft flight paths outside of the program area," but providing no explanation of how); 3-82 (acknowledging that previous seismic exploration has affected surface vegetation and permafrost and that future additional seismic exploration would have similar impacts, but fails to analyze how the future actions would have a synergistic effect on vegetation and permafrost); 3-111 (recognizing past spills and potential future spills would have cumulative impacts, but instead of explaining what those would be, merely stating that spills are cleaned up according to regulations).

[207] *See, e.g.*, *id.* at 3-79 to -80; *Id.* App. F at F-11.

[208] *See* Nat'l Res. Council of the Nat'l Academies, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope 10, 156 (2003).

[209] DSEIS App. F at F-6.

[210] *See, e.g.*, *id.* App. F at F-18 (limiting consideration of impacts to soils even though there could be changes to soils, permafrost, and drainage to adjacent areas); F-19 (limiting consideration of impacts to sand and gravel to the program area even though gravel could come from outside the program area for oil and gas activities); F-23 (limiting consideration of the impacts to water resources to the program area even though there could be impacts to nearshore marine waters and adjacent hydrology); F-27 (limiting consideration of impacts to wetlands and vegetation even though there could be impacts to adjacent wetlands and the vegetation systems they support); F-32 (limiting consideration of the impacts to birds to the North Slope west to the NPRA's eastern boundary and east to Canada even though many of the birds that use the Coastal Plain are migratory and use other areas of the Arctic Refuge and Alaska); F-34 (only considering the ranges of the Porcupine and Central Arctic Caribou herds and not discussing the geographic

analysis by resource issues, taking into consideration geographic formations, habitat and resources uses, migrations, and landscapes.

BLM and FWS defined the temporal scope of the cumulative impacts analysis as from the 1970s through realization of the hypothetical development scenario, which it estimated at 50 years.[211] This is an insufficient temporal scope as it does not necessarily account for full reclamation, including ongoing monitoring, of oil and gas development on the Coastal Plain. It is also inconsistent with the development scenario that BLM and FWS put forth. The draft SEIS indicates it could be as many as 85 years after the ROD is signed before abandonment and reclamation could occur.[212] The temporal scope of the cumulative impacts should be at least as long as the timeline the agency identifies could follow its implementation of an oil and gas program.

BLM and FWS also improperly exclude oil and gas activities on non-federal lands, including State of Alaska lands adjacent to the Coastal Plain and private lands within the boundaries of the Coastal Plain, asserting that it is not reasonably foreseeable and will be considered once project proposals are available.[213] These both should be analyzed to the extent practicable.

It is unclear from the description whether the agencies are excluding consideration of projects on State lands or only inholdings owned by Alaska Native Corporations. There are continuing plans for oil and gas activities to occur on adjacent State lands and the agencies must analyze them. Additionally, excluding oil and gas activities and development on inholdings held by Kaktovik Inupiat Corp. and Arctic Slope Regional Corp. is unreasonable. BLM, FWS, and DOI are well aware that ASRC has advocated for years to be able to develop these lands, and were a leading voice in advocating for passage of the Tax Act.[214] It is therefore reasonably foreseeable that the corporations will push for development on their lands. We also note that provisions of the Chandler Lake Agreement grant ASRC extensive rights to develop and sell sand and gravel from their lands. BLM and FWS must analyze the likely impacts from the exercise of those rights as currently written.[215] Because facilities to support a Coastal Plain oil and gas program could be located on these lands (such as gravel mines, pipelines, road, central processing facilities), BLM and FWS must analyze that at the very least as part of the reasonably

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area for other species); F-41 (limiting the sociocultural systems and environmental justice impacts to only four identified communities); F-43 & F-45 (limiting the recreation and visual impacts to the program area despite the impacts that could occur to people recreating on adjacent areas, including the Wilderness); F-46 (limiting transportation impacts to the program area despite the impacts the developing roads could have on lands outside of the Coastal Plain, particular to the west).

[211] *Id.* App. F at F-6.

[212] *Id.* App. B at B-9.

[213] *Id.* App. F at F-11 to F-12.

[214] Written Testimony of Richard K. Glenn, Executive Vice President for Lands and Natural Resources, Arctic Slope Regional Corporation (Nov. 2, 2017).

[215] *See* Chandler Lake Land Exchange Agreement, Appendix 2. C., pp. 29-32 (1983); *see also supra* Section V.D & VI.M

foreseeable development scenario.[216] Related to this point, the agencies seem to acknowledge that uses of these lands related to and oil and gas program will increase.[217] The agencies' conclusions and assumptions are, therefore, inconsistent.

Finally, the draft SEIS states that the permitting requirements of other agencies would reduce cumulative impacts.[218] BLM and FWS make the assertion without any analysis, citation, or support. Unless BLM and FWS actually analyze the impacts resulting from various agencies permitting requirements, they cannot make this conclusion. They must explain the basis for this conclusion, including conducting the necessary analysis to support it.

b. BLM and FWS Should Better Quantify Impacts to Resources.

BLM and FWS should better analyze and quantify the potential impacts to resources on the Coastal Plain. The draft SEIS does not include impact criteria and overall rankings that show the level of impact by alternative for impacts to all resources. The draft SEIS provides no explanation for the absence of impact criteria or analysis of the level of impacts by alternative. Through its NPR-A planning and leasing efforts, BLM has developed specific impact criteria for nearly every resource present on the Coastal Plain. These criteria were well-vetted and subject to public comment in the GMT1 Final SEIS and GMT2 Draft SEIS.[219] There is seemingly no reason that BLM and FWS should refuse to use impact criteria in the SEIS for the Coastal Plain.

The absence of that information makes it difficult to compare impacts between alternatives or synthesize information in a manner that is easy for the public to understand. It is critical that BLM and FWS provide a meaningful analysis, conclusions for the levels of impacts, and a comparison between alternatives for all resources. BLM and FWS must fully inform the public of the level and nature of impacts anticipated for all resources; indeed, BLM has fully quantified these impacts in the past. BLM and FWS should not eliminate these determinations to avoid making findings of significance.

5. Effectiveness and Enforceability of Mitigation Measures.

"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,' is an understanding that the EIS will discuss the extent to which such adverse effects can be

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[216] Groups question whether location or development of these lands is permitted. *See supra* Section V.D & VI.M. If BLM's position is that it is, BLM cannot skirt its obligations to consider the impacts of development of the lands to support BLM's proposal.

[217] DSEIS App. F at F-36 (assuming that "[d]emand for ancillary uses and permits . . . will increase in conjunction with oil and gas development").

[218] *Id.* App. F at F-4.

[219] *See* Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth 1 Development Project: Final Supplemental Environmental Impact Statement, Vol. 1 219-220 (2014); *see also* Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth 2 Development Project: Draft Supplemental Environmental Impact Statement 235 (2018) ("A resource specific description of the impact criteria is included in each section of this chapter.").

avoided."[220] Accordingly, an EIS must discuss appropriate mitigation measures.[221] Those measures "must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated."[222] Simply identifying mitigation measures, without analyzing their effectiveness, violates NEPA. Rather, an "essential component of a reasonably complete mitigation discussion" must include "an assessment of whether the proposed mitigation measures can be effective."[223] In addition, CEQ has instructed that the "possibility of mitigation" should not be relied upon to avoid further environmental analysis.[224] In sum, the effectiveness of mitigation measures must always be disclosed in a NEPA analysis and their prominence in the range of alternatives and role in the effects analysis requires substantial treatment in an EIS. Groups are concerned that the draft SEIS does not meet these requirements.

Overall, the draft SEIS still suffers from the same problem as the prior EIS: it considered the amount and purported benefit of the measures, instead of analyzing the adverse effects that are still likely to occur and how to address them. This again results in the SEIS failing to disclose the effects that will occur despite mitigation.[225] Issues relevant to specific stipulations and ROPs are addressed in the various resource sections below.

The draft SEIS continues to include stipulations that rely on ROPs for their standards and requirements, which makes it unclear whether there is anything additive in terms of resource protections. The final SEIS should better explain the agency's approach to stipulations and ROPs, particularly where one references the other (e.g., stipulation 6 referring to ROP 23 for the standards and requirements), and BLM and FWS must analyze the effectiveness of the measures to comply with NEPA.

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[220] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989) (quoting 42 U.S.C. § 4332(2)(C)(ii)).

[221] *See* 40 C.F.R. §§ 1502.14(f), 1502.16(h), 1508.25(b). 40 C.F.R. § 1508.20 defines mitigation to include:

> Avoiding the impact altogether by not taking a certain action or parts of an action.
> Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
> Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
> Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
> Compensating for the impact by replacing or providing substitute resources or environments.

[222] *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (quotations and citation omitted).

[223] *S. Fork Band Council of W. Shoshone of Nevada v. U.S. Dep't of Interior*, 588 F.3d 718, 727 (9th Cir. 2009).

[224] *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*; *see also Davis v. Mineta*, 302 F.3d 1104, 1125 (10th Cir. 2002).

[225] 2021 Scoping Comment Letter at 39; 2019 DEIS Comment Letter at 40–44.

BLM and FWS rely heavily on a purported no-surface occupancy (NSO) stipulation to provide protection for multiple Coastal Plain resources. While a NSO stipulation has the potential to be protective, the loopholes for those protections and general lack of clarity about them in the draft SEIS raises serious doubts about the meaningfulness of those requirements to protect surface resources.[226] First, there is no clear definition of what no-surface occupancy means. Instead, it is offered as the requirement and standard for various stipulations that contain slightly different language about what is or is not allowed, but are all collectively labeled as "NSO."[227] BLM and FWS should include a clear definition in the final SEIS that applies to all relevant stipulations. If the agencies determine that there is no one clear definition that can apply based on the objectives of the stipulation, the agencies should explain that, better explain what the various requirements mean, and more clearly identify where different measures might apply. Second, it is unclear how BLM and FWS will apply the NSO protections in light of the agency's interpretation of the ROW provision. For example, in some places where the agencies set out a stipulation as being NSO, there is express language indicating that the NSO provision would not apply to necessary ROWs, while in others, no such language is included.[228] This leads the reader to understand that there are certain NSO stipulations that could be waived/excepted/modified for necessary ROWs. But it is unclear if this is what the agencies intend based on the broad interpretation of the ROW provision.[229] BLM and FWS must better explain how the ROW provision intersects with the NSO stipulations. If all of the NSO stipulations can be waived based on the ROW provision, the meaningfulness of that stipulation is seriously undercut, and the SEIS must actually analyze those impacts.

The draft SEIS explains that the stipulations and ROPs can be waived, excepted, or modified if the objective of the stipulation or ROP is otherwise met, and if the factors leading to the stipulation have changed such that the stipulation is no longer justified.[230] BLM and FWS rejected an alternative that would not allow any waivers, exceptions, or modifications to the lease stipulations and ROPs, stating that "it was not reasonable or practicable" and claimed there are "several" stipulations and ROPs that cannot be waived, excepted, or modified.[231] However, there is no indication of which stipulations and ROPs cannot be waived, excepted, or modified. To the contrary, the discussion on waivers, exceptions, and modifications indicate that all stipulations and ROPs could be. NSO stipulations, timing limitations, and surface use limitations designed to protect Arctic Refuge resources are only effective to the extent that the safeguards will actually be applied. Waivers (permanent exemption that applies to the entire leasehold), exceptions (one-time exemption for a particular site within the leasehold), and modifications (change to the lease stipulation, either temporarily or for the term of the lease, can apply to the entire leasehold or certain areas) all permit an operator to avoid compliance with the requirements of a stipulation. Where these loopholes are permitted and used, the protections that the stipulations are supposed to provide can be undermined. If there are specific stipulations and ROPs that BLM and FWS will not consider granting any waivers, exceptions, or modifications to, that must be made clear

[226] *See infra* Section IV.B.6
[227] *Compare* DSEIS at 2-7, 2-9, 2-11, 2-14, 2-21, & 2-22.
[228] *Compare* DSEIS at 2-7 *with* DSEIS at 2-22.
[229] *See supra* Section IV.A.3.
[230] DSEIS at 2-5.
[231] DSEIS at 2-88.

in the final SEIS. Additionally, when rejecting an alternative that would not allow waivers, exceptions, or modifications, BLM and FWS stated that in some cases "it is not practicable to comply with all lease stipulations and required operating procedures."[232] If BLM and FWS believe that there will be cases where not all stipulations and ROPs can be met, the draft SEIS needs to analyze the impacts that will result. Without that, the draft SEIS does not accurately evaluate the impacts of the Leasing Program.

Groups have also strongly encouraged the agencies to adopt clearer standards and criteria for granting waivers, exceptions, and modifications. While Groups appreciate that there will be a public notice prior to any waiver, exception, or modification granted, and that there must be documentation of the decision, the draft SEIS still lacks clear standards and criteria for granting waivers, exceptions, and modifications.[233] Without any criteria for granting waivers, exceptions and modifications, there is not reliability or foreseeability as to how and when the stipulations will be applied, resulting in little certainty that the stipulations will protect Coastal Plain resources. The lack of sideboards on granting waivers, exceptions, and modifications also renders a NEPA analysis that relies on their effectiveness deficient, since their continued application depends on the discretion of the BLM authorized officer. The U.S. Government Accountability Office has opined that BLM's failure to have consistent standards or practices in waiving lease stipulations and operating procedures means that the effectiveness cannot be measured: "[W]ithout sufficiently detailed documentation of inspections and effective use of data from inspectors, BLM is unable to fully assess the effectiveness of its best management practices policy to mitigate environmental impacts."[234] In order to rely on lease stipulations and ROPs in its analysis and to adopt a program that purports to comply with legal mandates and the purposes of the Coastal Plain, BLM and FWS must set out narrowly prescribed waivers, exceptions and modifications to lease stipulations that are based on clear, identified criteria that can be objectively evaluated by the agencies and the public.

6. Whether the Agencies Are Deferring NEPA to Subsequent Stages of the Oil and Gas Process.

a. BLM Cannot Make an Irretrievable Commitment of Resources Without First Conducting a Site-Specific NEPA Analysis.

In the oil and gas context, projects and agency review typically follow a tiered process, with NEPA review beginning broad and becoming more site-specific at each later step. Typically, as part of the earliest and broadest level of decision-making, BLM develops a broad programmatic-level environmental analysis, such as a land use plan.[235] BLM next holds lease

[232] DSEIS at 2-88.

[233] DSEIS at 2-5 to 2-6.

[234] U.S. Government Accountability Office, Oil and Gas Development: Improved Collection and Use of Data Could Enhance BLM's Ability to Assess and Mitigate Environmental Impacts (Apr. 2017).

[235] *Pennaco Energy, Inc. v. U.S. Dep't of the Interior*, 377 F.3d 1147, 1151 (10th Cir. 2004).

sales and issues leases for the use of a specific area.[236] Third, the lessee may apply for a permit to drill to develop its lease.[237] The level of detail required by NEPA at each step varies, and depends on the nature and scope of the proposed action.[238]

NEPA requires that agencies evaluate the environmental consequences of a project at an early stage of the planning process.[239] While agencies can "defer detailed analysis until a concrete development proposal crystallizes the dimensions of a project's probable environmental consequences,"[240] agencies are required to undertake site-specific analysis prior to making an irretrievable commitment of resources. As the Ninth Circuit explained, the key inquiry is not "*whether* the project's site-specific impact should be evaluated in detail, but *when* such detailed evaluation should occur."[241] An agency is required to fully evaluate site-specific impacts once it reaches the point of making "a critical decision . . . to act on site development."[242] An agency reaches the threshold triggering site-specific review when it proposes to make an irreversible and irretrievable commitment of resources.[243] In the oil and gas context, this occurs when an agency proposes to issue a lease that does not contain an express provision retaining the agency's authority to fully prohibit later activities on those leases.[244] Once this critical decision-point is reached, "any vague prior programmatic statements are no longer enough" to satisfy NEPA.[245] Here, if BLM is going to issue non-NSO leases, it cannot defer its site-specific analysis and cannot rely on vague programmatic statements in the draft SEIS.

BLM and FWS acknowledge in the draft SEIS that the issuance of a lease is an irretrievable commitment of resources.[246] The agencies also claim lease issuance does not cause any direct impacts in and of itself because it does not authorize any on-the-ground oil and gas activities, but at the same time it says a "lease does grant the lessee certain rights to drill for an extract oil and gas."[247] Because BLM and FWS claim they "cannot ascertain the precise extent of the effects of granting those rights until it receives and reviews potential future site-specific proposals for exploration and development," they instead rely on the hypothetical development scenario to identify reasonably foreseeable effects.[248] This is not adequate for purposes of

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[236] *New Mexico ex. rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 716 (10th Cir. 2009).

[237] *Id.*

[238] *California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982).

[239] *Id.*

[240] *Id.*

[241] *Id.* (emphasis added).

[242] *Friends of Yosemite Valley*, 348 F.3d at 800 (quoting *N. Alaska Envtl. Ctr. v. Lujan* (*NAEC*), 961 F.2d 886, 890–91 (9th Cir. 1992)); *see also Block*, 690 F.2d at 761 ("The standards normally applied to assess an EIS require further refinement when a largely programmatic EIS is reviewed.").

[243] *Block*, 690 F.2d at 761.

[244] *Conner v. Burford*, 848 F.2d 1441, 1448 (9th Cir. 1988).

[245] *Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 784 (9th Cir. 2006).

[246] DSEIS App. F at F-1.

[247] *Id.*; DSEIS at 1-2.

[248] *See, e.g.*, DSEIS at 1-2, 3-1.

NEPA; the agencies either need to fully retain their authority to say no to future proposals or be required to fully analyze the site-specific impacts.

The draft SEIS has conflicting statements about the exact scope of the authority BLM will retain under any leases. On the one hand, it states that issuance of a lease constitutes an irreversible and irretrievable commitment of resources.[249] On the other hand, it claims that BLM retains at each decision stage "the authority to approve, deny, or reasonably condition any proposed on the ground-disturbing activity based on compliance with the terms and conditions of the lease and applicable laws and policies."[250]

BLM and FWS also rely heavily on NSO stipulations for a number of the areas that could be leased under Alternatives C and D.[251] While the use of NSO provisions in the leases could potentially mean that BLM is not making an irretrievable commitment of resources at the leasing stage for purposes of some leases, the draft SEIS never draws that distinction or explains how BLM will implement the NSO stipulations to ensure it fully retains the authority to deny and limit later proposals. The conflicting and unclear statements about the nature of the right BLM is granting under the leases makes it challenging for the public to meaningfully determine the exact nature of these leases or whether BLM has truly retained the right to later preclude all activities on those leases. The use of NSO provisions in the draft SEIS also needs to be clarified. On the one hand, the draft SEIS seems to refer to a set of NSO restrictions that will apply across a broad portion of areas under Alternatives C and D.[252] This appears to be reflected in Map 2-5, which indicates a large portion of the area available for lease sale would be subject to NSO under Alternative D.[253] However, it is unclear if this reflects that there would be an overarching NSO provision that applies to leases in those areas or whether that just reflects the overlapping compilation of the individual, resource-specific NSO provisions.[254] This needs clarification in the final SEIS. This is particularly important since, if the agencies are contemplating an overarching NSO provision, it is unclear whether that would be subject to the same waiver provisions as the resource-specific lease stipulations. In addition, if the agencies are allowing for waivers, exceptions, and modifications of the NSO provisions in general, those leases cannot be deemed NSO for purposes of excusing BLM from needing to conduct a site-specific analysis at this stage. BLM needs to do a site-specific analysis prior to making an irretrievable commitment of resources.

The lack of clarity regarding the use of NSO provisions is concerning in light of how BLM has proceeded in the past with issuing leases in the Reserve. In the Reserve, BLM has issued leases constituting an irretrievable commitment of resources, without first conducting a site-specific NEPA analysis; once development projects have arisen, BLM claims that it no longer retains the right to deny development proposals by adopting the no action alternative

[249] DSEIS App. F at F-1.
[250] DSEIS at 3-1.
[251] *See, e.g.*, DSEIS 2-2 tbl.2-1.
[252] *See, e.g.*, DSEIS 2-2 tbl.2-1.
[253] DSEIS map 2-5.
[254] DSEIS map 2-6; DSEIS tbl.2-2.

because "oil and gas leases provide a right of development."[255] BLM cannot leave such uncertainty to the future. BLM needs to either fully retain the authority to preclude all activities pending submission of later site-specific proposals — i.e., not make an irretrievable commitment of resources — or conduct a far more robust, site-specific analysis at this stage. Put another way, BLM should acknowledge the difference between retaining authority to deny a particular application for a permit to drill or conduct other activities pursuant to a lease, and retaining the authority to preclude development altogether, even if that means barring access to some or all of the oil and gas associated with the leased parcel. Anything short of the latter irretrievably commits resources because some amount of damage will inevitably occur for the lessee to explore and extract the oil and gas resources. If BLM does not retain the authority to deny all activities, the exercise of those rights is a direct effect of this decision, which is contrary to the statements in the draft SEIS that granting leases does not have direct impacts.[256] The effects of foreclosing a no action alternative for future decisions must be disclosed now and evaluated as a direct effect of the leases. BLM should also provide the public with template lease language in the final SEIS so it is clear that BLM has in fact retained the authority to fully preclude development on the leases. As discussed earlier, BLM should retain its authority to preclude all later activities on the leases to ensure that it is able to fully comply with the Tax Act's 2,000-acre provision. Groups recognize BLM's extensive use of NSO provisions in Alternative D, but BLM needs to clarify and expressly state the full nature of the rights it will retain through such a mechanism and whether it applies to the entire leased area.

The agencies similarly fail to distinguish between what decisions are irreversible or irretrievable at this point in time and instead improperly defers to the IAP for the Reserve. The draft SEIS states that a "detailed description of irreversible or irretrievable commitments of resources from oil and gas development on the North Slope is in Section 4.11 of the NPR-A EIS" and includes a bullet list of types of effects that would be irreversible.[257] These are effects of the leasing program as a whole, and fail to distinguish between what becomes irreversible now and what becomes irreversible at later decision points. It is important for the public to understand the effects that would occur solely because of a lease and this specific oil and gas program — as opposed to those that might occur from a potentially different program hundreds of miles away in the Reserve.

Relatedly, the agencies cannot defer the analysis of foreseeable impacts by asserting that the consequences are unclear or that the agency will analyze the impacts at a later point in time when there is a development proposal if BLM is going to make an irretrievable commitment of resources.[258] Here, the agencies assert that they do not have sufficient information to engage in more than a hypothetical analysis of what might be a reasonably foreseeable development

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[255] *See, e.g.*, BUREAU OF LAND MGMT., GREATER MOOSES TOOTH 2 OIL AND GAS DEVELOPMENT PROJECT: JOINT RECORD OF DECISION AND PERMIT EVALUATION 8 (2018) ("Alternative D is not a practicable alternative in the JROD, due to the fact that the BLM cannot select this alternative as its decision for GMT2. Once issued, oil and gas leases provide a right of development, subject to reasonable regulation.").

[256] *See, e.g.*, DSEIS App. F at F-1.

[257] DSEIS 3-449.

[258] *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1072 (9th Cir. 2002).

scenario.[259] If the agencies do not have sufficient information at the lease sale stage to conduct a site-specific NEPA analysis, they can delay that analysis "provided that [they] reserve[] both the authority to *preclude* all activities pending submission of site-specific proposals and the authority to *prevent* access to oil and gas completely if the environmental consequences are unacceptable."[260] If there is too much uncertainty to conduct a more robust analysis at this stage, the agencies have a choice: they must either reserve the authority to preclude all access to oil and gas and related activities on the entire lease or they must conduct a site-specific analysis prior to making an irretrievable commitment of resources.[261]

b. The Agencies Must Consider All Foreseeable Direct and Indirect Impacts.

NEPA requires that an agency analyze the environmental consequences of a proposal as soon as it is "reasonably possible" to do so.[262] Although the scope of the agency's analysis in an EIS must be appropriate to the action in question, NEPA is also not "designed to postpone analysis of an environmental consequence to the last possible moment."[263] NEPA requires that this analysis be done "as soon as it can reasonably be done."[264] "Reasonable forecasting and speculation is . . . implicit in NEPA," and agencies cannot "shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry.'"[265] If it is "reasonably possible to analyze the environmental consequences in [a programmatic-level EIS], the agency is required to perform that analysis."[266] An EIS is required to provide "as much environmental analysis as is reasonably possible under the circumstances, thereby 'provid[ing] sufficient detail to foster informed decision-making' at the stage in question."[267]

There are several areas in the draft SEIS where BLM and FWS do not analyze impacts on the basis that it will analyze those impacts at later stages. Examples where they defer analyzing impacts include the following:

- BLM and FWS did not complete a health impact assessment at this stage or analyze the potential health impacts of the oil and gas program, and instead plan to conduct that analysis as part of its analysis of later development projects.[268]

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[259] DSEIS at 1-2.

[260] *Ctr. for Biological Diversity v. BLM*, 937 F. Supp. 2d 1140, 1153 (N.D. Cal. 2013) (quoting *Sierra Club v. Peterson*, 717 F.2d 1409, 1415 (D.C. Cir. 1983)).

[261] *Id.*

[262] *Native Village of Point Hope v. Jewell*, 740 F.3d 489, 497 (9th Cir. 2014).

[263] *Kern*, 284 F.3d at 1072.

[264] *Id.*

[265] *Id.* (quoting *Save Our Ecosystems v. Clark*, 747 F.2d 1240, 1246 n.9 (9th Cir. 1984)).

[266] *Id.*

[267] *Native Vill. of Point Hope*, 740 F.3d at 498 (quoting *Friends of Yosemite Valley*, 348 F.3d 789, 800 (9th Cir. 2003)).

[268] DSEIS at 3-432.

- BLM and FWS failed to conduct a visual resource impacts analysis and state they will do so in post-leasing NEPA processes.[269]
- BLM and FWS inadequately considered the impacts of water withdrawals for oil and gas on water quantity despite there being much more information available to the agencies regarding water quantity on the Coastal Plain and wildlife and habitat needs related to stream flow and water quantity.
- BLM and FWS largely deferred analyzing the foreseeable impacts of seismic exploration, despite having more information to analyze those impacts at this point based on recent proposals.
- BLM and FWS failed to analyze the foreseeable impacts to air quality that would be likely to occur from oil and gas activities on the Coastal Plain.

BLM and FWS should include an analysis of these impacts in the SEIS and not defer until a later phase.

7. BLM and FWS Have Not Adequately Considered the Foreseeable Impacts of Seismic Exploration.

Groups appreciate that BLM and FWS are no longer allowing seismic exploration on areas that would be closed to leasing under Alternative D. However, BLM and FWS need to clarify how they will regulate seismic exploration on areas open to leasing. It is unclear how BLM and FWS are treating pre-leasing seismic exploration and any proposals to conduct off-lease seismic exploration. Throughout the draft, BLM and FWS claim the SEIS is intended to inform post-lease activities, including seismic exploration.[270] There is a reference in the RFD scenario that indicates seismic exploration might occur separate from where areas are leased; that section states "[o]ff lease seismic could occur in frontier areas to inform potential future prospects."[271] It is unclear from that sentence if BLM and FWS anticipate allowing off lease seismic to occur and it appears to be at odds with every other reference to seismic exploration as being a post-lease activity. BLM and FWS also stated in the draft SEIS that they are expecting exploration of the first lease sale within two years after the lease sale.[272] But again, this appears to assume that seismic exploration would only occur on areas open to leasing, and potentially only on leased areas. BLM and FWS need to clarify whether seismic exploration will occur only after leasing or whether it can occur on unleased areas open to leasing or prior to leasing occurring in general. To protect the Coastal Plain to the maximum extent possible, BLM and FWS should expressly state that seismic exploration is limited to only leased areas and not just areas open to leasing, which could allow for additional, damaging and speculative seismic exploration. BLM and FWS should also incorporate requirements to limit the amount of seismic exploration that occurs in general since seismic can often occur repeatedly over the course of a lifetime for a particular development.

[269] DSEIS at 3-404.
[270] *See, e.g.*, DSEIS 1-2.
[271] *Id.* App.B at B-13.
[272] *Id.* at 3-23; DSEIS App. B at B-11 tbl. B-3.

The analysis of the impacts of seismic exploration in the draft SEIS is also inadequate. First, the draft SEIS estimates different levels of disturbance that might occur under the different alternatives.[273] It is unclear from those estimates if BLM is including the damage likely to occur from seismic exploration. BLM and FWS need to quantify the foreseeable impacts from seismic exploration and consider those as part of its analysis.

Second, BLM and FWS inappropriately defer conducting a more robust analysis of seismic exploration. BLM and FWS claim they cannot determine the precise extent of effects for exploration and claims the impacts of exploration in general are unknown.[274] They assert that the impacts of seismic are speculative until the agency receives an actual application because too much is unknown about the location, scope, scale, and timing of that proposal.[275] In looking at the impacts of seismic, BLM and FWS claim they relied on assumptions based on the previous two-dimensional (2D) seismic exploration that occurred in the 1980s on the Coastal Plain.[276]

BLM and FWS's assertions ignore that there have already been recent proposals from SAExploration, Inc. (SAE) and other entities to conduct 3-dimensional (3D) seismic exploration across the Coastal Plain of the Arctic Refuge. BLM previously reviewed an application from SAE to conduct extensive 3D seismic surveys across the entire Coastal Plain.[277] SAE's proposal would have involved two camps of 160 people, 12–15 tracked vibrators, 20,000 to 25,000 nodes, and 6,000–7,000 gallons of fuel usage per day, for each camp.[278] There would have been approximately 50 trailers and support trailers that make up each camp, with generators, lighting, temporary airstrips, incinerators and waste discharges, and other industrial equipment and activities.[279] SAE would have moved the camps with heavy vehicles every two to three days, eventually covering the entire Coastal Plain.[280] Given the extent of the proposed program, there would have been approximately forty to fifty different camp locations for each of the two crews throughout the Coastal Plain. Operations would have continued 24 hours a day, 7 days a week.[281] The impacts from that extensive proposal from SAE would have been significant — far more so than those associated with the 2D seismic survey conducted in the 1980s, the scars of which remain detectable on the Refuge to this day.

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[273] *Id.* at 2-2.

[274] *Id.* at 1-2 to -3.

[275] DSEIS at 3-1.

[276] *Id.* at 3-1 to -2.

[277] *See* U.S. Dep't of the Interior, Bureau of Land Mgmt., NEPA Register, DOI-BLM-AK-R000-2018-0040-EA (SAExploration, Inc. Seismic Application), *available at* https://eplanning.blm.gov/epl-front-office/eplanning/projectSummary.do?methodName=renderDefaultProjectSummary&projectId=111085 [hereinafter BLM NEPA Register].

[278] SAEXPLORATION, INC., MARSH CREEK 3D PLAN OF OPERATIONS WINTER SEISMIC SURVEY (2018), https://eplanning.blm.gov/epl-front-office/projects/nepa/111085/153349/187888/Marsh_Creek_Plan_of_Operations_Submitted_May2018.pdf [hereinafter SAExploration Plan].

[279] *Id.*

[280] *Id.*

[281] *Id.* at 9.

While SAE's proposal might have covered a broader area than might be allowed under the new restrictions in Alternatives C and D, that proposal is still indicative of the likely proposal that would occur for the lands open to leasing and could be used to develop a hypothetical seismic exploration scenario for each alternative. The draft SEIS claims that the hypothetical development scenario looks at exploration, but the RFD scenario contains only a handful of very cursory references to a few components that might be part of a seismic exploration proposal.[282] There is no indication BLM and FWS took a hard look at any of the potential direct, indirect, and cumulative impacts of a likely seismic exploration proposal, as required by NEPA. The draft SEIS's reliance on the historical 2D seismic surveys to estimate impacts also ignores that the technology likely to be used would be 3D surveys, similar to SAE's proposal, which occur in much denser grid patterns than 2D surveys. Seismic surveys, whether before or after leasing, will stamp a grid on the entire Coastal Plain, directly affect hundreds of thousands of acres, altering or destroying vegetation, causing subsidence and erosion, and creating ponds and surface water channels whose effects can run far afield from vehicle tracks. As the draft SEIS acknowledges, some of these impacts are permanent.[283] BLM and FWS have far more information on which to base a more robust analysis of the likely impacts of seismic exploration than is included in the draft SEIS. BLM and FWS also do not take into consideration the fact that seismic exploration is often not a one-time operation. It is frequently repeated as companies move to subsequent oil and gas phases, with exploration in some areas occurring on a yearly basis. It also does not take into account the proprietary nature of seismic survey results, which can lead to different companies repeating seismic surveys across the same area to gather their own data. These seismic operations, particularly when considered cumulatively, have the potential to significantly degrade permafrost, destroy vegetation, and dramatically alter hydrologic systems. The analysis does not account for these combined impacts. Overall, because BLM and FWS did not engage in this analysis, their consideration of potential mitigation measures to mitigate the impacts of any seismic exploration — let alone repeated seismic exploration over the life of a field, which should also be limited — is lacking in the draft SEIS. The analysis in the final SEIS should be revised to include the analysis of the foreseeable impacts of seismic exploration under each alternative.

C. COMPLIANCE WITH REFUGE LEGAL MANDATES.

The Coastal Plain is part of the Arctic National Wildlife Refuge, the largest and wildest unit of the National Wildlife Refuge System. In scoping comments at the very start of this process in 2018, Groups identified that in developing the Leasing Program, BLM must pay particular attention to refuge law and polices that govern both the Arctic Refuge specifically and the National Wildlife Refuge System more broadly, including addressing the management role of FWS, the conservation purposes of the Coastal Plain, and Refuge System management laws and policies.[284] The 2020 Leasing Program failed to address these issues. While the draft SEIS attempts to rectify some of the problems Groups previously identified, the final SEIS should be significantly improved in terms of clarifying and addressing these issues.

[282] DSEIS App. B at B-12 to -13.
[283] *Id.* at 3-55.
[284] 2018 Scoping Comment Letter at 12–16.

1. U.S. Fish and Wildlife Service's Role as the Sole Administrator and Primary Management Agency of the Coastal Plain.

The U.S. Fish and Wildlife Service is the administrator and management agency for the entire Arctic Refuge.[285] While the Tax Act instructed that the Secretary, acting through the BLM, will establish and manage the oil and gas program on the Coastal Plain,[286] the legislation did not otherwise alter or supplant the FWS administration and management role and obligations for the Coastal Plain or for the entire Arctic Refuge. FWS is the science and resource expert for the Arctic Refuge and the Coastal Plain.[287] We are glad that FWS is now a joint lead-agency for the SEIS.[288] The draft SEIS also properly identifies that FWS "will continue management of Arctic Refuge lands under the guidance of its current comprehensive conservation plan [] and any amendments thereto" and continue to "manage all federal lands in the Arctic Refuge Coastal Plain, including both potential leases and unleased areas."[289] As the court recognized in *Trustees v. Watt*, ANILCA and the NWRSAA mandate that refuges be administered solely by FWS; split administration is not permitted.[290]

The final SEIS should explain what the agencies mean when they say that for all activities regarding the Leasing Program, BLM will coordinate with FWS "to ensure that its considerations as the surface management agency are taken into account."[291] Groups note FWS and Interior are still subject to the requirements of other statutes, such as the NWRSAA and ANILCA, which were in no way abrogated or limited by the Tax Act. As explained below, these statutes give FWS a direct role in permitting and decision making for activities on the Coastal Plain, including for activities related to the Leasing Program. Without more information about how DOI is structuring the relationship between BLM and FWS, and how FWS administration and management actions may be impacted by the oil and gas program, the public cannot be sure that Secretary is complying with ANILCA and the NWRSAA regarding FWS's administration and management of the Refuge. The agencies should clarify this information, and in doing so, it must be sure that its roles and responsibilities are consistent with current laws regarding Refuge administration.

2. Original Conservation Purposes of the Arctic Refuge Coastal Plain.

The 2020 Leasing Program repeatedly recognized only an incomplete set of Coastal Plain purposes, failed to acknowledge that the conservation purposes are the priority purposes, and overall failed to ensure that the oil and gas program was consistent with these priority conservation purposes.

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[285] 16 U.S.C. § 668dd(a)(1); ANILCA § 304(a).

[286] Pub. L. 115-97, Title II, sec. 20001(a)(2), (b)(2)(A), (3).

[287] In this capacity, FWS should approve all Refuge activities, including oil and gas activities.

[288] DSEIS at 1-1.

[289] DSEIS at 1-3, 1-5.

[290] 524 F. Supp. at 1305, 1310.

[291] DSEIS at 1-4, 2-7.

Prior to the passage of the Tax Act, there were seven articulated purposes for the Coastal Plain: those from the original 1960 Range designation and the additional four added by ANILCA.[292] Those seven purposes include (1) preserving wildlife values, (2) preserving wilderness values, (3) preserving recreation values, (4) conserving fish and wildlife and habitat, (5) meeting international treaty obligations regarding fish, wildlife, and habitat, (6) continuing to provide for subsistence, and (7) protecting water quantity and quality needed to meet fish, wildlife, and habitat needs.[293]

The draft SEIS fails to include the original three purposes from the 1960 Range designation among the recognized Arctic Refuge purposes, acknowledging only the four original ANILCA purposes plus the Tax Act purpose.[294] FWS policy is clear the original three purposes set out in PLO 2214 apply to the Coastal Plain equal with its other purposes.[295] The agencies must include the three purposes from PLO 2214 among the purposes of the Coastal Plain outlined in the draft SEIS and specify that the Leasing Program must also be consistent with these purposes.[296] By not recognizing or including the original three purposes in its analysis, BLM and FWS cannot ensure that an oil and gas program would be consistent with Refuge purposes.

Additionally, while the Tax Act added an additional purpose for the Coastal Plain for the oil and gas program,[297] the Tax Act did not prioritize the oil and gas purpose over any of the seven pre-existing purposes and in no way altered the applicability of the NWRSAA or ANILCA. BLM and FWS state that no purpose is "superseded" by any others.[298] However, as Groups pointed out in prior comments, FWS policy instructs that the oil and gas purpose of the Coastal Plain is subservient to the seven conservation purposes.[299] FWS's policy manual states the following regarding refuges with multiple purposes and priority of purposes:

> **1.15 If a refuge has multiple purposes, do some purposes take priority over others?** Purposes dealing with the conservation, management, and restoration of fish, wildlife, and plants and the habitats on which they depend *take precedence over other purposes* in the management and administration of a refuge unless

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[292] ANILCA §§ 303, 305; CCP EIS 1 at 1-21.

[293] PLO 2214 at 1; ANILCA § 303(2)(B). There are numerous other purposes that apply as well from broader management statutes and policies, like the National Wildlife Refuge Administration Act and the Wilderness Act.

[294] DSEIS at 1-5, App. D at D-3.

[295] ANILCA § 305; FWS Refuge Management Part 601 National Wildlife Refuge System, 601 FW 1 at 1.16 (July 26, 2006); U.S Fish and Wildlife Service, Arctic National Wildlife Refuge, Revised Comprehensive Conservation Plan Final Environmental Impact Statement at 1-21 [hereinafter CCP EIS].

[296] DSEIS at 1-3 (explaining that alternatives "must be consider all five statutory purposes of the Arctic Refuge, none of which are superseded by any other").

[297] Pub. L. 115-97, Title II, sec. 20001(b)(2)(B)(iii).

[298] DSEIS at 1-3.

[299] 2019 DSEIS Comment Letter at 64–65.

otherwise indicated in the establishing law, order, or other legal document. The Improvement Act states that "compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management."[300]

Despite this directly applicable policy, the agencies continue to fail to recognize that the seven conservation purposes are the priority purposes for the Coastal Plain. The final SEIS should correct this. To the extent that BLM and FWS believe that this policy does not apply, they should explain that reasoning, given that Congress is presumed to know these policies when it passes laws.

3. Refuge Compatibility Mandate.

Compatibility is a cornerstone of refuge management.[301] The compatibility requirement obliges FWS to determine whether proposed "uses are compatible with the major purposes for which such areas were established."[302] Section 304(b) of ANILCA adopted the compatibility standard for refuges in Alaska and indicates that the Secretary cannot authorize any use or grant easements for any purposes unless that use is compatible with the purposes of the Refuge. FWS policy describes a "compatible use" as "[a] proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge."[303] "Refuge use" is defined as "[a] recreational use (including refuge actions associated with a recreational use or other general public use), refuge management economic activity, or other use of national wildlife refuge by the public or other non-National Wildlife Refuge System entity."[304]

Despite the clear compatibility requirements, the prior Leasing Program failed to account for them. The draft SEIS makes this same error.[305] FWS has not proposed any compatibility determinations as part of this leasing EIS and there are no current compatibility determinations that cover the proposed oil and gas program.[306] It is unclear how the Secretary will ensure that compatibility mandates are complied with for the oil and gas program, or at what stage of the program FWS will propose compatibility determinations to cover the activities under the Leasing Program. It is also unclear if FWS could even find that such activities would be compatible. For example, the FWS compatibility policy states that uses such as roads and pipelines may

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[300] U.S. Fish and Wildlife Service, 601 FW 1, 1.15, National Wildlife Refuge System Mission and Goals and Refuge Purposes (July 26, 2006) (emphasis added), *available at:* https://www.fws.gov/policy/601fw1.html.

[301] 16 U.S.C. § 668dd(d).

[302] *Id.* § 668dd(d)(1)(A).

[303] U.S. Fish and Wildlife Service, Compatibility, 603 FW 2, 2.6.B. A (Nov. 17, 2000), *available at*: https://www.fws.gov/policy/603fw2.html.

[304] 603 FW 2 2.6.Q.

[305] DSEIS App. at D-3 to D-4 (failing to discuss compatibility mandate under applicable laws).

[306] CCP EIS at Appendix G.

reasonably be anticipated "to reduce the quality or quantity or fragment habitat on a national wildlife refuge will not be compatible."[307] Regardless, no oil and gas activities, including a lease sale, can proceed prior to completion of a compatibility determination by FWS.

Additionally, the statements in the draft SEIS describing BLM as having "sole responsibility" for making decisions regarding the oil and gas leasing program fail to account for the fact that FWS can and must make compatibility determinations for all proposed activities under the program.[308] FWS, therefore, has a significant role in approving activities for the oil and gas program via its compatibility mandate and the final SEIS must recognize this.

4. Current Management of the Coastal Plain Under the Comprehensive Conservation Plan.

FWS currently manages the entire Arctic Refuge — including the Coastal Plain — under the Comprehensive Conservation Plan (CCP) adopted on April 3, 2015.[309] The CCP establishes "management goals and objectives," "define[s] compatible use," "[u]date[s] management direction related to national and regional policies and guidelines used to implement Federal laws governing Refuge management," and "[e]stablish[es] broad management direction for Refuge programs and activities" among other things.[310] Currently, the Coastal Plain is managed under the Minimal Management category as set out in the CCP.[311]

Throughout the CCP revision process, FWS properly declined to consider oil and gas development on the Coastal Plain.[312] Specifically regarding the management of the Arctic Refuge and the lack of consideration of oil and gas development in the CCP process, the CCP states:

> Until Congress takes action to change the provision of ANILCA 1003 or to implement the 1987 report, the Service will not and cannot permit oil and gas leasing in the Refuge under any of the alternatives in the Plan. *When Congress makes a management decision, that action will be incorporated into the Plan and implemented.*[313]

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[307] 65 Fed. Reg. 62,486 (2000); 603 FW 2.5.

[308] DSEIS at ES-2, 1-4.

[309] U.S Department of the Interior, Fish and Wildlife Service, Region 7, Record of Decision, Revised Comprehensive Conservation Plan, Arctic National Wildlife Refuge (Apr. 3, 2015) [hereinafter CCP ROD].

[310] CCP EIS at S-9.

[311] CCP EIS at 3-34; CCP ROD at 5.

[312] *See, e.g.*, CCP EIS at 3-6.

[313] CCP EIS at 1-1 (emphasis added); *see also* Arctic National Wildlife Refuge, Comprehensive Conservation Plan, Environmental Impact Statement, Wilderness Review, Wild River Plans Final, Dear Reader Letter at 2 (Sept. 1988) (stating, "[w]hen Congress makes a management decision [re: oil and gas], that action will be incorporated into the Plan implemented").

Congress bound the Secretary to "manage the refuge . . . in a manner consistent with the plan."[314] Oil and gas leasing and any related activities on the Coastal Plain are, therefore, inconsistent with the CCP and present management of the Coastal Plain. It is important to note that under the Minimal Management category governing present use of the Coastal Plain,[315] many of the activities that BLM is considering as part of the oil and gas program are not permitted.[316] BLM and FWS should better explain how the Leasing Program is consistent with the CCP. Groups remain concerned that adopting the Leasing Program will indirectly and implicitly amend or alter the CCP. This cannot be permitted. The agencies state that the CCP will be revised to account for all purposes of the Coastal Plain but give no additional information on when or how that will be accomplished.[317] To amend the CCP, FWS must take clear action and do so in compliance with multiple statutes and regulations that mandate notice and public participation.[318]

D. COMPLIANCE WITH ADDITIONAL RELEVANT LEGAL REQUIREMENTS.

1. Endangered Species Act.

NEPA's implementing regulations require an EIS to "state how alternatives considered in it and decisions based on it will or will not achieve the requirements [of NEPA] and other environmental laws and policies."[319] Here, the draft SEIS fails to explain how BLM and FWS will comply with its substantive and procedural obligations under the Endangered Species Act (ESA). In their scoping letter, the Groups identified the statutory mandate for the agencies to ensure that the leasing program met the agencies' obligations under the ESA as a key issue that the SEIS must address.[320] Several species protected under the ESA[321] inhabit the Arctic Refuge and its nearshore waters, including bowhead whales, ringed and bearded seals, spectacled eider,

[314] 16 U.S.C. § 668dd(e)(1)(E); *see also e.g.*, *Ctr. for Food Safety v. Jewell*, 83 F. Supp. 3d 126 (D. D.C. 2015) (overturning certain farming activities on a refuge unit because its CCP had not addressed site-specific impacts of the activities).

[315] CCP EIS at 3-34; CCP ROD at 5.

[316] For example, gravel mining is not permitted under Minimal Management in the Arctic Refuge. CCP EIS at 2-72. But under the action alternatives proposed by BLM, gravel mining would proceed. DSEIS at 3-49 to 3-50.

[317] DSEIS at 3-272.

[318] ANILCA § 304(g); U.S. Fish and Wildlife Service, Comprehensive Conservation Planning Process, 602 FW 3 at 8(b) (June 21, 2000).

[319] 40 C.F.R. § 1502.2(d); *see Montana Wilderness Ass'n v. McAllister*, 658 F. Supp. 2d 1248, 1255–56 (D. Mont. 2009); *Pac. Coast Fed. of Fishermen's Ass'ns v. Interior*, 929 F. Supp. 2d 1039, 1059–60 (E.D. Cal. 2013).

[320] 2021 Scoping Comment Letter at 57–59.

[321] 16 U.S.C. §§ 1531–1544.

and polar bears.[322] The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for threatened polar bears.[323]

Congress enacted the ESA to ensure the protection and conservation of threatened and endangered species.[324] The fundamental, express purpose of this federal statute is to conserve endangered and threatened species and the ecosystems upon which they depend.[325] The obligations imposed by the ESA on federal agencies are clear: "Each Federal agency, shall, in consultation with and with the assistance of the Secretary, 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 [critical] habitat . . . ."[326] The action agency's duty to consult with either FWS or the National Marine Fisheries Service (the "wildlife agency") is triggered when it has determined that its actions "may affect" a threatened or endangered species.[327]

The action agency is responsible for initiating consultation and is responsible throughout the consultation process for providing the best available scientific and commercial data to the wildlife agency.[328] If the action agency properly determines with the written concurrence of the wildlife agency that its action is likely to affect, but not likely to adversely affect, listed species or critical habitat ("NLAA finding"), consultation may terminate at the informal stage without formal consultation.[329] To concur in an NLAA finding, the wildlife agency must find that "effects on listed species are expected to be discountable, or insignificant, or completely beneficial."[330]

[322] *See* U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Mammal List, *available at*: https://www.fws.gov/refuge/arctic/mammlist.html; U.S. Fish and Wildlife Service, Arctic Refuge, Bird List, *available at:* https://www.fws.gov/refuge/arctic/birdlist.html; *see also* 35 Fed. Reg. 18319 (Dec. 1, 1970) (bowhead whale listing); 77 Fed. Reg. 76706 (Dec. 28, 2012) (ringed seal listing); 77 Fed. Reg. 76740 (Dec. 28, 2012) (bearded seal listing); 73 Fed Reg. 28212 (May 15, 2008) (polar bear listing); 58 Fed Reg. 27474 (May 10, 1993) (spectacled eider listing).

[323] 75 Fed. Reg. 76086 (Dec. 7, 2010).

[324] 16 U.S.C. § 1531(b).

[325] *Id.*

[326] *Id.* § 1536(a)(2).

[327] *Id.* § 1536(a)(3); 50 C.F.R. § 402.14.

[328] 50 C.F.R. § 402.14.

[329] *Id.* §§ 402.13, 402.14(b).

[330] U.S. FISH & WILDLIFE SERV. & NAT'L MARINE FISHERIES SERV., ENDANGERED SPECIES CONSULTATION HANDBOOK 3–12 (1998), *available at* https://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf. ("Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Based on best judgment, a person would not . . . be able to meaningfully measure, detect, or evaluate insignificant effects[.]"); *id.* at 3-12 to 3-13.

If the action may adversely affect listed species or critical habitat, including via potential incidental take, the action agency must request formal consultation.[331] Formal consultation concludes with the wildlife agency's issuance of a biological opinion (BiOp).[332] In a BiOp, the wildlife agency must determine whether the federal action is likely to jeopardize the listed species or destroy or adversely modify critical habitat.[333] The BiOp must include a summary of the information upon which the opinion is based, an evaluation of the environmental baseline of the listed species and critical habitat, the effects of the action, and the cumulative effects.[334] A jeopardy analysis requires the wildlife agency to consider the aggregate effects of past and ongoing human activities that affect the current status of the species and its habitat (i.e., the environmental baseline); the 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" (i.e., the effects of the action); and the effects of future state and private activities that are reasonably certain to occur (i.e., the cumulative effects).[335] The wildlife agency is also obligated to use the best available scientific and commercial data throughout the consultation process.[336]

If the Service relies upon mitigation measures to reach a no jeopardy conclusion, those mitigation measures must be "reasonably certain to occur."[337] To demonstrate that mitigation measures satisfy the reasonable certainty requirement, they must, inter alia, be achieved through "specific and binding plans," and constitute "solid guarantees."[338]

The ESA regulations require that the consultation process consider "all consequences to listed species or critical habitat that are caused by the proposed action," meaning "it would not occur but for the proposed action and it is reasonably certain to occur."[339] Cumulative effects "are those effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action subject to consultation."[340] To comply with its Section 7 consultation requirements, the Service must consult on a host of impacts from oil and gas activities, such as seismic exploration, construction of oil and gas production and development facilities, as well as impacts from access routes, aircraft and vehicle traffic, field crews and other human activities, and noise disturbance.

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[331] 50 C.F.R. § 402.14(a).

[332] *Id.* § 402.02.

[333] 16 U.S.C. § 1536(b)(4).

[334] 50 C.F.R. § 402.14(g), (h)(3).

[335] *Id.* §§ 402.14(g), 402.02.

[336] 16 U.S.C. § 1536(a)(2).

[337] *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.* (*NWF*), 524 F.3d 917, 936 n.17 (9th Cir. 2008).

[338] *Rock Creek All. v. U.S. Fish & Wildlife Serv.*, 663 F.3d 439, 444 (9th Cir. 2011) (quoting *NWF*, 524 F.3d at 935–36) (internal quotation marks omitted).

[339] 50 C.F.R. § 402.02.

[340] *Id*.

Section 9 of the ESA prohibits any person, including any federal agency, from "taking" any member of a threatened or endangered species without a valid permit.[341] "Take" includes habitat modification or degradation that results in actual injury.[342] Only through the Section 7 consultation process may an action agency receive authorization, via an incidental take statement included in a BiOp, to undertake actions that may result in incidental take of a listed species.[343]

Section 7's procedural and substantive duties cannot be separated. Courts require stringent procedural compliance to ensure substantive compliance.[344] This also promotes other vital statutory objectives. First, Section 7(a)(2) is the ESA's only mechanism to ensure against the destruction or adverse modification of critical habitat.[345] Second, Section 7 is designed to prevent and mitigate harm to protected species and critical habitat before it happens. The consultation process "ensures that environmental concerns will be properly factored into the decision-making process as intended by Congress."[346] Section 7 thus embodies the "institutionalization of . . . caution" that Congress intended in enacting the ESA.[347]

The prior ESA consultations for the Leasing Program violated the ESA and those legal failures must be addressed through reinitiation of consultation for the current SEIS. Numerous groups notified BLM and Interior of their intent to file suit under the ESA in August 2020 because the 2020 Leasing Program failed to ensure against jeopardy of polar bears or destruction or adverse modification of the species' designated critical habitat.[348] The BiOp supporting the 2020 Leasing Program was legally flawed in a variety of ways: it relied on uncertain mitigation measures to avoid jeopardy; it failed to consider the best available scientific data; it failed to analyze the total impacts of the whole oil and gas program on critical habitat; and it failed to consider impacts from increased greenhouse gas emissions in making its "no jeopardy" determination. Additionally, Groups explained that BLM cannot reasonably or lawfully rely on the BiOp because the agency repudiated its authority to enforce conditions on which FWS premised the BiOp's conclusions and had changed its position regarding a key limitation on which the BiOp relied in the ROD. Under BLM's interpretation of the Tax Act, its decision about which lands to make available for leasing is the last point at which BLM has authority to preclude harmful activities or infrastructure from occurring in designated polar bear critical habitat. Even though subsequent authorizations are required for those activities, BLM took the position that it cannot deny such authorization for any activity or infrastructure that is

[341] 16 U.S.C. § 1538(a)(1)(B); 50 C.F.R. § 17.31 (extending the "take" prohibition to threatened species under FWS jurisdiction). The prohibition against jeopardy, however, extends to both endangered and threatened species.

[342] 16 U.S.C. § 1532(19); 50 C.F.R. § 17.3.

[343] 16 U.S.C. § 1536(b)(4)(iv), (o)(2).

[344] *Conner v. Burford*, 848 F.2d 1441, 1458 (9th Cir. 1988); *Thomas v. Peterson*, 753 F.2d 754, 764 (9th Cir. 1985).

[345] 16 U.S.C. § 1532(5)(A).

[346] *NRDC v. Houston*, 146 F.3d 1118, 1128–29 (9th Cir. 1998).

[347] *Tennessee Valley Auth. v. Hill*, 437 U.S. 153, 178 (1978).

[348] Ltr. from Trustees for Alaska and Sierra Club RE: Notice of Violation of the Endangered Species Act Section Associated with Oil and Gas Leasing Activities on the Coastal Plain of the Arctic National Wildlife Refuge (Aug. 24, 2020).

"necessary" for "access" to leased oil and gas. This interpretation is legally incorrect.[349] As a result, BLM cannot rely on the legally flawed BiOp to support this SEIS and any further lease sale.

Unfortunately, the draft SEIS fails to acknowledge or rectify many of these prior flaws or explain how BLM will comply with the ESA's substantive and procedural requirements when conducting leasing. The draft SEIS merely states that BLM consulted with the wildlife agencies regarding the effects of its actions on threatened and endangered species and designated critical habitat and that it would reinitiate consultation as part of this SEIS process to address changes to alternatives and mitigation measures.[350] No additional explanation of the defects with the 2020 BiOp are offered.

Specifically problematic is BLM's continued statements that the Tax Act will require the agency to grant necessary access to leased areas, without acknowledgment that such right-of-way grants must be subject to the ESA's protective mandates and that the agency has discretion to deny such applications.[351] Even under Alternative D, the draft SEIS would authorize extensive oil and gas leasing on the Coastal Plain, including in areas that are used and relied on by listed species or designate critical habitat. This is alarming given BLM's substantive obligation to avoid jeopardizing endangered and threatened species and destroying or adversely modifying their critical habitats. The range of alternatives in the SEIS does not include an alternative that sufficiently protects the Coastal Plain's sensitive ecosystems from leasing. For example, the NSO stipulations are not sufficient to protect ESA-listed species because they do not preclude seismic exploration, which could impact species and their habitat.[352] Additionally, for all alternatives, the lease stipulations and required operating procedures are very similar and waivable, can be granted exceptions, or BLM can provide modifications.[353] The fact that the range of alternatives allows such extensive activities with so few concrete protections raises serious questions as to whether BLM can make leasing decisions consistent with its ESA obligations.

It is also unclear when Section 7 consultation will occur and what level of activities BLM intends to consult on for purposes of this SEIS with either FWS (for polar bears and spectacled eider) or NMFS (for whales and seals). As an initial matter, the draft SEIS does not contain a preferred alternative, which is typically the alternative used for purposes of Section 7 consultation. The agency should clarify which of these action alternatives are being defined as the "agency action" for purposes of consultation with FWS and NMFS. BLM should also confirm that FWS and NMFS will issue biological opinions prior to any Record of Decision being issued to authorize a lease sale on the Coastal Plain.

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[349] *See supra* Section IV.A.3.

[350] DSEIS at 1-7, 4-3.

[351] *See e.g.*, DSEIS at 2-5 ("Note that PL 115-97 requires that the BLM authorize ROWs for essential roads and pipeline crossings, and other necessary access, even in areas closed to leasing or with a NSO stipulation."); *AIDEA v. Biden*, 2023 U.S. Dist. LEXIS 136474 at *24–25 (recognizing agency authority to deny ROW the agency deems not necessary).

[352] *See infra* Section VI.K.2.b.

[353] *See supra* Section IV.B.5

Additionally, the SEIS does not expressly state which ESA-listed species BLM intends to consult with NMFS and FWS on; this should be clarified in the final SEIS. For instance, BLM acknowledges that Steller's eiders are protected under the ESA and may be present in the program area in low numbers,[354] but these ESA-protected birds are never again mentioned in the impacts analysis. BLM is obligated to satisfy its consultation obligations on any action that *may* affect any listed species or its critical habitat.[355] The threshold for triggering formal consultation is very low, and "the burden is on the Federal agency" to show that the action is not likely to affect adversely species or critical habitat and "[a]ny possible effect" triggers formal consultation requirements.[356] Only if and when BLM obtains a written NLAA determination from the wildlife agency that the leasing program may affect, but is not likely to adversely affect, a particular listed species may BLM forego formal consultation on the effects of its action on such species. Otherwise, BLM must formally consult on *all* species that may be adversely affected by the agency's authorization of an oil and gas leasing program.

BLM and FWS also recognize that a number of species of marine mammals present in or adjacent to the program area, or along the marine vessel route toward Dutch Harbor, are protected under the ESA.[357] BLM must engage in formal consultation for all listed species and explain what mitigation will be considered as part of that consultation process.

BLM must also consult on all of the effects of its actions. BLM's analysis assumes that issuance of oil and gas leases will have no direct impact on the environment, but BLM states it will consider "direct and indirect impacts" of leasing in this SEIS.[358] BLM is obligated to consult on all of the impacts from its leasing program that "may affect" listed species. ESA regulations require that the consultation process consider "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action . . . ." as well as the action's "cumulative effects."[359] Cumulative effects "are those effects of future State or private activities . . . that are reasonably certain to occur within the action area of the Federal action subject to consultation."[360] In interpreting these regulations, courts require agencies to consider all related impacts of agency actions that may

[354] DSEIS at 3-151.

[355] 50 C.F.R. § 402.14.

[356] *See* Interagency Cooperation—Endangered Species Act of 1973, as Amended; Final Rule, 51 Fed. Reg. 19949 (June 3, 1986)

[357] DSEIS at 3-226.

[358] *See, e.g.*, DSEIS at 1-2 ("Issuance of an oil and gas lease does not have any direct effects on the environment, since it does not authorize drilling or any other ground-disturbing activities; however, a lease does grant the lessee certain rights to drill for and extract oil and gas, subject to reasonable regulation, including applicable laws, terms, conditions, and stipulations of the lease.").

[359] 50 C.F.R. § 402.02.

[360] *Id*.

affect listed species.[361] Thus, BLM must consult not only on the leasing program, but on the impacts of exploration, production, and development of Coastal Plain oil and gas to federally protected species, including impacts from downstream emissions. This necessarily includes considering the climate change impacts from oil and gas activities on the Coastal Plain and how such activities would exacerbate impacts to ice-depending ESA species, such as polar bears and ice seals. FWS has sufficient information to discuss how such increased greenhouse gas emissions would impair the recovery and survival of the species, given the draft SEIS's quantification of additive emissions from the Leasing Program.[362] Moreover, the BiOp failed to consider the impacts of the whole leasing program that will accrue and accumulate over decades, including all the direct and indirect effects dictated by its decision about what lands will be open or closed to leasing and seismic exploration. This shortcoming should be rectified through reinitiation of consultation.

In conclusion, the ESA requires federal agencies to give first priority to the declared national policy of conserving endangered and threatened species — i.e., by using all methods and procedures necessary to bring such species to the point at which ESA protections are no longer necessary.[363] BLM cannot lawfully authorize an oil and gas leasing program in the Arctic Refuge that is likely to jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. Nor can it engage — or permit others to engage — in activities that will result in unauthorized incidental take of listed species. These requirements are put into practice through the Section 7 consultation process. The draft SEIS fails to explain how BLM will comply with these important substantive and procedural legal requirements, in violation of NEPA's implementing regulations.[364] Before the agency can make its final decision and issue a Record of Decision, it must reinitiate consultations under Section 7 and obtain biological opinions (or written NLAA concurrences) from NMFS and FWS. It must also fully explain in the Final SEIS how it has ensured that its considered alternatives and its ultimate choice of alternative, as reflected in the ROD, will or will not achieve the requirements of the ESA.

2. Marine Mammal Protection Act.

[361] *See, e.g.*, *Defenders of Wildlife v. Babbitt*, 130 F. Supp. 2d 121, 128–30 (D.D.C. 2001) (requiring consultation analysis to include impacts of all activities within the action area that affect listed species); *Conner v. Burford,* 848 F.2d 1441, 1453–54 (9th Cir.1988) (requiring consultation to consider not only oil and gas leases but also impacts from future exploration and development); *Nat'l Wildlife Fed'n v. Coleman*, 529 F.2d 359, 373 (5th Cir. 1976) (requiring analysis of residential and commercial development that was expected as a result of the construction of a highway as an indirect effect of highway construction) (internal quotations omitted); *see also San Luis & Delta-Mendota Water Auth. v. Locke*, 776 F.3d 971, 1009 (9th Cir. 2014) (referencing the facts at issue in *Nat'l Wildlife Fed'n*, 529 F.2d at 373, as a clear, oft-cited example of an "indirect effect").

[362] DSEIS at 3-11 to 3-12. *See also* S.C. Amstrup & C. Bitz, Unlock the Endangered Species Act to address GHG emissions, *Science* (2023). DOI: 10.1126/science.adh2280.

[363] 16 U.S.C. § 1362(3).

[364] 40 C.F.R. § 1502.2(d).

The draft SEIS still fails to discuss how BLM will ensure compliance with the Marine Mammal Protection Act (MMPA).[365] BLM must ensure that the leasing program meets the agency's obligations under the MMPA, and this is a key issue to address in the SEIS. Similar to the ESA, jurisdiction of the MMPA is shared by NMFS and FWS (generically, "the Service"). For marine mammal resources relevant to the Coastal Plain, FWS has jurisdiction over polar bears and walrus while NMFS has jurisdiction over seals, porpoises, and whales.

Congress enacted the MMPA in 1972 based on its finding that "marine mammals have proven themselves to be resources of great international significance, esthetic and recreational as well as economic[.]"[366] The MMPA's stated purpose is "that [marine mammals] should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be to maintain the health and stability of the marine ecosystem."[367] To carry out its protective and conservation purposes, the MMPA imposes a moratorium on the taking of marine mammals.[368] Within the context of the MMPA, "take" is broadly defined as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal."[369] Harassment is further defined as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal (Level A harassment) or has the potential to disturb a marine mammal (Level B harassment).[370] Prohibited harassment includes any act that may disrupt behavioral patterns such as migration, breeding, and feeding.[371]

The MMPA contains several narrow exceptions to the moratorium on take. The MMPA authorizes the Service to allow upon request the incidental, but not intentional, taking of marine mammals that occurs during otherwise lawful activities.[372] To allow incidental take, the agency must find that the authorized activity will affect only "small numbers of marine mammals of a species or population stock," will have only a "negligible impact on such species or stock," will not have an "unmitigable adverse impact" on subsistence uses of such species or stock, and must prescribe means of "effecting the least practicable impact" on the species or stock to be taken.[373]

The Service may allow incidental take through an Incidental Take Regulation (ITR) or an Incidental Harassment Authorization (IHA). An ITR is a formal regulation promulgated by the

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[365] 16 U.S.C. §§ 1361–1389.
[366] *Id*. § 1361(6).
[367] *Id*.
[368] *Id*. § 1371(a).
[369] *Id*. § 1362(13).
[370] *Id*. § 1362(18)(A).
[371] *Id.*
[372] *Id*. § 1371(a)(5).
[373] An activity: (i) must be "specified" and limited to a "specific geographical region," (ii) must result in the incidental take of only "small numbers" of marine mammals of a species or stock, (iii) can have no more than a "negligible impact" on species and stocks, and (iv) cannot have "an unmitigatable adverse impact on the availability of such species or stock for taking for subsistence uses." *See id*. §§ 1371(a)(5)(A)(i), (ii) (incidental take regulation); 1371(a)(5)(D)(i), (ii) (incidental harassment authorization).

Service, subject to a full administrative rulemaking process. The MMPA allows the Service, upon request, to promulgate ITRs for a period up to five years. A Letter of Authorization is required to conduct activities pursuant to an ITR, including activities that may seriously injure or kill a marine mammal or result in harassment.[374] An IHA is effective for up to 1 year and can be used to authorize harassment only (i.e., disturbance or potential to injure). The MMPA achieves its purpose of protecting marine mammals from unpermitted incidental take through this process of ITRs and IHAs. The draft SEIS raises — but still does not answer — many questions as to how BLM and future lessees will be able to comply with these important procedural and substantive requirements.

Regarding polar bears, though BLM acknowledges the MMPA protections for this species, its analysis fails to acknowledge that FWS has already authorized an extensive amount of take of the Southern Beaufort Sea (SBS) population. FWS has issued incidental take regulations for the taking of polar bears by oil and gas activities in the Beaufort Sea and along the coast, but these regulations expressly exclude and do not take into consideration potential oil and gas activities in the Arctic Refuge.[375] The current 2021–2026 Beaufort Sea ITR authorizes take of approximately half the SBS population by level B harassment making it unclear how any additional take of this population could be lawfully authorized for the Coastal Plain Leasing Program. As such, BLM should acknowledge this limitation and consider alternatives which would ensure no such lethal take would occur from the Leasing Program in the final SEIS.

As a practical matter, BLM does not expressly state whether the agency believes an ITR will be required for oil and gas leasing on the Coastal Plain. Groups are not aware at this time of any application for an ITR under consideration by the FWS for purposes of the Coastal Plain Leasing Program. Thus, BLM's repeated references to the ITR process and the protections it provides to polar bears on the Coastal Plain are improper and misleading to the public. BLM must clarify that ITRs or IHAs will be required for any ground-disturbing or other activities on leases with a potential to harass polar bears. Without clearly articulating when and for what activities ITRs or IHAs will be issued, BLM cannot assume future mitigation measures will be put in place via the ITRs and IHAs or fully comply with its NEPA obligation to "state how alternatives considered in it and decisions based on it will or will not achieve the requirements [of] other environmental laws and policies."[376]

Finally, BLM relies on future ITR protections for polar bears without articulating what specific measures would be necessary or effective or explaining at what stage of oil and gas activities it assumes which ITR protections would be required.[377] Similar to our concerns described in the ESA section above, BLM assumes for purposes of the draft SEIS that leasing itself presents no direct impacts on the environment. Thus, it is not clear at what stage — pre-leasing seismic testing, post-lease exploration, development, and/or production — that the potential protections from IHAs or ITRs (that are not yet developed) would apply. BLM further seems to assume that any mitigation required by ITRs would preclude negative impacts to polar

[374] 50 C.F.R. § 18.27(f)(1).
[375] 86 Fed. Reg. 42982 (Aug. 5, 2021).
[376] 40 C.F.R. § 1502.2(d).
[377] *Infra* Section VI.K

bears, which is unrealistic and contrary to recent studies and research.[378] For example, BLM offers the conclusory assertion that future ITRs would ensure that oil and gas activities would only result in negligible impacts to polar bears, despite acknowledging that disturbance to denning females from seismic could cause major to moderate impacts where dens go undetected.[379] BLM cannot abdicate its responsibilities under NEPA to assess reasonably foreseeable impacts by relying on a future permitting process, undertaken by a private applicant and conducted under a different statute, to preclude those impacts. The SEIS must plainly state what specific mitigation measures it believes will be in place at which phase of oil and gas activities to protect marine mammals. BLM cannot not treat the MMPA as a loophole to avoid its obligation to fully consider impacts to marine mammals in this SEIS.

3. Migratory Bird Treaty Act.

The agencies must comply with the Migratory Bird Treaty Act (MBTA) in the development of the oil and gas program for the Coastal Plain.[380] More than 200 bird species found on the Arctic Refuge are migratory birds protected under the MBTA.[381] Congress enacted the MBTA in 1918 to implement a 1916 convention with Canada to protect migratory birds.[382] The United States later signed three more bilateral conventions with Mexico, Japan, and Russia to protect migratory birds.[383] After each convention, Congress amended the MBTA to cover the species addressed in the new convention. The MBTA makes it unlawful "at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess . . . any migratory bird" unless otherwise permitted by regulation.[384] Any oil and gas activities that take or kill migratory birds on the Coastal Plain without authorization would violate the MBTA. The agencies must address how it will ensure compliance with the MBTA for an oil and gas program on the Coastal Plain, in particular with regards to the identification of the tracts to offer for lease.

E. COMPLIANCE WITH INTERNATIONAL TREATY OBLIGATIONS.

One of the ANILCA purposes of the Arctic Refuge is to "fulfill the international fish and wildlife treaty obligations of the US with respect to fish and wildlife and their habitats."[385]

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[378] *See infra* Section VI.K.2

[379] DSEIS at 3-251.

[380] 16 U.S.C. §§ 703–712.

[381] *See* U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Bird List, *available at*: https://www.fws.gov/refuge/arctic/birdlist.html.

[382] Convention between United States and Great Britain for the Protection of Migratory Birds, 39 Stat. 1702 (Aug. 16, 1916) (Canada Convention).

[383] Convention for the Protection of Migratory Birds and Game Mammals, 50 Stat. 1311 (Feb. 7, 1936) (Mexico Convention); Convention for the Protection of Migratory Birds and Birds in Danger of Extinction, and Their Environment, 25 U.S.T. 3329, T.I.A.S. No. 7990 (Mar. 4, 1972) (Japan Convention); Convention Concerning the Conservation of Migratory Birds and Their Environment, T.I.A.S. No. 9073 (Russia Convention).

[384] 16 U.S.C. § 703.

[385] ANILCA § 303(2)(B)(ii).

Multiple treaties apply to wildlife that use the Coastal Plain, including for caribou and polar bears. The Trump Administration failed to fulfill its international commitments in adopting the 2020 Leasing Program. These are addressed in turn below.

1. *Compliance with Caribou Treaty Obligations and Engagement with Canadian Governments.*

The Agreement Between the Government of Canada and the Government of the United States of American on the Conservation of the Porcupine Caribou Herd (the Agreement) imposes important protections for the caribou and caribou users on both sides of the U.S./Canada border. The Agreement was signed in 1987 by the United States and Canada to conserve the Porcupine Caribou herd and its habitat.[386] The Agreement recognizes that "the Porcupine Caribou Herd regularly migrates across the international boundary between Canada and the United States of America and that caribou in their large free-roaming herds comprise a unique and irreplaceable natural resource of great value which each generation should maintain and make use of so as to conserve them for future generations."[387] The Agreement also recognizes that the Porcupine Caribou Herd is important for the "nutritional, cultural, and other essential needs" and for "customary and traditional uses" by Canadian First Nations and Alaska Natives.[388] The Agreement recognizes the importance of conserving habitat on an ecosystem level to the conservation of the herd, "including such areas as calving, post-calving, migration, wintering and insect relief habitat."[389] The Agreement specifically defines the herd's habitat as "the whole or any part of the ecosystem, including summer, winter and migration range, used by the Porcupine Caribou Herd during the course of its long-term movement patterns."[390]

The Agreement imposes multiple mandates on the two nations, including "tak[ing] appropriate action to conserve the Porcupine Caribou Herd and its habitat," a consultation opportunity if one country is going to take an action that "is determined to be likely to cause significant long-term adverse impact" on the herd or habitat, which can require mitigation, and avoidance of activities that disrupt migration or other "important behavior patterns" like calving and insect relief.[391] To meet the obligations in the Agreement, the Agreement establishes a Board that is able to make recommendations on any activities that "could significantly affect the conservation of the Porcupine Caribou Herd or its habitat."[392] The Party undertaking the action is then required to consider the Board's recommendations and respond in writing to any that it rejects.[393]

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[386] Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd, U.S.-Can. July 17, 1987, E100687-CTS 1987 No. 31, *available at* http://www.treaty-accord.gc.ca/text-texte.aspx?id=100687.

[387] *Id.*

[388] *Id.*

[389] *Id.*

[390] *Id.*

[391] *Id.*

[392] *Id.*

[393] *Id.*

The draft SEIS explains that the goal of the Agreement "is to minimize the risk of irreversible damage or long-term adverse effects, including cumulative effects, as a result of use of caribou or their habitat."[394] The agencies recognize that the purpose of the International Caribou Board is to "give advice and recommendations to the countries on the conservation and management of the herd."[395]

Unfortunately, under the Trump Administration, the United States obstructed the engagement of the Board in the development of the Leasing Program. As it stands, it is very unclear what role the Board is playing in the development of the SEIS and how it is being consulted. Adopting an oil and gas program in the calving, post-calving, insect-relief, and migratory habitat of the Porcupine Caribou Herd is an activity that is "likely to cause significant long-term adverse impact on the Porcupine Caribou Herd or its habitat."[396] As such, the consultation process set out in the Agreement must be adhered to. The agencies and the Department of State should fully engage with the Board to solicit recommendations for the Leasing Program. Without doing so, it is unclear how BLM and FWS can ensure that the Arctic Refuge's purposes will be achieved, and importantly, how the United States will comply with its international obligations.

In addition, we note that while BLM and FWS acknowledge this purpose and identify specific resource sections where impacts to relevant treaties are analyzed,[397] the agencies do not separately evaluate whether they meet this individual purpose for each alternative. This additional analysis is critical and should be included in the final SEIS.

We also strongly encourage the agencies to fully engage Canadian and First Nations governments in the SEIS process. These governments have submitted extensive comments on the prior leasing program and lease sale, including substantial scientific information. They have raised significant concerns and opposition to oil and gas drilling in the Coastal Plain because of the potentially disastrous transboundary impacts on the PCH and the indigenous people that rely on the Herd for material, cultural, and spiritual sustenance. In addition, hundreds of individuals from Canada submitted comments voicing concern about the transboundary impacts of the proposed oil and gas development in the Arctic Coastal Plain. These voices were largely ignored in the prior EIS process. Given the stake that individuals and governments across the border have in the animals that rely on the Coastal Plain, their voices are critical to ensuring that any leasing program is sufficiently protective. The agencies should seek to fully engage these governments moving forward.

2. International Agreements on the Conservation of Polar Bears.

[394] DSEIS at 1-8; *see also* DSEIS App. D at D-1.

[395] DSEIS at 1-8; *see also* DSEIS App. D at D-1.

[396] Agreement Between the Government of Canada and the Government of the United States of America on the Conservation of the Porcupine Caribou Herd.

[397] DSEIS at 1-5.

In assessing the effects of an oil and gas program on the Coastal Plain, BLM is required to consider the transboundary impacts on polar bears in the context of our international obligations under the 1973 Agreement on the Conservation of Polar Bears and the 1988 Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea.[398]

The United States, along with Canada, Denmark (on behalf of Greenland), Norway and the Russian Federation, is a Party to the 1973 Agreement on the Conservation of Polar Bears. The Agreement requires these Polar Bear Range States to take appropriate action to conserve polar bears and protect their habitat.[399] Specifically, this multilateral agreement requires that each Party "shall take appropriate action to protect the ecosystems of which polar bears are a part," with special attention to denning areas, feeding sites, and migration corridors, and manage polar bears based on best available science through coordinated research. The United States signed the agreement on November 15, 1973, in Oslo, Norway and ratified it on September 30, 1976; it entered into force in this country on November 1, 1976.[400] The Polar Bear Range States approved a collaborative Circumpolar Action Plan (CAP) in 2015, which emphasizes reduction of threats (especially climate change and human caused mortality), cooperation among member parties, monitoring and adaptive management.[401] The 1973 Agreement also relies on the efforts of each Party to implement a conservation plan for polar bears within their jurisdiction. The FWS Polar Bear Conservation Plan serves as the United States' contribution to the CAP.

The Inuvialuit Game Council and the North Slope Borough Fish and Game Management Committee signed the Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea (I-I Agreement) in 1988 and reaffirmed it in 2000.[402] Polar bears harvested from the communities of Barrow, Nuiqsut, Kaktovik, Wainwright and Atqasuk are considered part of the SBS population and are thus subject to the terms of this voluntary Native-to-Native agreement between the Inupiat from Alaska and the Inuvialuit in Canada. The I-I Agreement provides for annual quotas and recommendations concerning protection of denning female polar bears, family groups and methods of harvest. Quotas are based on estimates of population size and age-specific estimates of survival and recruitment. The I-I Agreement established a Joint Commission to implement it, and a Technical Advisory Committee, consisting of biologists from agencies in the U.S. and Canada involved in polar bear research and management, to collect and evaluate scientific data and make recommendations to the Joint Commission.[403]

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[398] Council on Environmental Quality Guidance on NEPA Analyses for Transboundary Impacts, http://ceq.hss.doe.gov/nepa/regs/transguide.html.

[399] Agreement on the Conservation of Polar Bears (Nov. 15, 1973).

[400] *Id.*

[401] Polar Bear Range States, Circumpolar Action Plan: Conservation Strategy for Polar Bear (2015) (a product of the representatives of the parties to the 1973 Agreement for the Conservation of Polar Bears (Norway, Canada, Greenland, the Russian Federation and the United States)).

[402] Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea, Mar. 4, 2000.

[403] *Id.*

The Coastal Plain of the Arctic Refuge provides very important habitat for the Southern Beaufort Sea population (SBS) of polar bears, whose range includes Canada. The Coastal Plain has the highest density of on-shore polar bear dens found anywhere in America's Arctic, and more and more bears are using onshore habitat as sea ice diminishes due to climate change. Scoping comments and comments on the prior draft EIS from Canadian territorial and national governments and wildlife agencies stress the importance of SBS bears to Inuvialuit culture, and in turn the importance of the Coastal Plain to SBS bears.[404] According to multiple Canadian wildlife agencies, "[p]olar bears are highly valued in Inuvialuit mythology, spirituality, storytelling, art, song and other forms of cultural expression, and the well-being of this population is extremely important because of the ongoing relationship Inuvialuit have with these animals."[405]

Unlike the 2020 Leasing Program, BLM acknowledges in the draft SEIS that it is obligated to consider how an oil and gas program in the Coastal Plain and its impacts on SBS polar bears will affect the quotas and management protocols established through the I-I Agreement.[406] But the SEIS nonetheless fails to analyze how the proposed oil and gas leasing program will affect polar bears and subsistence users in Canada because it simply points to requirements in future MMPA processes as precluding impacts to polar bears.[407] Again, BLM cannot abdicate its responsibilities under this treaty to assess and prevent impacts by relying on a future permitting process undertaken by a private applicant. Additionally, the draft SEIS fails to address how BLM will ensure adequate coordination with Canada to protect polar bears that will be affected by oil and gas leasing in the Arctic Refuge Coastal Plain.

V. ANALYSIS OF IMPACTS FROM ALL PHASES OF OIL AND GAS DEVELOPMENT.

A. EVALUATION OF THE REASONABLY FORESEEABLE DEVELOPMENT SCENARIO REMAINS FLAWED.

Groups previously identified various flaws with the reasonably foreseeable development (RFD) scenario in the final EIS, including BLM's failure to develop a scenario that was specific

[404] *See, e.g.,* Government of Canada, Scoping Comment on the Notice of Intent to Prepare a Supplemental Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (Oct. 4, 2021); Government of the Northwest Territories, Comments on Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska (Mar. 12, 2019); Government of Yukon, Coastal Plain Oil and Gas Leasing Program Draft Environmental Impact Statement, Alaska (Mar. 12, 2019); Inuvialuit Game Council (IGC), Wildlife Management Advisory Council (North Slope) (WMAC(NS)), Wildlife Management Advisory Council (Northwest Territories) (WMAC(NWT)) and the Fisheries Joint Management Committee (FJMC), Comments on the Draft Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program, Alaska Mar. 2019) (Canadian Wildlife Agencies' Comments).

[405] Canadian Wildlife Agencies' Comments at 7.

[406] DSEIS at 3-266.

[407] *Id*.

to each alternative to accurately demonstrate the impacts from that alternative.[408] Groups are pleased to see that BLM and FWS have developed a specific RFD scenario for each alternative.[409] There are, however, aspects of the RFD scenarios that should be refined or strengthened in the final SEIS.

Groups are glad that to see BLM and FWS's use of a development scenario based on a petroleum estimate that represents maximum resource and environmental impacts, which is particularly appropriate for a programmatic decision with the degree of uncertainty that that the agencies are facing here. However, because the agencies identify a wide range of oil production values (1.5 billion barrels of oil (BBO) to 10 BBO for technically recoverable resources[410]), it is ultimately unclear what volumes the agencies assumed for the hypothetical unconstrained RFD scenario nor for any of the action alternative RFD scenarios. We appreciate that any attempt to project potential development activities and production levels for the Coastal Plain is speculative, but BLM and FWS clearly used some assumed production volume for each RFD scenario in order to conduct subsequent estimates that it provides, for example in the GHG emissions calculations and in the social cost emissions calculations. BLM and FWS should identify the overall economically recoverable oil production volumes as well as provide the by-year production volumes that the agencies ultimately assumed for each RFD scenario in the final SEIS in order for the public to evaluate and contextualize BLM's subsequent analysis. Additionally, the agencies currently assume first production in 2032, but experience has demonstrated that the time from exploration permitting to first production is considerably longer, nearly two decades.[411] The agencies should, therefore, include a more realistic timeline in the RFD scenarios. How much oil is developed and over what timeframe will likely result in different intensities and durations of impacts. Presumably the infrastructure required to produce these very different amounts of oil, and the amount of likely spilled oil, would differ dramatically. BLM and FWS should also better explain how the estimates of the amount of technically recoverable oil resource in the Coastal Plain connects with the scenario they use to assess impacts for each alternative.

While Groups are glad to see that the agencies developed specific RFD scenarios for each alternative, there is very little information about how BLM and FWS developed those scenarios. For example, it is unclear how the agencies determined the components by alternative. The agencies explained that they considered the restrictions and stipulations for each alternative, but it not clear how it concurrently accounted for hydrocarbon potential and oil estimates, or areas available for lease. Nor is it clear how the agencies determined the varying number of facilities per alternative. It is also not clear how NSO areas could be reached by horizontal directional drilling under current technology for each alternative, but this assumption is a critical piece of the RFD scenario. Additionally, now that the agencies are varying the RFD scenario by alternative, it is unclear what the purpose is of setting out and analyzing what it terms a "hypothetical unconstrained scenario."[412] Because there is no longer an alternative that matches

[408] 2019 Comments at 87–94; 2021 SEIS Scoping Comments at 70–72.
[409] *See generally* DSEIS App. B.
[410] DSEIS App. B at B-22.
[411] *See infra* Section VI.V.4
[412] DSEIS App. B at B-10 to B-22.

this scenario, it is confusing how it relates to the alternative-specific scenarios presented. The agencies should better explain how they developed the scenarios for each alternative in the final SEIS to ensure that the agencies are fully analyzing the potential impacts to the Coastal Plain.

Additionally, the agencies still do not have a map drawn to scale showing a realistic depiction of the expected development by alternative. Such a map — which could use symbols to show well pads, pipelines, gravel and ice roads and gravel mines, Central Processing Facilities, and other building infrastructure — would allow the public to visualize and comment on the extensive nature of the potential development. Figures B-1 and B-2 do not present the complete picture of what the expected infrastructure and development will look like by alternative because they are not placed geographically, which matters for the expected impacts. They also do not include all expected components of the development scenario, such as gravel mines, gravel roads, and storage pads. These components are significant in terms of acreage and where they could be located matters in terms of the potential impacts.[413] Additionally, oil development infrastructure is likely to be more dense in the portion of the Coastal Plain with high hydrocarbon potential and less dense in areas with lower hydrocarbon potential, for example. The agencies try to explain in the text where components could be located, so it is unclear why the agencies have not provided a visualization to accompany each alternative.

The agencies also attempt to provide an economic analysis as part of the RFD scenario, but their quantitative estimates are for the hypothetical unconstrained scenario and do not vary by alternative.[414] Regardless, the economic impacts analysis is flawed.[415]

BLM and FWS continue to assume that no gas will be developed in the Coastal Plain because there does not yet exist a transmission pipeline to bring natural gas to market from the North Slope.[416] However, plans for such a pipeline are presently being developed through a Federal Energy Regulatory Commission process. BLM and FWS seem to acknowledge this in their additional assumptions, wherein the agencies assume that the natural gas processing plant would be located outside of the Coastal Plain.[417] In light of the long time horizon for the development scenario and the current planning process for delivering North Slope gas to market, BLM should consider assessing the potential effects of natural gas production in its development scenarios for each alternative, including the need for gas pipelines to transport natural gas outside of the Coastal Plain for processing.

B. IMPACTS ASSOCIATED WITH INFRASTRUCTURE.

Groups are glad to see that BLM and FWS are applying the revised interpretation of the 2,000-acre limitation in the different alternatives and using that limit to restrict surface disturbance.[418] Because the agency is treating the various limits under the 2,000-acre limitation

[413] DSEIS App. B at B-26.
[414] DSEIS App. B at B-26 to B-28.
[415] *See infra* Section VI.V.4.
[416] DSEIS App. B at B-3.
[417] *Id*. at B-9.
[418] *Id.* at B-10, B-23 to B-24.

as a cap on development, BLM needs to ensure that the terms of the leases expressly retain the agency's right to restrict the footprint of development and account for the maximum allowed development for the selected alternative.

In development of the alternatives and the corresponding RFD scenarios, we also encourage BLM to develop a map or other diagram drawn to scale depicting the reasonably foreseeable extent and location of development and associated infrastructure that can be expected under each alternative. Such a map — which could use symbols to show well pads, pipelines, gravel and ice roads and gravel mines, central processing facilities and other building infrastructure — would allow the public to visualize and comment on the potentially extensive nature of the development under each alternative. This is particularly important because all alternatives allow for non-contiguous and dispersed development, which would ultimately impact far more than 2,000 acres of the Coastal Plain.

To guard against expansive development, Groups recommended that BLM should include an administrative mechanism to allow the agency to force consolidated and shared infrastructure, and not rely just on operator agreements. Lease Stipulation 13 now requires a master development plan for Alternative D only.[419] While Groups support requiring such a plan to minimize development, it is unclear if this stipulation can be waived, excepted, or modified.[420] As explained above, BLM and FWS must be more clear about which stipulations are subject to waiver, exception, or modification.[421] If BLM can issue a waiver, exception, or modification for this stipulation, it is unclear how the agency could keep infrastructure in line with what is analyzed in the SEIS. When unnecessary or duplicative infrastructure is built, the infrastructure footprint is not minimized and environmental impacts are greater than they need to be. For that reason, we encourage BLM to require this stipulation for any alternative ultimately selected to better protect the Coastal Plain.

C. CONSIDERATION OF, AND RELIANCE ON, RECLAMATION.

Groups remain concerned that BLM and FWS are over-relying on reclamation to restore the Coastal Plain. It is unrealistic to expect that reclamation will return land to its previous condition and ecosystem function. The agencies recognize this, stating "reclamation and restoration of original habitat value has not been proven for gravel removal in the arctic environment once operations have ceased."[422] However, the draft SEIS still includes a ROP that assumes that such reclamation can occur and identifies that the objective of ROP 35 is to "[e]nsure ongoing and long-term reclamation of land to its previous condition and use."[423] Gravel roads, gravel mines, and other infrastructure in Arctic environments will cause long-term impacts to the landscape that cannot be easily recovered or restored and will never recover to their original, wilderness state.[424] Studies have indicated that natural recovery of tundra

[419] DSEIS at 2-23.
[420] DSEIS at 2-5
[421] *See supra* Section IV.B.5.
[422] DSEIS at 3-182; *see also* DSEIS at 3-97.
[423] DSEIS at 2-67.
[424] *See, e.g.*, NRC Report at 158.

vegetation may occur on a timeframe that could take millennia or may never occur.[425] There is not a single tundra rehabilitation site that has returned to its original state in thirty-plus years of tundra rehabilitation. Even with intensive rehabilitation efforts, the recovery process takes at least decades.[426] For areas where there has been thermal slumping or subsidence, rehabilitation is very expensive and likely impossible.[427] We are concerned that BLM and FWS are relying on this ROP to achieve unproven results. The agencies should not rely on standards that are known to be unachievable and will thus require exemptions to the reclamation requirements.[428]

The ROP also states that the BLM authorized officer has the authority to grant exceptions to this requirement to satisfy unspecified "environmental or public purposes."[429] The agencies should remove the provision that allows BLM to grant exceptions to these reclamation requirements. The circumstances under which BLM could potentially waive this requirement remain unclear in the draft SEIS and appear to completely negate the meaningfulness of any reclamation requirements. Regardless, there is no circumstance under which BLM should be able to grant exceptions to these reclamation requirements.

BLM should also include clear standards that companies will need to meet to ensure areas are fully restored. The cursory statements BLM included in ROP 35 are unobtainable and too vague to give any indication of where and how areas will be restored, over what timeframe, and to what standards. It is also unclear what is meaningfully different in the requirements/standards presented in the alternatives. For example for Alternative C, the standard says that reclamation shall include "measures to control erosion, landslides, and water runoff."[430] For Alternative D, the standard is that reclamation shall include "adequate and approved measures to control erosion, landslides, and water runoff."[431] But under both alternatives (as well as Alternative B) the reclamation plan would be approved by BLM to achieve reclamation goals.[432] Additionally, under Alternative B, the standard is that the reclamation plan will "ensure eventual rehabilitation to the land's previous hydrological, vegetation, and habitat functions."[433] For both Alternatives C and D, the ROP explains that the plan will "ensure eventual habitat restoration to the land's previous hydrological, vegetation, and habitat condition, wild and scenic river (WSR) eligibility/suitability, and intent to retore general wilderness characteristics of the area."[434] But given that the objective of ROP 35 overall is to ensure "reclamation of land to its previous

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[425] BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 16–17 (2017), https://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final.pdf.

[426] *Id.* at 17.

[427] *Id.*

[428] If BLM and FWS retain this ROP, the agencies need to also to account for and provide a long-term plan that addresses where the removed gravel would be placed after field closure, particularly in light of concerns about contamination.

[429] DSEIS at 2-68.

[430] DSEIS at 2-68.

[431] *Id.*

[432] *Id.*

[433] *Id.*

[434] *Id.*

condition and use," it's unclear why, if land previously had wilderness characteristics, that would be a reclamation standard for Alternative B, or how it's not included in the standards set forth in terms of the lands' previous functions. It's also not clear why "reclaimed" and "reclamation" is used for the standard in Alternative B but "restored" and "restoration" is used for Alternatives C and D. If the agencies mean to achieve something different between the alternatives, it is not readily apparent. In the final SEIS, the standards need to be specific, and any differences between the ROP by alternative better explained.

Additionally, to justify relying on reclamation as lessening environmental impacts in a NEPA document, BLM needs to incorporate standards into the lease terms to ensure there are clear, achievable obligations for companies to undertake restoration of any impacted areas. BLM and FWS should incorporate far more detailed criteria related to restoration standards, including information on the timing of implementation, monitoring methods that will be used to determine success, how any contamination issues will need to be addressed, how companies will restore adjacent areas that have been impacted by dust or other contaminants, and more. Without additional specifics, and particularly in light of the fact that reclamation is unproven in the Arctic for gravel infrastructure, it is unlikely that areas will ever be restored to a level that returns them to anything close to their original condition or functions, or that ensures companies will actually be required to meet any objective, clear standards.

Finally, given the high cost of tundra rehabilitation, there are substantial concerns related to whether adequate funds will be available to undertake reclamation, particularly given the potential for companies to transfer ownership over time. In addition to incorporating more stringent standards and clear obligations for reclamation in the leases, the agencies should include formal criteria governing the financial assurances necessary to ensure sufficient funding for restoration and reclamation in ROP 35, including by mandating bonding at the time it issues the leases to cover reclamation and abandonment. BLM should estimate actual, likely reclamation costs of reasonably foreseeable development projects and consider alternatives that impose corresponding bonding amounts. Additionally, BLM should require that bonds be adjusted for inflation at regular intervals to ensure that they remain sufficient to cover any necessary reclamation activities after operations eventually conclude.

D. IMPACTS OF INFRASTRUCTURE ON PRIVATE CORPORATION LANDS AND NATIVE ALLOTMENTS.

Groups previously identified the need for BLM to explain its position on the legal status of ASRC subsurface lands, including the application of any protective provisions adopted in the Leasing Program, and to consider the impacts to the Coastal Plain of any oil and gas activities that may take place on private corporation lands.[435] BLM has still not adequately explained the legal status of these lands or analyzed impacts of oil and gas activities on ASRC lands. Without explanation, BLM stated in the final EIS in response to comments that the ASRC lands are now open to oil and gas exploration and development, but that the stipulations and ROPs do not apply

[435] 2021 Scoping Comments at 77; 2019 DEIS Comments at 306.

to these lands.[436] BLM and FWS appear to maintain this position.[437] If BLM and FWS's position is that these areas are now open to oil and gas, it must analyze the impacts of any activities on those lands to the Coastal Plain. Such activities are not speculative; KIC is seeking permits to conduct seismic on these lands. In the course of analyzing the impacts from activities on private corporation lands, the agencies must also be clear about what protections may or may not apply to those lands, including those in the 1983 Chandler Lake Agreement and any mitigation measures adopted under the Leasing Program that would apply under ANCSA 22(g), and explain thoroughly its reasoning. Additionally, as explained below, the draft SEIS must include an analysis of the impacts of development of oil and gas and support facilities on Corporation and private land. This area of analysis is still lacking in the draft SEIS.

VI. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON COASTAL PLAIN RESOURCES.

While the analysis in the draft SEIS is improved from the prior EIS, w we address distinct resources issues below to individually highlight areas that would benefit from additional analysis, as well as to identify additional stipulations and required operating procedures that should be considered and adopted to protect resources.

A. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON GREENHOUSE GAS POLLUTION AND CLIMATE CHANGE.

We appreciate that the draft SEIS includes an analysis of greenhouse gas (GHG) emissions that identifies substantial differences between the action alternatives. However, given the dire threat that climate change poses to the Coastal Plain, and the urgent need to reduce emissions, the final SEIS must provide additional information and analyses.

The draft SEIS discusses GHG emissions that would result from oil development and production stemming from leasing on the Coastal Plain under the action alternatives, along with climate impacts caused by GHG emissions. Throughout the draft SEIS, BLM and FWS acknowledge and describe harmful present and projected adverse effects of climate change in the Arctic — and on development projects themselves — in the program area. Comparisons of the action alternatives clearly show that GHG emissions under Alternative D are appreciably lower than under Alternatives B or C, though still considerable compared to the no-action alternative. The GHG emissions profile of the action alternatives supports choosing the alternative that would result in the lowest contribution to adverse climate change impacts.

While the draft SEIS's evaluation of GHG emissions and climate is helpful, we strongly recommend several changes to, and identify several issues with, the analysis. Our recommendations include: (1) acknowledging that climate change impacts to the Arctic are significant; (2) addressing analyses that show emissions from already leased reserves will exceed a 1.5°C temperature rise; (3) disclosing the production estimates used in the analyses of emissions and economic impacts; (4) conducting a sensitivity analysis that assumes necessary climate action; (5) fully addressing the impacts of black carbon that would result from oil

[436] FEIS App. S at S-539.
[437] DSEIS App. F at F-12.

development in the Arctic; (6) amending discussion of carbon sequestration in Alaska; and (7) requiring mitigation in the action alternatives of upstream, midstream, and downstream GHG emissions resulting from oil development and production.

1. *The SEIS should acknowledge explicitly that climate change impacts to the Arctic are significant.*

The draft SEIS discusses climate change and GHG emissions that would result from oil leasing in the Coastal Plain. It explains that climate change is causing and will continue to cause adverse effects globally, in the Arctic, and on the Coastal Plain, recognizing that climate science demonstrates the connection between anthropogenic GHG emissions and climate disruption. But nowhere does BLM and FWS simply acknowledge that climate change is causing *significant* effects in the Arctic. It is important for the final SEIS to state this explicitly and then, as discussed below, include measures in Alternative D to mitigate GHG emissions that would result from oil development and production and thus contribute to climate change.

DOI has acknowledged that climate change impacts are significant. Recently, it explained that "[c]limate change poses a *significant* global threat."[438] BLM has concluded that "the implications of climate change for marine mammals in the Arctic are *substantial*."[439] Federal agencies clearly acknowledge the significance of climate change impacts, including on the Arctic.[440] The draft SEIS itself implicitly acknowledges that climate change is significantly impacting the Arctic: "Considering all past, present, and reasonably foreseeable future actions, by far the most significant factor affecting Arctic marine mammals is ongoing climate change from GHG emissions and the resulting loss of sea ice habitat."[441]

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[438] Bureau of Ocean Energy Mgmt., 2024–2029 National Outer Continental Shelf Oil and Gas Leasing Program: Final Programmatic Environmental Impact Statement 26 (Sept. 2023) (emphasis added) [hereinafter OCS 2023 EIS], https://www.boem.gov/sites/default/files/documents/oil-gas-energy/leasing/2024-2029NatOCSOilGasLeasing_FinalPEISVol1_0.pdf

[439] Management and Protection of the National Petroleum Reserve in Alaska, 88 Fed. Reg. 62,025, 62,030 (Sept. 8, 2023) (emphasis added).

[440] *E.g.*, U.S. Envtl. Protection Agency, Methane and Black Carbon Impacts on the Arctic: Communicating the Science 2 (Jan. 19, 2016) [hereinafter Methane and Black Carbon], https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/arctic-methane-blackcarbon_communicating-the-science.pdf ("Climate change has distinct and *significant* impacts on the Arctic." (emphasis added)); U.S. Envtl. Protection Agency, *Climate Change Indicators: Permafrost*, https://www.epa.gov/climate-indicators/climate-change-indicators-permafrost (last visited October 7, 2023) (finding that warming of permafrost was "statistically significant" in several locations); Nat'l Oceanic and Atmospheric Admin., U.S. Dep't of Commerce, *Climate change impacts*, https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts (last visited October 7, 2023) ("Climate change will continue to have a *significant* impact on ecosystems and organisms, though they are not impacted equally. The Arctic is one of the ecosystems most vulnerable to the effects of climate change, as it is warming at least twice the rate of the global average and melting land ice sheets and glaciers contribute dramatically to sea level rise around the globe." (emphasis added)).

[441] DSEIS at 3-269 to 3-270.

Stating explicitly in the final SEIS the well understood reality that climate change is causing significant effects on the Arctic will support including robust mitigation measures, discussed below, to combat those impacts.

2. *The SEIS must evaluate the impacts of emissions under the reality that GHG emissions from already leased fossil fuel reserves are projected to exceed a 1.5°C temperature rise.*

Although the draft SEIS offers several comparisons to contextualize GHG emissions the Leasing Program would cause, it fails to accurately evaluate and disclose the impacts on achieving the steep emissions reductions necessary based on climate science.

The draft SEIS quantifies projected GHG emissions from Coastal Plain leasing and compares these emissions at the state, national, and global levels, and shows various emissions equivalences to help translate the quantity of emissions at stake. BLM and FWS also mention the U.S. target of reducing net GHG emissions by 50 to 52 percent below the 2005 level by 2030, comparing first year emissions and peak annual emissions to the 2030 target.

This analysis in the draft SEIS, however, insufficiently contextualizes projected leasing program GHG emissions and, ultimately, is misleading. The agencies must place emissions and climate damages "in the context of relevant climate action goals and commitments, . . . summarizing and citing to available scientific literature to help explain real world effects."[442] As such, BLM and FWS must discuss emissions in the context of research showing that already leased fossil fuel reserves are projected to exceed necessary climate targets.

Numerous recent analyses conclude that to meet either commonly cited emissions targets — such as the United States's commitment to achieving net zero GHG emissions by 2050 — or to keep global temperature increases below a 1.5°C threshold in order to avoid likely catastrophic climate damages,[443] including to the Coastal Plain, new fossil fuel infrastructure and development must immediately cease, while ongoing production must decrease at a consistent rate over the coming decades.[444] The draft SEIS should include research showing that the

[442] National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, 88 Fed. Reg. 1196, 1206 (Jan. 9, 2023).

[443] Intergovernmental Panel on Climate Change, Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (Oct. 6, 2018), http://www.ipcc.ch/report/sr15/.

[444] *See, e.g.*, Stéphanie Bouckaert et al., Net Zero by 2050: A Roadmap for the Global Energy Sector at 21, Int'l Energy Agency (Oct. 2021) (App. Ex. 18), https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf; Dan Welsby et al., *Unextractable fossil fuels in a 1.5 °C world*, 597 Nature 230, 234 (2021) (App. Ex. 16), https://www.nature.com/articles/s41586-021-03821-8; Oil Change International, *The Sky's Limit: Why the Paris Climate Goals Require a*

production horizons for already leased federal fossil fuel resources will exceed U.S. climate commitments if current emission levels continue. For example, federal crude oil already leased will continue producing for 34 years beyond the 1.5°C threshold and 19 years beyond the 2°C threshold, and federal natural gas already leased will continue producing 23 years beyond the 1.5°C threshold and 8 years beyond the 2°C threshold.[445] In 2017, the U.S. Global Change Research Program — comprised of the nation's top climate scientists — published a final report "designed to be an authoritative assessment of the science of climate change, with a focus on the United States, to serve as the foundation for efforts to assess climate-related risks and inform decision-making about responses."[446] The report's findings help demonstrate that expanded fossil fuel development would seriously hinder the United States's ability to meet climate commitments and avoid significant adverse effects on the Arctic.[447]

In light of this research, while the draft SEIS briefly mentioned the United States's near-term climate commitment, the comparison of first year emissions and peak annual emissions to the 2030 reductions target obscures the impact of production that would result from Coastal Plain leasing. As BLM and FWS explain, oil production would not begin in the program area until 2032, with peak emissions not starting until after 2050 and continuing for decades. The draft SEIS acknowledges the U.S. commitment to achieving net-zero emissions by 2050. But the discussion of GHG emissions in context of this commitment states merely that "fossil fuels are likely to continue to play a role in the U.S.'s energy portfolio" and that, under certain scenarios for achieving the goal, "oil and gas consumption would continue beyond 2050."[448] This cursory

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Managed Decline of Fossil Fuel Production (September 2016), http://priceofoil.org/2016/09/22/the-skys-limit-report/; Oil Change International, *Drilling Toward Disaster: Why U.S. Oil and Gas Expansion Is Incompatible with Climate Limits* (January 2019), available at: http://priceofoil.org/drilling-towards-disaster; M. Pathak et al., IPCC: *Climate Change 2022: Mitigation of Climate Change Technical Summary* at 90 (2022) (App. Ex. 17), https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_TechnicalSummary.pdf; Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2021: The Physical Science Basis: Summary for Policymakers* SPM-36 n.43 (Valérie Masson-Delmotte et al. eds., 2021) [hereinafter IPCC AR6] ("The term carbon budget refers to the maximum amount of cumulative net global anthropogenic CO_2 emissions that would result in limiting global warming to a given level with a given probability, taking into account the effect of other anthropogenic climate forcers. . . . The remaining carbon budget indicates how much CO_2 could still be emitted while keeping warming below a specific temperature level."). IPCC AR6 estimates the remaining carbon budget starting in 2020 for a 67% probability of limiting warming to 1.5°C at 400 $GtCO_2$, depending on variations in reductions of non-CO_2 emissions (such as methane). At the current emissions rate of 42 $GtCO_2$ per year, this carbon budget would be expended in less than ten years. *See* IPCC AR6 at SPM-38, Table SPM.2.

[445] Dustin Mulvaney, et al. Over-Leased: How Production Horizons of Already Leased Federal Fossil Fuels Outlast Global Carbon Budgets (2016), https://1bps6437gg8c169i0y1drtgz-wpengine.netdna-ssl.com/wp-content/uploads/wpallimport/files/archive/Over_Leased_Report_EcoShift.pdf.

[446] U.S. Global Change Research Program, Climate Science Special Report 1 (Nov. 4, 2017).

[447] *Id.* at 28–29, 31–32, 195, 307–08, 316–19.

[448] DSEIS App. R. at R-25.

analysis does not sufficiently explain how considerable emissions from Coastal Plain oil production continuing far beyond 2050 squares with scientific research showing the need for steep emissions reductions in the near-term and substantially deeper cuts by 2050. Comparing the peak emissions to the 2030 target without addressing the impacts on achieving net zero by 2050 is misleading and creates the impression that the magnitude of the harmful impacts of the action alternatives are less significant than they actually are.

BLM and FWS must include more in-depth analysis in the final SEIS and address the reality that decades of estimated peak emissions from production well beyond 2050 conflicts with achieving U.S. climate commitments.

3. *The agencies should disclose the production assumptions underlying their emissions analyses to avoid underestimating emissions and skewing the comparison of alternatives.*

The draft SEIS acknowledges that total production from the Leasing Program is estimated to range from 1.5 to 10 BBO under the action alternatives.[449] Yet, the estimates of annual emissions under each alternative are single values that appear to stem from an undisclosed production estimate rather than a range of values associated with a range of potential production. Based on the presented emissions estimates in the draft SEIS, the agencies appear to have used a production estimate for Alternative B that is very close to the low end of the stated range for anticipated production.[450] Problematically, the draft SEIS does not disclose the production estimates actually used in the emissions analysis, nor does it provide an explanation of the basis for using those estimates in the emissions analysis rather than providing a range of emissions based on the range for potential production under each alternative.[451] This omission is a failure to take a hard look at the impacts of the alternatives. It also potentially skews the comparison of alternatives by underestimating the potential emissions associated with the least constrained action alternative (Alternative B).

We urge BLM and FWS to correct this issue by disclosing the production assumptions underlying the emissions analyses for each alternative. If those production assumptions indeed underestimate or fail to consider the full range of emissions, BLM and FWS should analyze and disclose that full range based on the range of potential production under each alternative.

4. *The agencies should conduct a sensitivity analysis that assumes necessary climate action or at minimum a scenario assuming demand in-line with existing decarbonization pledges.*

BLM admits that there is uncertainty in its energy substitution modeling due to possible changes in laws, policies, and market dynamics based on lower fossil fuel demand. Nonetheless,

[449] DSEIS at 3-111.

[450] Multiplying the annual downstream emissions for Alternative B by an emission factor of 0.43 tCO2e/barrel of crude oil, we estimate that BLM assumed around 1.75 billion barrels of oil would be produced across the 69-year assumed lifespan of Alternative B.

[451] *See supra* Section V.A.

the draft SEIS assumes ongoing high demand for petroleum products and conducts no sensitivity analysis that assumes lower demand due to existing climate pledges, much less the amount of climate action that needs to happen for the United States to meet climate commitments. Given the need to rapidly transition away from fossil fuels for a chance to avoid global temperatures rising more than 1.5°C and to avoid the worst impacts of a changing climate, we urge BLM and FWS to simulate (or at least to qualitatively address) the expected prospects for drilling in the Coastal Plain under a scenario consistent with meeting climate targets, or, at minimum, a scenario assuming demand in-line with existing decarbonization pledges.

As the U.S. and the global economy transition to a low-emissions energy future, the demand for oil (especially from areas not yet leased that have a long lead time) are likely to decline considerably. Global demand for oil is around 100 million barrels/day. Climate scenarios compatible with keeping temperatures from rising more than 1.5°C or 2°C project that global oil demand will decline by between 40 to 70 million barrels/day by 2040 and decline between 60 to 90 million barrels/day by 2050.[452] Even scenarios that simply assume policies and technologies develop according to recent trends, and do not assume what is needed to avoid a 1.5°C or 2°C rise, still project that global oil demand will decline by between 10 to 40 million barrels/day by 2040 and by between 30 to 50 million barrels/day by 2050.[453] To put things in perspective, the unconstrained scenario projects that at its peak, a field in the Coastal Plain region could result in between 0.1 to 0.2 million barrels/day.[454] Global demand for oil will likely be reduced by much more than this high-end assumption of peak production from the Coastal Plain of 0.2 million barrels/day. BLM and FWS need to consider this in modeling. Moreover, analyzing lower production scenarios would reveal even more starkly that constructing infrastructure enabling

[452] Resources for the Future. 2023. Global Energy Outlook. https://www.rff.org/publications/reports/global-energy-outlook-2023/ [hereinafter, RFF 2023]. Scenarios compatible with keeping global temperatures from rising below 2C by 2100 is BP Accel and from rising below 1.5C include: BNEF NZS, BP Net Zero, Equinor Bridges, and IEA NZE. The Reference scenarios include: Exxon-Mobil, IEEJ Reference, and OPEC Reference. Figure 8. World Oil Demand shows the reference scenarios ranging from 100 to 110 mb/d, scenarios compatible with 2C reach 60 mb/d in 2040 and 40 mb/d in 2050. Scenarios compatible with 1C reach 50 to 40 mb/d in 2040 and 20 to 25 mb/d in 2050. (100-60=40 to 110-40=70 mb/d decline in 2040 and 100-40=60 to 110-20=90 mb/d decline in 2050).

[453] RFF 2023, Figure 8 shows that for evolving policy scenarios (including Equinor Walls, BP New Momentum, BNEF ETS, IEEJ Advanced Technology, and IEA APS) oil demand falls to between 90 and 70 mb/d in 2040 (10 to 40 mb/d below the reference scenarios in 2040) and falls to between 80 and around 58 mb/d in 2050 (for 20 to 52 mb/d below the reference scenarios in 2050).

[454] DSEIS App. B. at B-10. To be conservative, assuming that both anchor fields that BLM assumes would begin production before 2050 could come online and reach peak production at the same time means that peak production for the entire program area could result in around 0.2 mb/d. BLM states that it assumes two fields would come online by 2050 : "The assumption is that the second anchor field would be discovered and developed several years after the first anchor field and would have four smaller satellite fields that would be developed by 2050 and tie into its CPF." DSEIS at 3-422

extraction from undeveloped reserves in the Arctic will increase fiscal risk to firms in the long run as they fail to recover investments from stranded assets.

The agencies analysis in the draft SEIS in this regard stands in contrast to DOI's recent analysis for the National Outer Continental Shelf Oil and Gas Leasing Proposed Final Program (OCS Final Program). In the draft SEIS's substitution analysis, BLM assumes "that current regulations and consumption patterns will not change over the long term."[455] But in the OCS Final Program analysis, while likewise running scenarios based on 2023 AEO projections, DOI also recognizes that "meeting U.S. climate goals will require significant changes to national and worldwide economies beyond those projected by the 2023 AEO" and therefore conducted a "sensitivity analysis on the impacts of net-zero emissions pathways."[456]

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[455] DSEIS App. R at R-25.

[456] Bureau of Ocean Energy Mgmt., 2024–2029 National Outer Continental Shelf Oil and Gas Leasing Program: Proposed Final Program 5–17 (Sept. 2023); *id.* at 6 ("BOEM's analysis shows that, in a future where the U.S. makes significant progress towards its net- zero emissions goals, a reduction in reliance on OCS oil and gas production would occur. This reduction will result in greater energy substitution from renewable sources and a greater reduction in consumption than is currently projected using baseline data from the EIA."); Bureau of Ocean Energy Mgmt., Final Economic Analysis Methodology for the 2024–2029 National Outer Continental Shelf Oil and Gas Leasing Program 4-7 to 4-20 (Sept. 2023); OCS 2023 EIS at 34. In contrast, the draft SEIS admits of likely changes to energy demand patterns, but instead of conducting additional sensitivity analysis, merely states:

> The EnergySub modeling for the CPSEIS does not account for structural changes that would have to occur within energy markets to meet climate commitments and achieve net-zero emission goals. As the U.S. works towards achieving net-zero, energy production and consumption patterns will change. Energy markets may become increasingly electrified through greater deployment of renewable energy sources, enabling sectors that have historically been heavily reliant on fossil fuels to reduce their demand and consumption of carbon intensive energy sources. Technological innovation will also play a significant role in transforming how energy will be produced and consumed, though its implications for specific fuel sources and uses is not known at this time since many of the technologies have yet to be developed or economically scaled for widespread adoption.
>
> Even in a low carbon future, fossil fuels are likely to continue to play a role in the U.S.'s energy portfolio. Princeton's Net-Zero America Project has been developing pathways to achieve net-zero emissions by 2050 using existing technologies. Four of their five pathways projected that oil and gas consumption would continue beyond 2050, and that carbon capture and sequestration technology would play an important role in offsetting emissions. Under their fifth scenario, oil and gas are phased out by 2050 but oil continues to account for more than 20% of the energy fuel mix until the late 2030's (Larson et al. 2020). Researchers and industry experts are continuing to explore potential pathways for decarbonization and the role of fossil fuels and other energy sources in a low carbon economy is still uncertain.

Therefore, we strongly urge BLM and FWS to simulate (or at least qualitatively address) development in the Coastal Plain under a scenario that assumes global oil demand is consistent with meeting climate targets, such as net-zero pathways, or, at minimum, a reduced carbon-demand future. BLM and FWS should include the subsequent estimated economic impacts of development under this scenario as well in its economic impact analysis. We also recommend that the draft SEIS discuss the existing known barriers to development in the Arctic compared to elsewhere that, at the least, will extend the hypothetical development timeline.[457]

5. The agencies should fully address the impacts of black carbon that would result from oil development in the Arctic.

The draft SEIS briefly mentions that black carbon emissions can increase snow and ice melt, exacerbating climate change effects,[458] and that black carbon emissions are projected to be lower under Alternative D.[459] But the draft SEIS fails to discuss in greater depth what the additional warming impacts would be of black carbon emitted from sources in the Arctic. Nor does the draft SEIS explicitly acknowledge that black carbon has a greater impact when emitted in the Arctic than in warmer climates. We urge BLM and FWS to address these deficiencies in the final SEIS.

As the Environmental Protection Agency has explained:

> Black carbon emitted from higher-latitude sources near the Arctic is more likely to be transported to or within the region and then deposited on snow and ice. In addition, black carbon emitted from sources near or within the Arctic is often found at low altitudes in the atmosphere, where it exerts a stronger warming influence on surface temperatures than black carbon at higher altitudes. Therefore, black carbon emitted from near or within the Arctic exerts a stronger Arctic temperature response per metric ton of emissions than black carbon emitted from farther away.[460]

The SEIS should discuss the greater adverse impact on the Coastal Plain of black carbon emitted from oil development and production occurring in the Arctic itself. In contrast to the draft SEIS's cursory discussion of black carbon, the OCS Final Program documents address this issue directly. There, DOI explains that "black carbon emitted in the Arctic has a greater impact than black carbon emitted in warmer climates."[461] The SEIS should likewise reflect the latest scientific research on black carbon.

> Specific data on how the energy transition will affect demand for fossil fuels and alternative energy sources is not yet available.

DSEIS App. R. at R-25 to R-26.BLM should, as DOI has done in the OCS Final Program analysis, conduct a sensitivity analysis based on a lower-carbon future.

[457] *See infra* Section VI.V.3.

[458] DSEIS at 3-2 to 3-3.

[459] *Id.* at 3-11, 3-13, 3-14.

[460] Methane and Black Carbon at 12.

[461] OCS 2023 EIS at 27.

6. *The agencies should amend their discussion of carbon sequestration in Alaska to more accurately reflect the latest science.*

The draft SEIS asserts that sequestration of "GHGs from land use, land-use change, and forestry from lands in the state has been significantly higher than the state's total anthropogenic GHG emissions since 1990," citing Alaska Dep't of Envtl. Conservation Division of Air Quality, Alaska Greenhouse Gas Emissions Inventory: 1990-2020 (May 25, 2023) [hereinafter ADEC 2023], https://dec.alaska.gov/air/anpms/projects-reports/greenhouse-gas-inventory.[462] While this statement appears to be accurate based on ADEC 2023, it omits an important consideration. Future GHG emissions (especially CH_4), and therefore climate warming, are projected to have a profound impact on permafrost thaw. Some of the soil carbon in the arctic is 20,000 years old and represents massive stores of potential GHG emissions. ADEC 2023 admits of this uncertainty for future emissions in the Arctic, noting:

> These calculations do not include carbon flux from natural sources. Such sources include Permafrost Carbon Feedback (PCF), which is still being estimated and refined by government and academic research programs. Once a more accurate estimate of PCF is determined in terms of GHG tonnage per year, DEC will investigate using these calculations in the SIT to better estimate total statewide GHG emissions.[463]

Explaining this potential release of emissions from permafrost thaw aligns with the agencies' analysis in the draft SEIS. It describes how such thaw releases GHGs, including increased emissions of N_2O.[464] BLM explained this in even starker terms in the Willow Master Development Plan final SEIS: "Recent studies (Voigt, Marushchak et al. 2017) suggest that thawing permafrost could also lead to the release of significant amounts of N_2O, which is typically the third largest contributor to net radiative forcing by long-lived GHGs. Permafrost thaw releases nitrogen from the previously frozen soil, enabling chemical transformations by microbes from nitrogen to N_2O (Butterbach-Bahl, Baggs et al. 2013; Voigt, Marushchak et al. 2017)."[465] BLM and FWS should include this research in the final SEIS and connect these studies' conclusions to projections regarding the ratio of emissions to sequestration in Alaska.

If this issue goes unaddressed, the draft SEIS risks conveying the misleading conclusion that all future GHG emissions in Alaska will be offset by sequestration. We recommend that, in the SEIS, BLM and FWS address this uncertainty regarding the relationship between GHG emissions and sequestration in Alaska.

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[462] DSEIS at 3-7.
[463] ADEC 2023 at 63.
[464] DSEIS at 3-5.
[465] BLM, Willow Master Development Plan: Final Supplemental Environmental Impact Statement 37 (Jan. 2023).

7. The agencies should require mitigation of upstream, midstream, and downstream GHG emissions resulting from oil development and production.

The draft SEIS discusses various measures, including stipulations and required operating procedures, to mitigate adverse impacts to the Coastal Plain from oil development and production. However, the agencies provide no mitigation of GHG emissions that would stem from oil development and production (except for monitoring and reporting). It is critical for BLM and FWS to do so in the final SEIS.

BLM must analyze reasonable alternatives, "including those that would reduce GHG emissions relative to baseline conditions, and identify available mitigation measures to avoid, minimize, or compensate for climate effects."[466] Thus, in the SEIS, the agencies should analyze and require measures to mitigate GHG emissions that contribute to climate change impacts.

To address adverse impacts to the Coastal Plain from climate change and to meet U.S. climate commitments for GHG emissions reductions, including net-zero emissions by 2050, mitigation of GHG emissions stemming from onshore oil and gas development and production is necessary. As DOI recently recognized, there "is scientific consensus and confidence, as illustrated by a recent report from the . . . IPCC[] that avoiding the most severe climate impacts by limiting global warming to 1.5°C will require reducing global GHG emissions to net zero by 2050 . . . ."[467] In offshore oil and gas leasing, DOI has explained that, "[b]y 2050, with the net-zero emissions target, all GHG emissions would have to be offset by removal of an equal amount of GHGs from the atmosphere, including those resulting from any OCS development."[468]

Every ton of CO_2 adds to global warming. With every additional increment of global warming, changes in extremes become larger. And every additional 0.5°C of global warming causes clearly discernible increases in the intensity and frequency of hot extremes, heavy precipitation, and agricultural and ecological droughts.[469]

DOI has recently acknowledged the connection between reducing GHG emissions and avoiding the worst impacts of climate change, including in the Arctic. In the OCS 2023 EIS, the Bureau of Ocean Energy Management (BOEM) explained that "[w]ithout *significant reductions in GHG emissions*, extinctions and transformative impacts on some ecosystems cannot be avoided, with varying impacts on the economic, recreational, and subsistence activities they support."[470] Indeed, the draft SEIS itself acknowledges that "indirect GHG emissions [from Coastal Plain oil and gas development and production] would contribute to climate change and [cause] the types of impacts discussed in the *Affected Environment* unlike Alternative A that would not result in any of those impacts."[471]

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[466] 88 Fed. Reg. at 1200–02.
[467] OCS 2023 EIS at 26.
[468] *Id.* at 34.
[469] IPCC AR6 at SPM-19, SPM-37.
[470] OCS 2023 EIS at 25 (emphasis added) (citation omitted).
[471] DSEIS at 3-10.

In the Arctic specifically, for example, the "decreasing extent and duration of sea ice due to warming has dramatic consequences for Arctic species and subsistence communities that live and hunt on the sea ice," with the disappearance of sea ice "expected to continue."[472] This example shows that mitigating GHG emissions stemming from sources in the Arctic directly correlates to reducing adverse impacts to BLM-managed resources. Research demonstrates an "observed linear relationship" of about $3m^2$ of sea-ice loss per metric ton of CO_2 emissions.[473] As such, "any measure taken to mitigate CO_2 emissions will directly slow the ongoing loss of Arctic summer sea ice."[474] Even more recent scientific evidence shows that "[b]y quantifying the relationship between anthropogenic GHG emissions and polar bear recruitment, . . . sensitivities to cumulative anthropogenic emissions explain observed population trends, allow estimation of demographic impacts from new emissions sources, and enable [Endangered Species Act (]ESA[)] procedures to assess global warming impacts of proposed actions—along with impacts on the ground."[475] As detailed in the discussion of the impacts of the oil and gas program on polar bears, the SEIS should utilize these studies to evaluate, disclose, and contextualize the impacts. The SEIS should also provide measures to mitigate impacts such as these resulting from GHG emissions.[476]

Accordingly, we strongly urge BLM and FWS to discuss and require measures to mitigate GHG emissions and the resulting contribution to climate change impacts, including those that would "align BLM decision making with the goal of achieving net-zero emissions by 2050."[477] There are several mitigation measures the agencies could require under Alternative D. The standard oil and gas lease gives BLM the right to specify rates of development and production in the public interest. For many years, the agency has interpreted this authority to allow it to limit production to protect environmental or wildlife values.[478] BLM also has authority to require lessees to enter into unit agreements if necessary for proper development and operation of a field. Using these authorities, BLM could include a stipulation that a lease is subject to BLM's discretion to impose a rate of production in order to reduce GHG emissions stemming from production on drilling operations on the leasehold.

To avoid or delay GHG emissions, BLM should consider including a stipulation that specifies BLM reserves the discretion to delay permitting of development and production activities on a lease — and allow for lease suspension during the delay period — based on U.S. climate commitments. Additionally, as set forth in the Specialist Report, BLM has other mitigation tools it should consider, as a last resort, to offset GHG emissions. The agency could impose measures to require the leaseholder to sequester an amount of carbon equivalent to

[472] OCS 2023 EIS at 41, 74.

[473] Dirk Notz & Julienne Stroeve, Observed Arctic Sea-Ice Loss Directly Follows Anthropogenic CO2 Emission, 354 SCIENCE 747, 748 (Nov. 11, 2016).

[474] *Id.* at 750.

[475] Steven C. Amstrup and Cecilia M. Bitz, *Unlock the Endangered Species Act to address GHG emissions*, 381 Science 949, 949 (Aug. 31, 2023).

[476] *See infra* Section VI.K.2.f

[477] Bureau of Land Mngt., 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends 92 (2022) [hereinafter Specialist Report].

[478] *See National Wildlife Federation*, 169 IBLA 146, 164 (2006).

estimated upstream, midstream, and downstream GHG emissions by year from production. Such sequestration could be achieved, for example, by offsite commitments. Another measure BLM should consider is requiring compensatory mitigation in the form of monetary payments equivalent to the social cost of lifecycle greenhouse gas estimates for projected well production.[479]

We strongly urge BLM and FWS to impose one or more of these mitigation measures on leases in the SEIS, prioritizing those that would avoid GHG emissions stemming from oil development and production.

B. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON AIR QUALITY IS INADEQUATE.

BLM and FWS's air quality impacts analysis fails to identify and disclose reasonably foreseeable direct, indirect, and cumulative air quality impacts from all phases of oil and gas development on the Coastal Plain. A detailed technical review prepared by Megan Williams of key components of the draft SEIS air quality analysis, including preparation and application of the regional photochemical air quality modeling, application of the Willow Master Development Plan near-field modeling, and analysis of potentially significant air pollution impacts from flaring is attached to these comments. We fully incorporate that document by reference and include summary information from it throughout the text below.

An adequate NEPA analysis and compliance with the Clean Air Act requires BLM and FWS to quantitatively analyze the air pollution impacts associated with each alternative considered in the SEIS, ensure prevention of significant deterioration of air quality, fully analyze a suite of enforceable mitigation measures, and address impacts from greenhouse gas emissions. In order to adequately analyze these issues, BLM and FWS were required to perform a quantitative analysis of criteria pollutants for all alternatives but failed to do so.[480] Further exacerbating this issue, BLM and FWS's proposed mitigation measures in the draft SEIS are deficient.

1. The draft SEIS presents inadequate baseline information.

Baseline levels of air quality must be established prior to allowing development on the Coastal Plain. In the absence of a baseline monitoring data record that is representative of ambient air conditions on the Coastal Plain, BLM and FWS should ensure that quality-assured monitoring data are collected within the program area in accordance with EPA and State data quality criteria and that the data are made available to the public, prior to allowing oil and gas activities on the Coastal Plain. The draft SEIS explains that there is only one air quality monitoring station in the program area, in Kaktovik, which began collecting data in 2021, and that it therefore relied on that data, plus monitoring data from the Kaktovik, Point Thomson,

[479] Specialist Report at 91–95.

[480] *See* Williams Air Quality Comments, attached, secs. I & III (regional photochemical modeling does not reflect action alternatives and incorporation of Willow near-field modeling likely under-estimates impacts).

Nuiqsut, A-Pad, and CCP monitoring stations.[481] The A-Pad, Point Thompon, and CCP stations all appear to be located in industrialized areas on state lands.[482] BLM and FWS do not explain what the differences may be between background air quality within the project area and these other areas which are many miles away and not within a protected National Wildlife Refuge. These monitoring stations are also located near rural communities. BLM and FWS do not discuss how human-induced air pollutant emissions from industrial processes and mobile emissions may alter the air quality near these stations. This information is necessary to ground truth the agencies' assumptions that this background data is representative of air quality within the areas in which it is considering leasing. Establishment of a comprehensive monitoring network within the program area is necessary to serve as a backstop to track and ensure air quality protection throughout the Coastal Plain and to help identify areas of concern with regard to air impacts.

Beyond establishing baseline air quality monitoring data, BLM and FWS must also complete a more comprehensive, quantitative modeling analysis of future development in the final SEIS in order to prevent significant impacts throughout the Coastal Plain (as opposed to taking corrective action after a significant impact is identified by an air quality monitor). At a minimum, the agencies must commit to remedying the lack of representative baseline monitoring data and comprehensive, quantitative modeling prior to any project-level approvals. At a minimum, the agencies must commit to remedying the lack of representative baseline monitoring data and comprehensive, quantitative modeling prior to any project-level approvals.

2. BLM Failed to Model Impacts Among Alternatives

The draft SEIS is deficient because BLM and FWS failed to conduct the modeling necessary to adequately analyze air quality impacts, compare alternatives, and support conclusions about compliance with the Clean Air Act. The absence of modeling for each alternative deprives the public and decision makers from understanding and evaluating the potential tradeoffs and differences between alternatives. Air quality modeling is a necessary tool for assessing future air pollutant impacts under NEPA and supporting BLM's conclusion that oil and gas activities would be unlikely to exceed health-based National Ambient Air Quality Standards and thresholds set to protect against adverse impacts to air quality related values. A quantitative modeling assessment of the air quality impacts from each of the alternative development scenarios, based on modeling of emissions associated with the specific assumptions for the development alternatives — including the location and density of development — is needed to understand whether impacts would be greater under certain alternatives for some pollutants, in some locations. The draft SEIS demonstrates that emissions, as well as the location of these emissions, from these three alternatives differ.[483] Therefore, as Ms. Williams explains, the only way to accurately know the air quality impacts from the various alternatives would be for BLM to have modeled the emissions from the various development scenarios.[484] This should be rectified in the final SEIS.

[481] DSEIS at 3-17.
[482] DSEIS App. Q at Figure 2-1.
[483] DSEIS at 3-27 to 3-34.
[484] Williams Air Quality Comments, sec. I.

BLM and FWS are required to independently estimate the emissions inventory, model air pollution impacts associated with each of the action alternatives and compare these results to the baseline of Alternative A. But BLM and FWS only conducted a quantitative air quality impact analysis for Alternative B — the highest potential development scenario. No independent impact assessment was completed for Alternatives C or D, despite BLM and FWS providing a projected emissions inventory for these alternatives.[485] The agencies simply assume that because Alternatives C and D would offer less lands for leasing, there would be a corresponding reduction in impacts. But this fails to account for the possibility that more infrastructure and development could be concentrated in certain areas, and thus increase emissions and impacts in areas that are open for leasing, and potentially lead to exceedances of air quality standards. Moreover, the modeling results demonstrate that Alternative D is actually expected to have higher impacts than the draft SEIS's hypothetical "low" oil and gas development scenario.[486] This is confusing given that Alternative D purportedly presents the least amount of development. The agencies should closely review their modeling assumptions as part of completing modeling of all alternatives in the final SEIS.

Moreover, even with the deficiencies with the regional photochemical model identified above, the results show potentially significant visibility and nitrogen deposition impacts that the draft SEIS fails to analyze or mitigate. For instance, maximum modeled cumulative nitrogen deposition fluxes in both the high and low development scenarios fall within the critical load range for harmful ecosystem impacts.[487]

As explained further by Ms. Williams in her review and in her previous comments on BLM's near-field modeling analysis for the Willow project, which the agencies' incorporate in the draft SEIS, Willow's near-field modeled scenarios were flawed because, amond other deficiencies, they failed to account for concurrent construction, drilling, and well intervention activities on leases, and therefore may underestimate potential air quality impacts.[488] BLM and FWS acknowledge that activities that could be happening simultaneously in any peak year of construction and development but fail to fully analyze those emissions and their air quality impacts.[489] As such, those shortcomings should be addressed. Further, BLM should explain more generally how it determined that Willow is representative of future development on the Coastal Plain. It is notable that Willow is located adjacent to existing infrastructure and did not require the same extent of gravel roads and pipeline construction that Coastal Plain development would require in the future, such that emissions from future development on the Coastal Plain would likely be much higher. This is particularly problematic because Willow's modeling results appear to demonstrate that impacts are near the national ambient air quality standards (NAAQS)

[485] *See* DSEIS at 3-27 to 3-34.

[486] Williams Air Quality Comments, sec. I.

[487] Williams Air Quality Comments, sec. II.

[488] Williams Air Quality Comments, sec. III; Megan Williams, Air Quality Review of the BLM's June 2022 Willow Master Development Plan Draft Supplemental Environmental Impact Statement (Aug. 2022) [hereinafter Williams 2022 Willow DSEIS Review].

[489] DSEIS at 3-24 ("The emissions described above would occur in multiple locations in the Coastal Plain during overlapping time frames as additional fields are explored, developed, put into production, and subsequently abandoned and reclaimed.").

for short-term PM2.5 and NO2, and annual PM2.5.[490] Willow also posed particularly significant concerns with the amount of fugitive dust emissions from traffic throughout construction, drilling, and operations. The potential for Coastal Plain development to have significantly higher air quality impacts than Willow should be addressed in the final SEIS, and BLM should include a near-field modeling requirement in ROP 6 to ensure air quality impacts are quantitatively considered for all future development proposals.

3. The draft SEIS lacks adequate mitigation.

The draft SEIS identifies essentially the same mitigation measures presented in the Willow final SEIS. As a result, the agencies fail to analyze or condition leasing on a comprehensive set of required, measurable, and enforceable mitigations to ensure there will be no significant impacts to air quality associated with leasing and development.[491] Without such mitigation measures, it is unclear how BLM and FWS will ensure there will be no significant impacts to air quality — i.e., that oil and gas activities will not adversely impact human health and the natural environment and will not result in significant deterioration of air quality as required by the Clean Air Act. While the draft SEIS contains some proposed mitigation meant to address air quality, the measures largely mirror those from the prior EIS and do not go far enough.[492]

Required Operating Procedure (ROP) 6 includes eight elements intended to prevent unnecessary or undue degradation of the lands and protect health. At the outset, unnecessary and undue degradation is the appropriate standard for the Western Arctic Reserve, but the Refuge is subject to different standards and statutory mandates.[493] These highly protective management objectives must be considered and enforced via mitigation measures. These elements are largely discretionary and, therefore, do not assure measurable and enforceable impact avoidance or minimization. For most of the elements, BLM and FWS state that the authorized officer, "*may* require" the element, leaving it entirely to BLM's discretion. BLM must make all of these elements required by replacing "may require" with "shall require" or simply "requires."

Element "c" requires that, "[f]or an application to develop a potential substantial air pollutant emission source, the proponent shall prepare an emissions inventory that includes quantified emissions of regulated air pollutants from all direct and indirect sources related to the proposed project." BLM and FWS do not specify what level of emissions would trigger the requirement to develop such an emissions inventory — i.e., BLM does not define "substantial air pollutant emission source," thereby leaving this element sufficiently vague as to be unenforceable as a practical matter. This element, as written, appears to leave it up to BLM or the operator's discretion as to what constitutes a "substantial emissions source." BLM should define this term and clearly require publicly-available emissions inventories for all air pollutant emissions sources related to oil and gas activities. Similarly, element (c)(ii) allows BLM to

[490] Williams 2022 Willow DSEIS Review.

[491] *See* Megan Williams, Willow FSEIS Review of Certain Air Pollution Mitigation Measures (Mar. 2023).

[492] DSEIS at 3-24 to 3-25; 2019 DEIS Comment Letter at 147–50.

[493] *Supra* Section IV.C

require modeling of air quality impacts from a "potential substantial air pollution emissions source." Again, BLM and FWS do not specify what will trigger this element and do not provide assurance that any modeling required will be conducted following rigorous standards and practices. BLM and FWS should require comprehensive modeling of all proposed air pollution emissions sources following the latest guidelines on air quality modeling from EPA and considering representative background concentrations and cumulative impacts.

Regarding monitoring measures, element "b" states that BLM may require one year of baseline monitoring data if no representative data is available, and that if required, baseline ambient air monitoring data "must meet DEC and EPA air monitoring standards." Besides requiring such data be gathered, BLM should further outline and/or reference specific standards with regard to: (1) siting and design criteria; (2) monitoring methods; (3) quality assurance requirements; and (4) data reporting and certification requirements. Similarly, the life-of-project monitoring outlined in element "e" should be required to meet the same specific standards. In addition, BLM should clearly specify: the magnitude of the emissions; the distance to Class I and sensitive Class II areas, and to nonattainment and maintenance areas; and types of meteorological or geographic conditions that will trigger when monitoring will be required for the life of the project. BLM should also include a requirement to monitor during the life of the project in subsistence use areas that will be impacted by the proposed development.

Regarding additional emissions reductions measures, element (c)(iii) allows BLM to seek an emissions reduction plan and additional mitigation measures but does not specify what will trigger these elements and what the specific requirements are of the emissions reduction plan or additional mitigation measures and strategies. BLM should outline the specific objectives of these elements — e.g., what additional measures will be required, when measures will be required, and what level of emissions reductions will be required.

Regarding significant air quality impacts, element "f" allows the authorized officer to require "changes" to reduce emissions if ambient air monitoring indicates project-related emissions are causing or contributing to unnecessary or undue degradation, exceedances of NAAQS, or fail to protect human health. But BLM and FWS do not specify how it will know if project-related emissions are causing or contributing to these trigger events or define what it means to fail to protect health. BLM and FWS should require that any monitored exceedance of the NAAQS in the impacted area would immediately trigger an adaptive management plan requiring additional analysis and mitigation. And as discussed above, unnecessary or undue degradation is the incorrect standard.

BLM and FWS should include an additional ROP element requiring the development of an adaptive management plan to react to monitored exceedances of the NAAQS and that also includes a proactive commitment to periodically review and update the air quality modeling analysis. This is particularly necessary given that the current modelling and impact analysis is incomplete and likely underestimates impacts, while also showing potential to exceed the NAAQS, as described above and in Ms. Williams' comments. To accurately reflect changing conditions and improved estimation techniques, a commitment to reviewing and updating the modeling analysis every three years will allow BLM to periodically evaluate advances in

mitigation technologies and practices and incorporate best management practices and mitigations that are based on the latest science.

To the extent BLM considers adopting ROP 6(d) — "Air monitoring or air modeling reports will be provided to the BLM; federal land managers; federal, state, local community, or affected Tribal governments; and other interested parties, as appropriate," it should include specific timeframes and a process for enforcing this measure. BLM has in the past purported to require industry to "mitigate" air quality impacts by, for example, collecting air pollutant data in Nuiqsut and making the data available to the public, but the agency never actually followed through with this requirement.[494] BLM and FWS should also make it clear that all reports on air quality monitoring, all emissions inventories, and all modeling results shall be made available to the public and actively shared with the local communities and Tribes. This will help to ensure the needed transparency for the public to monitor any project progression and its actual emissions and associated ambient air quality impacts. These monitoring data can also be important in evaluating the performance of the modeling analysis that was used to assess air quality impacts and can be the basis for understanding and adjusting future modeling efforts going forward.

More fundamentally, any mitigation measures BLM and FWS adopt in a ROD must be enforceable and must be enforced. The enforceability of these ROP 6 elements would be bolstered by the addition of specific timelines for implementing required additional mitigation measures, emissions reductions, emissions reductions plans, and required reporting elements.

Further, mitigation should include restrictions on flaring. As Ms. Williams' comments address, the agencies' analysis of potentially significant air pollution impacts from flaring is deficient in a number of respects.[495] BLM and FWS should require documentation of any and all flaring episodes, as well as adequate public records of the amount of gas flared and the causes of flaring. BLM and FWS should also require lessees to notify local communities and Tribes when flaring occurs. These measures will provide opportunities to minimize flaring events. In addition, BLM should require detailed control techniques for flares to ensure optimal flare efficiency and performance. BLM should also require that flares be operated at all times in a manner consistent with good air pollution control practices for minimizing emissions, and that flares be monitored to ensure they are operated and maintained according to their design.[496]

Finally, BLM should require lessees to implement an enforceable fugitive dust control plan that reflects the assumptions for fugitive dust control used in the modeling for the draft SEIS. There are also a number of measures BLM should require to minimize NO_x, PM_{10}, hazardous air pollution (HAP), ozone, and greenhouse gas emissions, as described in the attached report.[497] In addition to mitigation, BLM should consider an alternative aimed at

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[494] *See* Bureau of Land Management Reply to FOIA# BLM-2021-006299 (Mar. 7, 2022).

[495] Williams Air Quality Comments, sec. IV.

[496] *See* EPA, Enforcement Alert, EPA Enforcement Targets Flaring Efficiency Violations at 2 (Aug. 2012), available at: https://www.epa.gov/sites/production/files/documents/flaringviolations.pdf; *see also* 40 C.F.R. § § 63.172(e), 60.482-10

[497] Williams 2022 Willow DSEIS Review.

minimizing air quality impacts, *e.g.*, one that would reduce criteria pollutants and greenhouse gas emissions. For example, as described above, BLM should consider an alternative that makes only 400,000 acres of lands available for oil and gas leasing, an alternative that would not allow any waivers, exceptions, or modifications to the lease stipulations and ROPs, or an alternative that sets emissions at net zero. Such alternatives would have a corresponding benefit to air quality which should be fully analyzed.

C. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SOUNDSCAPES.

As Groups highlighted at scoping, maintaining the natural soundscape of the Arctic Refuge is crucial to its wilderness, recreation, wildlife, and subsistence purposes, as is recognized in the CCP:

> Natural quiet and natural sounds are intrinsic elements of the Wilderness character of designated Wilderness and the wilderness characteristics of the entire Refuge. As such, their perpetuation is important for meeting the Refuge's purposes, goals, objectives, and special values. Human-caused sounds may mask or obscure natural sounds and disrupt wildlife behavior. They may interfere with locating prey or detecting predators, or with the complex communication systems many species have evolved to assist in mating or other behaviors. As well, human-caused sound interferes with the sense of solitude that is important to many visitors.[498]

As FWS recognizes in the CCP, preservation of natural soundscapes is an important component of achieving the Refuge's purposes of conserving wildlife, habitat, wilderness, and recreation. The agencies cannot ensure compliance with those Refuge purposes or with NEPA absent a robust evaluation of foreseeable noise impacts on the natural soundscape and on wildlife, wilderness, and recreation.[499]

Despite these obligations, the 2019 FEIS failed to provide any meaningful analysis of the foreseeable acoustic impacts of oil and gas development on the natural soundscape.[500] The draft SEIS has made minor improvements by including some additional information on acoustic impacts to wildlife and subsistence activities, including from aircraft and via sound propagation through water and ice, and by providing estimates of noise impacts by decibel level for certain types of oil and gas development activities from various distances.[501] Nevertheless, the draft SEIS analysis of acoustic impacts still suffers from a number of significant deficiencies.

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[498] CCP EIS at 4-43 to 4-44; *see also* CCP ROD at 11–12 ("The Refuge exemplifies the idea of wilderness embodying tangible and intangible values including natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and immersion in the natural world.").

[499] *See, e.g.*, *S. Utah Wilderness Alliance v. U.S. Dep't of Interior*, No. 2:13-cv-01060-EJF, 2016 U.S. Dist. LEXIS 140624, *20–*24 (Oct. 3, 2016); *Izaak Walton League of Am. v. Kimbell*, 516 F. Supp. 2d 982, 995–97 (D. Minn. 2007); BLM Manual 7300.06D.

[500] 2019 DEIS Comment Letter at 150–52.

[501] DSEIS at 3-39 to 3-42, Table 3-16 at 3-43.

First, the draft SEIS's discussion of the affected environment remains highly incomplete. Most significantly, the agencies include no meaningful information about the baseline acoustic environment of the Coastal Plain, instead relying on dated background acoustic monitoring from Point Thomson — an area outside the Refuge Coastal Plain that is affected by noise associated with nearby oil production and associated industrial sites. The failure to include Coastal Plain specific acoustic information is particularly disappointing given that the University of Alaska Fairbanks conducted four years of baseline acoustic monitoring in the Coastal Plain and elsewhere across the North Slope of Alaska.[502] This monitoring was funded by the National Science Foundation's Navigating the New Arctic program[503] and was coordinated with FWS Arctic Refuge staff. These data provide the best available information on background sound levels in the Coastal Plain, at least during the summer season. The agencies should include this data in the final SEIS and compare them with the data reported from Point Thomson to determine if reliance on Point Thomson data is supportable. In addition, the agencies should conduct their own baseline acoustic monitoring consistent with existing methodologies.[504] This would ensure that monitoring remains ongoing during implementation of any oil and gas leasing program that is established and impacts could be better understood over time.

The affected environment section also continues to suffer from an incomplete explanation of the impacts of non-natural noise on wildlife, wilderness, and recreation. The draft SEIS still fails to address best available science on how anthropogenic noise, including from oil and gas development, can impact species in ways crucial to survival and reproductive success.[505] For instance, it is notable that caribou can hear a wide range of types of human activity. This is acknowledged in the draft SEIS,[506] but additional sources should be added, such as a study finding that reindeer (the same species as caribou) can hear noise from powerlines.[507] Recent research has expanded the known range of caribou hearing beyond previous studies,[508] which could expand the potential for different types of disturbance. Those authors note that additional studies at lower frequencies, especially infrasonic, are needed. They also warn that some individuals may be more sensitive to noise than others, which could lead to broader implications for populations if leaders are disturbed during herd movements.[509] The relative scarcity of studies of auditory capacity and disturbance responses for caribou means additional precaution should be taken to avoid auditory disruption of caribou.

To help address the gap in knowledge and inform the effectiveness of noise mitigation efforts, a study of caribou auditory responses should be added to the requirements under the

[502] Personal communication from Dr. Todd Brinkman to Tim Fullman on 2023-09-21.
[503] *See* https://humanwildliferesearch.com/projects/#Soundscape. Accessed 2023-10-06.
[504] *E.g.*, Betchkal 2015; Stinchcomb 2017; Stinchcomb et al. 2020.
[505] *E.g.*, Larson et al. 2020; Keyel et al. 2017; Drolet et al. 2016; Shannon et al. 2016; Halas 2015; Francis and Blickley 2012; Barber et al. 2009; Wolfe et al. 2000; Maier et al. 1998; Bradshaw et al. 1997, 1998; Georgette and Loon 1988; Calef et al. 1976.
[506] DSEIS at 3-40.
[507] Flydal et al. 2003.
[508] Perra et al. 2022.
[509] *Id.*

Adaptive Management Plan described in Lease Stipulation 6 for Alternative D. Perra et al. describe an approach that could be taken where acoustic recorders are combined with GPS collars deployed on caribou to simultaneously record sound exposure and caribou behavioral responses.[510] A scientific study using such collars should be part of the Adaptive Management Plan, funded by the lessee and conducted by the agencies or an organization they hire, with review by independent scientists. This would add to the available scientific knowledge and would be important for better understanding impacts of any future development.

While the draft SEIS properly acknowledges Alaska Native communities' long-standing concerns regarding the effects of aircraft noise and activity on caribou and subsistence,[511] it still fails to address sound impacts on subsistence across all phases of development, including, for instance, impacts of activities such as stick picking to clean up after winter exploration and construction, which often takes place during the sensitive summer period and is helicopter supported. And while the draft SEIS acknowledges how low-flying aircraft noise can cause annoyance to humans,[512] it still fails to provide any meaningful discussion of acoustic impacts on recreationists who visit the Coastal Plain to escape non-natural noises. As Groups pointed out at scoping, studies have found that anthropogenic noise interferes with the quality of the visitor experience and even impacts the perceived visual and aesthetic qualities of the landscape.[513] Non-natural noise also degrades wilderness characteristics, including apparent naturalness and opportunities for solitude.[514]

Second, the agencies' impact analysis likewise remains deficient. Despite repeated requests from Groups, the draft SEIS does not utilize acoustic modeling to fully analyze the impacts of each alternative on the natural soundscape and various resources — including wildlife, wilderness, and recreation — that would be affected by anthropogenic noise associated with oil and gas development. The final SEIS should utilize existing data on background ambient noise levels to establish the necessary baseline, as described above, and then conduct a proper noise impact study, including acoustic modeling of development scenarios under each alternative. Various models and methodologies that constitute the best available scientific information are available for purposes of conducting soundscape modeling.[515] Based on the results of the modeling, the agencies can then utilize acoustic ecologists and wildlife biologists to fully assess the reasonably foreseeable direct, indirect, and cumulative impacts of increased anthropogenic noise on various wildlife species. The agencies must also use the results of the modeling to fully analyze the reasonably foreseeable acoustic impacts on the Refuge's wilderness resources, the Mollie Beattie Wilderness, and on recreationists' experiences. Based on this analysis, the agencies must consider and fully analyze all options for avoiding, minimizing, and mitigating adverse impacts to natural soundscapes to ensure compliance with Refuge purposes. At a minimum, the agencies should require in a stipulation or ROP adopted as

[510] *Id.*
[511] DSEIS at 3-40.
[512] *Id.*
[513] *E.g.*, Mace 1999.
[514] *See* 16 U.S.C. § 1131(c).
[515] *E.g.,* Keyel et al. 2017; Keyel et al. 2018.

part of the oil and gas leasing program this type of baseline monitoring, modeling, and analysis prior to any project-level approvals.

The draft SEIS impacts analysis also fails to meaningfully apply the estimated noise levels for project equipment included in Table 3-16. While it discusses in a highly qualitative comparison across alternatives potential types and extent of noise by decibel level, the draft SEIS makes no effort to articulate what those noise levels may mean for different wildlife species, subsistence activities, or recreation activities in different locations. For instance, the agencies can and should — even absent acoustic modeling — address how anticipated noise levels from activities like summertime gravel mining across different alternatives may impact priority recreation and subsistence areas identified in the draft SEIS. The final SEIS impact analysis should also make clear that anticipated sound levels in Table 3-16 greatly exceed ambient noise levels and may extend significant distances, impacting much of the Coastal Plain and transcending into the Mollie Beattie Wilderness.

Finally, the draft SEIS fails to include adequate stipulations and required operating procedures to ensure protection of the natural soundscape and compliance with Refuge purposes that depend on maintenance of that soundscape. For instance, Stipulation 10 may buffer to a certain extent noise impacts within and immediately adjacent to the Mollie Beattie Wilderness. However, the distance of this buffer (3 miles) is far shorter than the distances listed in Table 3-16 required for oil and gas-related sounds to dissipate to ambient levels, indicating the insufficiency of Stipulation 10 to protect the Wilderness soundscape. Furthermore, this stipulation would do nothing to address the adverse acoustic impacts on the wilderness values of the Coastal Plain itself. Alternative D's ROP 34 provides a starting point for mitigating noise and other impacts from low-flying aircraft on wildlife, subsistence activities, local communities, and recreationists. These mitigation measures must be strengthened and adopted in the final SEIS and Record of Decision.[516] For instance, vague language such as that in ROP 34 requirement/standard c. to keep "to a minimum" use of aircraft near known subsistence camps and cabins, during sensitive subsistence periods, or when recreationists are present should be clarified and strengthened to require complete avoidance of those areas as the default expectation. The final SEIS should also require acoustic monitoring, modeling, and noise mitigation planning prior to project-level approvals. This requirement should include, but not be limited to, the recommendation above to add to Alternative D's Stipulation 6 a requirement to study caribou auditory responses as a component of the Adaptive Management Plan.

D. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SOILS, PERMAFROST, TUNDRA, AND VEGETATION.

1. The Agencies Do Not Adequately Analyze the Impacts of the Oil and Gas Program on Soils and Permafrost.

BLM and FWS's discussion of the impacts to soils and permafrost in the draft SEIS is still very short and does not provide the public the ability to understand the wide range of impacts likely to occur to these resources from oil- and gas-related activities on the Coastal

[516] *See also infra* Section VI.I.4 for additional recommendations.

Plain. It also provides no indication that BLM and FWS took a hard look at the potential direct, indirect, and cumulative impacts of the oil and gas program, as required by NEPA. For example, the draft SEIS does not adequately quantify the total number of acres that could be impacted due to the placement of gravel fills and VSMs for roads, pads, airstrips, and structures. BLM and FWS estimate that, under all the action alternatives, there will different levels of disturbances from gravel fill.[517] However, the analysis does not quantify the potential indirect impacts to soils and permafrost, which could extend well beyond the actual footprint of the gravel and could persist for decades or forever.[518] Oil development impacts are not limited to the area where drill pad gravel or support beams touch the ground. Gravel roads cause permanent hydrological and surface morphological changes to the landscape, altering permafrost freeze-and-thaw cycles and creating issues related to thermokarst. These effects can include deeper permafrost thaw, earlier snowmelt in close proximity to the road, and alterations to hydrology.[519] Gravel roads and related traffic on roads can also lead to issues with dust, salts, and contaminants being deposited into streams and ponds or onto nearby tundra, where it can smoother or alter the mix of vegetation. The road dust can smother vegetation, reducing transpiration, and decreasing albedo, leading to a warming effect that can increase the depth of thaw in the summer.[520] This can lead to changes in geomorphology, where ice wedges melt around flat or high-centered polygons and can become degraded polygons. BLM and FWS also do not adequately consider the potential impacts that could occur from infrastructure, such as pipelines, that may not directly touch the ground, but could still shade areas and potentially lead to changes in vegetation and permafrost. There could also be warming that occurs around the base of the vertical support members (VSMs), which can impact the soils and permafrost and threaten the integrity of infrastructure over time (e.g., sags in pipelines, which can lead to spills). Changes in soil hydrology may also influence the fire regime within the Coastal Plain. The analysis fails to take into account the full range of significant impacts that will substantially increase the damage to tundra and other resources in a way that extends well beyond the direct acres disturbed.

[517] DSEIS at ES-4.

[518] Nat'l Res. Council of the National Academies, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope 156 (2003) [NRC Report].

[519] *See, e.g.*, Walker, D. A., M. Kanevskiy, Y. L. Shur, M. K. Raynolds, J. L. Peirce, M. Buchhorn, K. Ermokhina, and L. A. Druckenmiller. 2018. 2016 ArcSEES Data Report: Snow, thaw, temperature, and permafrost borehole data from the Colleen and Airport sites, Prudhoe Bay, and photos of Quintillion fiber optic cable impacts, North Slope, Alaska. Alaska Geobotany Center Data Report AGC18-01, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska, USA; Raynolds, M.K., Walker, D.A., Kofinas, G.P., & Ambrosius, K.J. (2012). Sixty years of landscape change within an arctic oilfield, Prudhoe Bay, Alaska. In A. Colpaert, T. Kumpula, & L. Mononen (Eds.), *12th International Circumpolar Remote Sensing Symposium* (pp. 73-74). Levi, Finland; BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 16–17 (2017), https://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final.pdf.

[520] *See, e.g.*, D.A. Walker & K.R. Everett, *Road Dust and Its Environmental Impact on Alaskan Taiga and Tundra*, 19(4) ARCTIC & ALPINE RESEARCH 479 (2018).

One specific area where BLM and FWS have still underestimated impacts is with regard to dust. The draft SEIS estimates that fugitive dust, surface water accumulation, and rising air temperatures may affect soils and vegetation up to 200 meters from roads and pads.[521] While this is an improvement from what was considered in the prior EIS and is closer to reflecting what has been observed along the Dalton Highway,[522] these impacts are still likely to occur across a much broader area. One study from the Russian Arctic found that a more appropriate buffer is 3,280 feet, given the potential zone of impacts from windblown dust.[523]

BLM and FWS repeatedly refer to other documents to provide the analysis required in the draft SEIS. For example, the draft SEIS refers to the Reserve's Greater Mooses Tooth 2 development's analysis as containing a "fuller" discussion of how climate change is impacting soils and permafrost.[524] The text of the draft SEIS contains only very high level statements that climate change could influence the rate or degree of impacts.[525] This is not an adequate analysis of the likely impacts that could occur and merely pointing to the Greater Mooses Tooth 2 analysis is insufficient. The soil and permafrost regime in the Coastal Plain is very different than in the Western Arctic, as explained below. BLM and FWS need to discuss the likely changes to surface topography, increased water accumulation, changed drainage patterns (including sudden drainage events), and increased potential for soil erosion and sedimentation that are likely to occur on the Coastal Plain in ways that are unique from the NPRA. In the Refuge's Coastal Plain, many of these phenomena have already been greatly accelerated by climate change in the past 30 years.[526] The draft SEIS also cites, without informatively explaining or summarizing, the environmental analysis for the Nanushuk project, which is on state lands immediately adjacent to the Reserve; the draft SEIS relies on the Nanushuk decision to support the statements about changes to snow conditions that can occur from infrastructure, reclamation impacts, the potential for accelerated permafrost thaw, and for the proposition that placement of fill will cover soils and kill existing vegetation, which in turn alters the thermal active layer.[527]

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[521] DSEIS at 3-82.

[522] Myers-Smith, I. H., B. K. Arnesen, R. M. Thompson, and F. S. Chapin III. 2006. Cumulative Impacts on Alaskan Arctic Tundra of a Quarter Century of Road Dust. Ecoscience 13:503-510.

[523] Kumpula, T., A. Pajunen, E. Kaarlejärvi, B. C. Forbes, and F. Stammler. 2011. Land Use and Land Cover Change in Arctic Russia: Ecological and Social Implications of Industrial Development. Global Environmental Change 21:550-562.

[524] DSEIS at 3-79.

[525] *Id.* at 3-80.

[526] D.A. "SKIP" WALKER ET AL., LIKELY IMPACTS OF PROPOSED 3D-SEIMSIC SURVEYS TO THE TERRAIN, PERMAFROST, HYDROLOGY, AND VEGETATION IN THE 1002 AREA, ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA 27–28 (2019) [hereinafter Seismic White Paper].

[527] DSEIS at 3-80 to -81; *see also id.* at 3-79 ("Changes in the landforms due to erosion and thermokarst, such as slumping and channelization, affects the vegetation and water characteristics of the area (USFWS 2015a)."); *cf.* Seismic White Paper at 25 ("[G]round compaction by seismic vehicles, combined with the projected increases in temperatures and precipitation for the region, increase the risks for long-term hydrological impacts and widespread destabilization of ice-rich permafrost terrain.").

The agencies' incorporation of these unrelated decision documents by reference misses the mark for multiple reasons. First, BLM and FWS failed to provide adequate citations or explanations about the content and nature of those documents.[528] Without that information, the public cannot determine which sections the agencies are referring to or understand how the analyses in those documents may or may not apply to the Coastal Plain.

Second, BLM and FWS generalized the analysis in a way that assumes all permafrost and soil conditions across the entire North Slope are homogenous, and failed to look at the conditions and concerns specific to the Coastal Plain. The terrain, permafrost, hydrology, and snow conditions on the Coastal Plain differ greatly from those found further to the west in areas like the Reserve and the Nanushuk project. The Coastal Plain is primarily dominated by foothills (45%), hilly coastal plain (22%), and river floodplains and deltas (25%), with a small portion that is part of the Sadlerochit Mountains (0.03%).[529] Flat thaw-lake plains, which are typical in the northern portion of the Reserve and Prudhoe Bay area, make up only 3% of the Arctic Refuge's Coastal Plain.[530] These differences lead to there being broad floodplains and deltas in some areas and deep ravines and gullies in other areas of the Coastal Plain, which in turn has the potential to impact snow distribution, hydrology, permafrost, and vegetation in the region[531] — all in ways that are different from what occurs further to the west in areas like the Reserve. The Coastal Plain also has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.[532] This in turn could lead to very different impacts from those that have occurred further to the west, where there is comparatively greater snow cover to mitigate against impacts from activities like seismic exploration.

Similarly, BLM and FWS assume that information about recovery from past impacts is a reliable guide for the future. In reality, however, "effects of climate fluctuation further complicate the evaluation of the effects of seismic exploration."[533] This compounding effect will likely only grow more pronounced as climate change works ever greater impacts on the Coastal Plain.[534] Thus, even where retrospective study of development impacts and recovery times is done in similar geophysical conditions, it is likely that in the future those impacts and recovery times will increase.

The analysis also fails to account for the unique permafrost conditions on the Coastal Plain and how impacts might substantially differ from those in areas to the west. For example, extremely ice-rich silt deposits called yedoma are abundant in a broad band across the western

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[528] *See* 40 C.F.R. § 1502.21.
[529] Seismic White Paper at 15.
[530] *Id.*
[531] *Id.*
[532] *Id.* at 7, 21–22.
[533] *Id.* at 31.
[534] Wang, K., Jafarov, E., Overeem, I., Romanovsky, V., Schaefer, K., Clow, G., Urban, F., Cable, W., Piper, M., Schwalm, C., Zhang, T., Kholodov, A., Sousanes, P., Loso, M., and Hill, K.: A synthesis dataset of permafrost-affected soil thermal conditions for Alaska, USA, Earth Syst. Sci. Data, 10, 2311-2328, https://doi.org/10.5194/essd-10-2311-2018, 2018.

half of the Coastal Plain.[535] These deposits can be more than 40 meters thick and, if they were to thaw completely, could result in thaw settlement at levels of 10–20 meters of more.[536] The impacts of exploration and development on yedoma and other ice-rich soil features on the Coastal Plain could lead to thermokarst formation and thermal erosion, followed by subsidence, ponding, and new surface drainage patterns that threaten extensive ecosystem changes and dangers to infrastructure, and could be difficult or impossible to mitigate.[537] Simply referencing analyses of other, different Arctic landscapes and referencing that they are present on the Coastal Plain — without more — does not constitute an assessment of potential impacts to and mitigation measures for the unique distribution and characteristics of these and other soil structures in the Coastal Plain. Despite all of these differences between the Coastal Plain and areas further to the west, the analysis fails to account for the unique ways in which impacts and degradation to soil and permafrost resources might occur on the Coastal Plain.

BLM and FWS also need to better account for the impacts from seismic exploration to soil resources and permafrost on the Coastal Plain in the final SEIS. It is particularly important that the agencies address the undulating terrain of the Coastal Plain. Slope transitions are one of the places where seismic equipment is likely to cause damage to the vegetation and permafrost. The agencies need to account for these terrain and other differences in analyzing the potential impacts.

The discussion of the impacts to the Coastal Plain that occurred from the seismic program in the 1980s still does not accurately explain those impacts to the soil and permafrost resources. The draft SEIS notes briefly in the cumulative impacts section that previous seismic exploration and an exploratory test well disturbed the surface vegetation and impacted the thaw of permafrost, changed drainage patterns, and changed vegetation growth for over 25 years after disturbance.[538] In the prior draft EIS, BLM acknowledged that, while improvements have been made to avoid impacts on the ground surface, future seismic surveys may have similar impacts.[539] BLM and FWS omitted that acknowledgement now and assert, without a basis, that newer technologies should lead to reduced impacts.[540] This does not provide any indication that the agencies have fully analyzed the potential cumulative impacts from seismic surveys, as evidenced by the fact that the draft SEIS does not even account for recent seismic proposals that have been before the agency.[541] The note that technologies have improved also ignores the reality of recent exploration proposals and is not supported. SAE's seismic exploration proposal involved much of the same equipment that caused significant impacts in the 1980s, but its proposal was substantially more intense than that conducted in the 1980s.[542] That means that

[535] Seismic White Paper at 26.
[536] *Id.*
[537] *Id.* at 23–26.
[538] DSEIS at 3-82.
[539] *Id.* at 3-48.
[540] *Id.* at 3-82.
[541] *See supra* Section IV.B.7.
[542] Seismic White Paper at 29.

modern 3D seismic exploration is likely to lead to even more extensive damage on the Coastal Plain, especially when accounting for climate change — not less, as asserted in the draft SEIS.[543]

The discussion of the different impacts that are likely to occur under each alternative does not adequately distinguish what the differences will be between the various alternatives. The draft SEIS points to its overall assumption that there are likely to be different footprints for development under the different alternatives and points to different levels of road and gravel mine disturbance.[544] This does not adequately account for the differences in permafrost and soil resources across the Coastal Plain[545] and how impacts across the Coastal Plain might have different impacts than might occur under a scenario that limits development activity to certain areas in the Refuge. It also does not acknowledge or account for the fact that the draft SEIS allows for waivers of the limitations on surface occupancy, which could further compound impacts. The final SEIS should fully describe and account for the potential differences in impacts for each of the alternatives.

BLM and FWS also did not adequately assess the cumulative effects from the oil and gas program. The entire purpose of a cumulative effects analysis is for the agency to take a close look at the ways in which effects could combine and result in environmental degradation that could compound over time.[546] The draft SEIS only touches on a handful of points in the cumulative effects section for soils and permafrost: that previous seismic surveys caused long-term damage to soils and permafrost and future surveys may have impacts; that there could be changes to soil composition, drainage patterns, erosion, and thermal regimes; and that climate change could influence the rate or degree of cumulative impacts.[547] While BLM and FWS recognize these impact categories, it does nothing to quantify or otherwise analyze them and disclose to the public and decision makers how they are likely to affect the Coastal Plain. The agency also does not discuss how past, present, or future actions could combine to exacerbate and magnify impacts, which is the core of a cumulative impacts analysis. The current discussion is not an adequate analysis of the potential cumulative effects. The draft SEIS mentions seismic surveys and the acreage directly occupied by surface facilities, but does not account for other impacts, such as those from exploratory drilling and ice roads, or other off-road travel that could occur in the program area. The discussion also does not account for cumulative impacts to soils

[543] *See, e.g.*, Seismic White Paper at 10–11, 28–29.

[544] DSEIS at 3-81 to 3-82.

[545] DSEIS maps 3-10, 3-11.

[546] 40 C.F.R. § 1508.7 (indicating a cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions"); *see also* Vargas-Moreno, J.C., B. Fradkin, S. Emperador, O. Lee, (eds). 2016. Project Summary: Prioritizing Science Needs Through Participatory Scenarios for Energy and Resource Development on the North Slope and Adjacent Seas. GeoAdaptive, LLC, Boston, Massachusetts, *available at* http://catalog.northslopescience.org/catalog/entries/8302-nssi-scenarios-final-reports-prioritizing-sc.

[547] DSEIS at 3-82 to 3-83.

and vegetation that could occur from contamination issues — a serious omission given the long history of oil spills from North Slope oil drilling and transportation operations.

BLM and FWS also failed to adequately account for changes to surface hydrology and drainage patterns associated with changes in vegetation and soil resources, as well as from water impoundment. Any time water collects, there is greater heat transfer to the adjacent soil. Once water channels or ponding are changed or increased, there is a positive feedback cycle of warming and acceleration of thaw. Changes to surface hydrology drainage patterns can lead to increased thermo-erosion and thermokarsting. Elsewhere in the draft SEIS, BLM and FWS state that "[p]otential disturbance of the vegetation or water and wide erosion could initiate thawing of the upper ice-rich zones and trigger the development of thaw-lakes."[548] The agencies need to better analyze the development of thaw-lakes, thermo-erosion channels, and thermokarst features in the soils and permafrost section.

The agencies limit their analysis of cumulative impacts to the program area, contrary to NEPA.[549] BLM and FWS should not limit the geographic area for their analysis in that way; the agencies should consider broader impacts and degradation of permafrost and soil resources across the North Slope and northwest Canada. This should include an analysis of not only oil and gas impacts, but also other infrastructure that could further degrade oil and permafrost resources. BLM and FWS should also consider other nearby seismic activities, such as those conducted by SAE in previous winters on state lands immediately adjacent to the Refuge and any activities that may be proposed on private lands within the boundaries of the Refuge.[550] The potential cumulative effects to soils and permafrost have the potential to extend well beyond the limited footprint of the program area.[551] This is particularly important given the potential for climate change to further accelerate and exacerbate the significant impacts to permafrost across all of the Arctic.

The proposed mitigation measures in the required operating procedures and lease stipulations are still insufficient to address impacts to permafrost and soils. Outside of the very limited provisions that relate to off-road travel, it is unclear what measures the agencies will implement to prevent or mitigate against the full range of potential impacts to soil and permafrost resources. The significance and meaning of the changes to ROP 11 in the SEIS with regard to ground operations need to be better explained. ROP 11a for Alternative B indicates

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[548] DSEIS at 3-96.

[549] DSEIS App. F at F-19.

[550] *See, e.g.*, Alaska Dep't of Nat. Res., MLUP NS 18-004 SAExploration, Inc. Staines 3D Geophysical Exploration Permit Approval (2018), http://dog.dnr.alaska.gov/Documents/Permitting/NorthSlope/OperationPlans/2019/2018-12-31_Decision_MLUPNS_18-004_Approved.pdf; Henry Fountain, *See the Scars that Oil Exploration Cut Across Alaska's Wilderness*, N.Y. Times, Aug. 3, 2018, https://www.nytimes.com/2018/08/03/climate/alaska-anwr-seismic-testing-tracks.html (showing impacts from SAE's exploration activities just outside the Refuge last winter).

[551] *See, e.g.*, Raynolds, Martha K. et al., *Cumulative Geoecological Effects of 62 Years of Infrastructure and Climate Change in Ice-Rich Permafrost Landscapes, Prudhoe Bay Oilfield, Alaska*, GLOBAL CHANGE BIOLOGY (2014).

ground operations would be allowed when soil temperatures at 12 inches below the tundra surface reach 23 degrees Fahrenheit and snow depths are an average of 9 inches or 3 inches over the highest tussocks.[552] Alternative C now indicates ground operations will be allowed when soil temperatures at 12 inches below the tundra surface reach 23 degrees Fahrenheit and "snow depth and density amounts to no less than a snow water equivalent of 3 inches over the highest tussocks."[553] Alternative D provides that ground operations ground operations will be allowed when soil temperatures at 12 inches below the tundra surface reach 23 degrees Fahrenheit and there is "3 inches measured snow water equivalent."[554] But there is no explanation for why there are these subtle differences between the alternatives, what those differences might mean, or any analysis of the effectiveness of such measures.

It is also unclear how BLM and FWS anticipate calculating when the snow water equivalent is met and over what area they anticipate making such a determination. Table 3-27 appears to rely on a weighted average snow depth in examining the snow depth in different parts of the Coastal Plain. However, relying on average snow depth could lead to serious problems. There are significant variations in snow coverage on the Coastal Plain — and therefore a high likelihood that the depth might not be sufficient to prevent damage. The strong winds, varied topography, and variable snow depths on the Coastal Plain are likely to make it difficult to find routes with consistent or adequate snow cover to prevent impacts from activities like seismic exploration. Assuming those parameters are adequate to prevent any possibly significant harm, they cannot do that if only an *average* snow depth is used to determine when ground operations will be allowed. "Generally, low amounts of winter snowfall, strong winter winds, and the hilly terrain in the 1002 Area combine to create substantial areas of very thin and unpredictable snow."[555] Thus, even when snow depth was at its greatest recorded extent, in 2018, "vast areas of [the Coastal Plain] were snow free."[556] Nor does ROP 11 even explain how and where these measurements will be taken, and how often. Snow coverage can change throughout the season, even overnight. BLM and FWS need to explain in more detail how that measure will be implemented. It is also unclear how BLM and FWS are using the information contained in Table 3-27 since there does not appear to be any explanation for that content in the SEIS. That should be further explained.

ROP 11 also does not adequately account for different vegetation types with these default depths.[557] Allowing ground operations at a set snow water equivalent may still put vulnerable tussock tundra habitat at risk of damage.[558] Some tussock vegetation stands 18 inches tall when measured from the adjacent ground surface. If snow depth is insufficient to cover the tops of the tallest tussock vegetation, tussock vegetation may be crushed or sheared off during operations.

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[552] DSEIS at 2-44.
[553] *Id.*
[554] *Id.*
[555] Seismic White Paper at 7.
[556] *Id.* at 20.
[557] DSEIS map 3-17.
[558] *See, e.g.*, LORENE LYNN, RED MOUNTAIN CONSULTING LLC & MALAMUTE ENERGY, INC., REHABILITATION MONITORING REPORT FOR THE RENAISSANCE SNOW TRAIL, UMIAT, ALASKA: LAS 26566 (Nov. 30, 2018) (included in attached documents)

Tussock vegetation that is crushed or sheared off dies, often replaced by different vegetation. This process can take 5 or more years, leaving the ground surface vulnerable to subsidence caused by a change in surface albedo, hydrology, and evapotranspiration. The agencies need to ensure snow depths cover the tops of the tallest tussock vegetation at sufficient depths. Similarly, shrubby vegetation is vulnerable to damage when not fully covered by snow. Ground operation should not be allowed in areas with shrubby vegetation unless snow depths are sufficient to cover the tops of shrubby vegetation. Ground operations also should not be permitted on steep slopes with shrubby vegetation.

ROP 11 also contains additional provisions related to the types of vehicles and the manner in which they operate. These provisions appear to be drawn from best management practice C-2 in the Reserve.[559] While these provisions may arguably be appropriate in flatter areas with more consistent and deeper snow depths, they do not go far enough to address the unique range of terrain, snow conditions, permafrost, hydrology, vegetation community types, and other concerns that could lead to significant damage to the Coastal Plain. Further, similar measures have been insufficient to protect even these other areas, which are still scarred by past seismic operations, calling into question their ability to protect the Coastal Plain.[560] BLM and FWS cannot take a one-size-fits-all approach and assume that these provisions are sufficient to prevent degradation in areas that involve radically different conditions and concerns. BLM and FWS need to obtain additional information about the unique characteristics of the Coastal Plain so it can outline with greater specificity how it will prevent degradation of soil, vegetation, and permafrost resources.

ROP 11 includes a provision under Alternative D stating that "[i]ce roads and water crossings would be designed and located to avoid the most sensitive and easily damaged tundra types as much as practicable."[561] BLM and FWS should delete "as much as practicable" from this provision. Sensitive and easily damaged tundra is often located along stream banks where shrubby vegetation is common. Allowing ice road construction across shrubby stream bank vegetation risks damaging and/or killing vegetation in a location where soils are especially vulnerable to subsidence and erosion.

Standard g in Alternative B and Alternative C for ROP 11 indicates snow fences may be used in areas of low snow to increase snow depths within an ice road or snow trail route. Groups agree with the removal of this provision from Alternative D. Snow fences are an effective means to accumulate snow for the purpose of building snow roads, but snow accumulation may cause significant changes to surface hydrology, permafrost thermal stability, and to vegetation communities. Snow accumulation behind snow fences delays the melt period by 1–3 weeks and

[559] Bureau of Land Mgmt., NPR-A Integrated Activity Plan Record of Decision app'x A, at 54 (2013).

[560] Henry Fountain, *See the Scars that Oil Exploration Cut Across Alaska's Wilderness*, N.Y. Times, Aug. 3, 2018, https://www.nytimes.com/2018/08/03/climate/alaska-anwr-seismic-testing-tracks.html.

[561] DSEIS at 2-44.

sometimes 4–8 weeks,[562] causing changes to soil temperature, soil moisture, nutrient cycling, and vegetation communities. Subsidence has been documented as well.[563] The agencies should ensure any areas with such accumulated snow are excavated or pushed to decrease snow depths to that found in surrounding tundra.

Groups are concerned that BLM and FWS are missing and need to identify and obtain key information to fully understand and attempt to mitigate against the potentially significant impacts of oil and gas activities on soil and permafrost in the Refuge, specifically information about ground-ice distribution, wind speeds, and snow cover to better understand where scour and draft occurs on the Coastal Plain, and the range of potential impacts to permafrost and hydrology likely to occur in different snow conditions, terrain types, and vegetation types. If the agencies cannot obtain this information now, they should include a requirement in all applicable stipulations and ROPs that require the applicant to obtain this information prior to submitting an application.

2. The Agencies Do Not Adequately Analyze the Impacts of the Oil and Gas Program on Tundra, Vegetation, and Wetlands.

Groups are concerned that the agencies' analysis of the impacts of an oil and gas program on tundra, vegetation, and wetlands is still lacking. The vegetation and wetlands section of the draft SEIS points to a hypothetical oil field scenario, consisting of a central processing facility, roads connected to six satellite drill pads, a seawater treatment plant, and a 30-mile access road, which total an estimated 750 acres.[564] In the draft SEIS, BLM and FWS state that it was not possible for the agencies to quantify the potential impacts on specific wetland and vegetation types using a specific footprint because no on-the-ground actions have been authorized.[565] Instead, BLM and FWS calculate the proportions of each vegetation and wetland type occurring in each lease stipulation category and high-carbon potential zone.[566]

It is unclear from the reference to this hypothetical development scenario what the total potential impact might be to vegetation and wetland resources, and how the impacts might vary across the region from such a development. Even if BLM and FWS do not have an actual development proposal in front of them, they need to do more to quantify and convey how development in different areas is likely to impact the specific tundra, vegetation, and wetland resources in different areas. The quantification of the specific percentages of vegetation and wetlands within each of the areas open to leasing or other activities under the different

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[562] M. Martinelli, Jr., *Snow-Fence Experiments in Alpine Areas*, J. OF GLACIOLOGY vol. 12, no. 65, at 291–303 (1973); Kenneth M. Hinkel & John K. Hurd Jr., *Permafrost Destabilization and Thermokarst Following Snow Fence Installation, Barrow, Alaska, U.S.A.*, ARCTIC, ANTARCTIC, AND ALPINE RESEARCH (2006).

[563] Schimel, Josh P. et al., *Increased Snow Depth Affects Microbial Activity and Nitrogen Mineralization in Two Arctic Tundra Communities*, 36(2) SOIL BIOLOGY & BIOCHEMISTRY (2004).

[564] DSEIS at 3-118 to 3-119.

[565] *Id.* at 3-119.

[566] *Id.* App. J at J-9 to J-21.

alternatives is a start, but ultimately just informs the public of the types of vegetation in areas open to development; it does explain what the impacts from the full range of oil and gas activities within those specific areas are likely to be and how those might differ. The agencies never take the step of adequately discussing how the differences in vegetation might play out in terms of impacts — what, for instance, the landscape will look like if intensive seismic surveying is conducted in vegetation types like tussock tundra and riparian shrublands that are particularly prone to vehicular impacts, or in moist sedge tundra, where recovery is especially poor.[567] There is an acknowledgement in the draft SEIS about how impacts to tussocks can't be avoided and how seismic impacts would be "measurable and sustained" or could worsen long-term.[568] But there needs to be a more robust analysis of what that may actually mean in terms of impacts. If snow cover is inadequate and tussock tundra is damaged, it cannot recover in a human-significant timeframe.

The agencies also need to better quantify the potential indirect impacts. As noted throughout these comments, the impacts of development will extend well beyond the direct footprint where there is fill. BLM and FWS should include estimates of the total area that will be impacted by any activities, including indirect impacts. These impacts include nearby areas that could be impacted by dust, oil spills, and other contaminants or that could be altered due to other changes, such as impacts to hydrology that lead to changes in vegetation. The agencies have not accounted for impacts to vegetation from pipelines, which will shade significant areas and potentially alter or kill vegetation.

BLM and FWS assumed there was a 328-foot buffer to account for the area of indirect effects on vegetation and wetlands.[569] This buffer is too small. There are significant impacts from fugitive dust, gravel spray, thermokarsting and thermoerosion, and impoundments. Some of these could extend well beyond just this 328-foot buffer. As noted above, the study of the Dalton Highway that the draft SEIS cites when setting the 328-foot buffer indicates that there were significant disturbances and impacts to vegetation that occurred across an area roughly twice that size.[570]

In the draft SEIS, the agencies appear to limit their impacts analysis to post-leasing activities.[571] The agencies need to analyze the full range of direct, indirect, and cumulative impacts that could occur to vegetation, tundra, and wetlands, including impacts that might occur on non-leased areas. BLM and FWS were unclear in the draft SEIS about whether they would

[567] *See, e.g.*, Seismic White Paper at 32–33.

[568] DSEIS at 3-121.

[569] *Id.* at 3-119.

[570] *Id.* at 3-118; Myers-Smith, I. H., B. K. Arnesen, R. M. Thompson, and F. S. Chapin III. 2006. Cumulative Impacts on Alaskan Arctic Tundra of a Quarter Century of Road Dust. Ecoscience 13:503-510; *see also* Kumpula, T., A. Pajunen, E. Kaarlejärvi, B. C. Forbes, and F. Stammler. 2011. Land Use and Land Cover Change in Arctic Russia: Ecological and Social Implications of Industrial Development. Global Environmental Change 21:550-562.

[571] DSEIS at 3-118.

allow seismic exploration in areas that have not been leased.[572] If such activities are allowed, that needs to be fully analyzed.

In a White Paper analysis by prominent scientists with deep expertise and research experience in the Arctic in a range of disciplines, they concluded that a prior exploration proposal was likely to cause "significant, extensive, and long-lasting direct, indirect, and cumulative impacts . . . to the microtopography, hydrology, permafrost, and vegetation of the 1002 Area."[573] That White Paper discusses a broad range of potential impacts to vegetation and hydrology from seismic activities that the agencies need to analyze in relation to all leasing-related seismic surveying. It concludes that 3D-seismic technology has not improved to the point where there would not be significant damage to arctic tundra. Seismic activities cause compression of the tundra vegetation, which in turn causes changes to snow accumulation, hydrology, and thermal regimes, which are visible from the air and can lead to thermokarst and thermoerosion.[574] These impacts would likely have significant consequences to the habitats of many species of plants, insects, small mammals, birds, and potentially large mammals including caribou.[575] While the draft SEIS cites this White Paper, it fails to adequately analyze or adopt measures to minimize these impacts.

The draft SEIS notes that long-term studies have shown that the overall impact of seismic vehicle traffic on tundra is low, but impacts can still be measured up to 33 years after exploration.[576] The draft SEIS also states that seismic lines and camp trails on the North Slope were found to be generally visible in summer vegetation for about 5 years after disturbance, and that disturbance levels varied widely depending on snow cover and permafrost, site moisture, microtopography, and vegetation conditions.[577] The draft SEIS does not adequately discuss the results of the studies that were conducted on areas disturbed as part of the 1980s seismic program, which indicate there are likely to be significant, long-term impacts from future seismic surveys. There are also cumulative effects that will occur from conducting seismic surveys over areas that are still damaged from the 1980s. The seismic work that took place in the 1980s resulted in impacts that persisted for decades, some of which are still visible to this day and are expected to be permanent. There was still measurable disturbance from that program on 5% of the trails in 2009 and 3% in 2018 — 33 years after the initial disturbance.[578] The soil subsidence and vegetation changes that remain indicate that disturbance is likely to be present in those areas for decades to come.[579] Camp-move trails for seismic surveys caused some of the most damaging impacts to vegetation and tundra and took far longer to recover than many of the areas damaged by the seismic trails in the 1980s.[580]

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[572] *Id.* App. B at B-13 (referencing off-lease seismic).
[573] Seismic White Paper.
[574] *Id.* at 6–7.
[575] *Id.* at 7.
[576] DSEIS at 3-120.
[577] *Id.*
[578] Seismic White Paper at 33.
[579] *Id.*
[580] *Id.* at 34.

The draft SEIS states that impacts from off-road vehicle traffic could be mitigated by using vehicles that involve fewer pounds per square inch and by performing seismic operations later in the winter when there is more snow cover and soils are frozen deeper.[581] This fails to account for the unique terrain, vegetation (e.g., tussocks), and inconsistent snow cover in the Coastal Plain.[582] The Coastal Plain has relatively low amounts of winter snowfall and strong winter winds that can lead to significant scouring and unpredictable and inconsistent snow cover.[583] It also fails to take into consideration the level of intensity of modern 3D seismic proposals in general. Modern seismic proposals still use many of the same vehicles and equipment that have been used in past seismic programs and that have led to vegetation and other damage.[584] Although there have been some improvements to vehicles, the number of vehicles used can be more than double that of past surveys and many of the vehicles are even heavier.[585] This also fails to account for the sheer intensity of 3D seismic proposals, which will involve dramatically more seismic lines and a much more extensive seismic program than conducted in the 1980s. Even if one assumes that only 5% of the area impacted by a modern seismic proposal will persist for decades, that would still amount to hundreds or thousands of acres worth of severe, long-term impacts from just one seismic program.[586] Even that number, which standing alone is significant, does not take into account the potential for other seismic and oil and gas activities to cumulatively combine with those effects.

The analysis of the potential impacts of ice roads and related mitigation measures is insufficient. The draft SEIS states that ice roads have minimal effect on vegetation, which would recover to pre-construction conditions after approximately 20 years.[587] Ice roads can have major impacts that persist into other seasons and can severely alter hydrology, natural thermal regimes, and cause a wide variety of ecological impacts.[588] BLM and FWS recognize that recovery can take decades, which is inconsistent with its claim of a minimal impact. The draft SEIS emphasizes that more damage from ice roads occurs in well-drained areas, including moist tundra and shrub habitats.[589] The existing ice road study the agencies rely on underscores that damage is more likely to occur in well-drained areas. That study has limited applicability to the Coastal Plain because it looked at four ice roads in the western Arctic, and recommended that, "[b]ecause of the greater impacts associated with tussock tundra uplands, future ice roads planning should concentrate on locating roads in wetland areas."[590] The Coastal Plain is made up of 59% moist herbaceous meadow types, including herbaceous and tussock tundra.[591] Tussock tundra is the most common vegetation type in the Coastal Plain of the Arctic Refuge and is

[581] DSEIS at 3-120.
[582] Seismic White Paper at 6–7, 15–16, 18–22.
[583] Seismic White Paper at 7, 21–22.
[584] *Id.* at 29.
[585] *Id.*
[586] *See id.*
[587] DSEIS at 3-121.
[588] Sullender at 17.
[589] DSEIS at 3-121.
[590] SCOTT GUYER & BRUCE KEATING, THE IMPACT OF ICE ROADS AND ICE PADS ON TUNDRA ECOSYSTEMS, NATIONAL PETROLEUM RESERVE-ALASKA at vii (2005).
[591] FEIS at 3-82.

particularly susceptible to damage because of the considerable microtopographic relief in the tussocks, which can be up to ten-inches tall.[592] The agencies fail to recognize the prevalence of the exact vegetation type that is likely to be most vulnerable to damage from ice roads and pads. A one-size-fits all approach to these vegetation types is likely to result in damage to these vulnerable areas.

The analysis of how the impacts will differ between alternatives focuses heavily on the no surface occupancy provisions to differentiate between the impacts under each alternative.[593] However, there are questions about whether the NSO provision will be effective. These provisions will only be effective to the extent that the agencies actually adopt and hold to those safeguards. As written, the draft SEIS still allows for waivers, exceptions, and modifications to these and other requirements, opening the door for operators to avoid ever complying with those requirements.[594] The agencies should remove these waivers, exceptions, and modifications. However, because they have included them, the agencies need to acknowledge and fully assess the ways in which waivers, exceptions, and modifications to these so-called protections could lead to far greater impacts and a much larger footprint of impacts than analyzed in the draft SEIS.

Groups encourage the agencies to obtain additional information in order to make sound decisions regarding the potential impacts of the oil and gas program on tundra, vegetation, and wetland resources, including additional studies related to snow depths, wind patterns, and scour patterns on the Coastal Plain, as well as the impacts of damaging surface vegetation where there are high volumes of massive ground ice.

E. ANALYSIS OF THE IMPACTS OF GRAVEL MINING.

BLM and FWS's consideration of gravel mining in the draft SEIS is better than the prior analysis. For example, BLM correctly recognizes that gravel mines are "facilities" subject to the 2,000-acre limit.[595] However, the draft SEIS continues to misstate BLM's authority to permit gravel mining on the Coastal Plain, would allow gravel mines in NSO and setback areas, and the agencies have not provided adequate justification for the assumptions underlying the estimates of needed gravel or the impacts of gravel mining in general.

Serious questions remain about BLM's authority to permit gravel mining on the Coastal Plain. BLM's general authority to issue permits for mining of gravel is governed by the Materials Act, which allows BLM to issue permits for mining of gravel and other mineral materials without leasing those lands.[596] The Materials Act, however, does not apply where other laws

[592] Seismic White Paper at 32.
[593] DSEIS at 3-124 to 3-127.
[594] *See, e.g.*, DSEIS at 2-5.
[595] DSEIS at 1-9.
[596] *See* 43 C.F.R. § 3601.3 ("BLM's authority to dispose of sand, gravel, and other mineral and vegetative materials that are not subject to mineral leasing or location under the mining laws is the Act of July 31, 1947, as amended (30 U.S.C. 601 et seq.), commonly referred to as the Materials Act. This authority applies to sale and free use of these materials…").

prohibit extraction, or where extraction would be contrary to the public interest.[597] Extraction of gravel from the Coastal Plain is both prohibited by law and contrary to the public interest. ANILCA section 304(c) withdrew all national wildlife refuge lands in Alaska "from all forms of appropriation or disposal under the public land laws" except for the mineral leasing laws.[598] The Coastal Plain is further withdrawn from all forms of entry or appropriation under the mining laws and from operation of the mineral leasing laws by ANILCA section 1002(i).[599]

In the draft SEIS, the agencies state that sand and gravel on the Coastal Plain are salable minerals subject to the Materials Act.[600] In its responses to comments on the final EIS, BLM asserted that the Tax Act amended ANILCA section 1002(i).[601] This is incorrect. The Tax Act amended ANILCA section 1003, which prohibited the production of oil and gas from the Refuge.[602] The Tax Act did not amend ANILCA section 1002(i), which stripped BLM of its authority to permit mineral leasing on the Coastal Plain. In the final EIS's responses to comments, BLM repeatedly stated that it is "not possible to have an oil and gas program without access to gravel."[603] That may be the case factually, but the need for gravel does not legally authorize BLM to extract it from the Coastal Plain in violation of the law. Nor did BLM otherwise address the fact that the Coastal Plain is withdrawn from mining and mineral leasing under ANILCA. If BLM cannot point to any legal authority to permit gravel mining despite ANILCA section 1002(i), then it must evaluate the impacts of importing gravel from outside the Coastal Plain for future construction needs. The draft SEIS does not address this concern, which must be fully considered in the final SEIS.

Even if gravel mining could be allowed, the agencies should clarify FWS's role in any authorizations. The agencies correctly note in the draft SEIS that FWS is the administrator and manager of the Refuge.[604] In the final EIS, BLM claimed erroneously that the Tax Act stripped FWS of any authority over lands leased for oil and gas development in the Refuge.[605] The Tax Act nowhere removed FWS from its management position over the Refuge, nor subordinated FWS to BLM. FWS has independent legal obligations in other statutes, such as the National Wildlife Refuge System Administration Act, which were not modified by the Tax Act. BLM and FWS correctly note in the draft SEIS that FWS continues to manage federal lands in the Coastal Plain, but the agencies statement that BLM would coordinate with FWS for all activities does not go far enough to acknowledge FWS's role[606] and the division of responsibilities remains

[597] 30 U.S.C. § 601.
[598] ANILCA § 304(c).
[599] 16 U.S.C. § 3142(i).
[600] DSEIS at 3-61.
[601] FEIS App. S at S-424.
[602] *See* 16 U.S.C. § 3143; Section 20001(b)(1) of the Tax Act, 115 P.L. 97.
[603] *See, e.g.*, FEIS App. S at S-328, S-330.
[604] DSEIS at 1-3 to 1-4.
[605] *See, e.g.*, FEIS App. S at S-374 (claiming that "Section 20001(a)(2) of the Tax Act assigns the BLM the sole responsibility for making oil and gas program decisions for lands within the Coastal Plain")
[606] DSEIS at 1-4.

unclear.[607] The agencies should clarify that FWS's approval and a compatibility determination would be a prerequisite to approving any activity in furtherance of gravel mining on the Coastal Plain.

BLM and FWS's analysis of the impacts of gravel mining and consideration of alternatives which would reduce impacts from gravel mining is insufficient to satisfy the agencies' NEPA duties. Critically, the agencies rely on designating lands as NSO to preclude or reduce impacts from oil and gas development in its analysis. But gravel mining could be allowed in these areas.[608] Because of the significant impacts gravel mining would have, discussed below, BLM and FWS must consider an alternative that precludes gravel mining in all NSO areas in order to protect sensitive resources. Otherwise, BLM and FWS should explain why areas it deems too sensitive for placement of gravel pads would still be subject to permanent and significant harm from blasting and mining activities.

Like the final EIS, the DSEIS provides little information on gravel mining beyond an estimated number of cubic yards of gravel needed for each action alternative. The final EIS anticipated that 12.4 to 12.7 million cubic yards of gravel would be needed for the Coastal Plain's exploration, construction, development, and maintenance under the various alternatives.[609] The draft SEIS presents a much wider range, estimating that between 6 and 12 million cubic yards of gravel would be needed.[610] It is impossible to check the veracity of this number, as the RFD scenario does not provide incremental gravel needs for various elements of potential infrastructure projects (e.g., central processing facilities, anchor pads, and airstrips are all combined).[611] The agencies also fail to explain how it is able to provide precise figures for miles of roads and pipelines without knowing where any projects would actually be located.[612] Furthermore, the agencies' math does not add up. BLM and FWS note that an estimated 6 million to 12 million cubic yards of gravel would be required, depending on the alternative selected.[613] In reaching this range, the agencies rely on gravel needs for various facilities constructed for similar projects to estimate gravel requirements at 10,000 cubic yards per acre.[614] The agencies then estimate the acreage to be developed for each alternative. But using the figure of 10,000 cubic yards of gravel per acre results in nearly 17 million cubic yards of gravel required for Alternative B, which is far above the 12 million upper bound projected[615] and its estimate that 10.9 million cubic yards of gravel would be needed for Alternative B.[616] The figures provided for Alternatives C and D similarly conflict with the agencies explanation of

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[607] *See supra* Section IV

[608] DSEIS at 3-185 and 3-188 (gravel mines may be allowed within NSO-designated areas in Alternative C and D).

[609] FEIS at 3-63.

[610] DSEIS App. B at B-25.

[611] *Id*.

[612] *Id.*

[613] *Id.*

[614] DSEIS App. B at B-24.

[615] *Id.* at B-26.

[616] DSEIS at 3-85.

gravel requirements.[617] Alternative C tips the scales at 12.45 million cubic yards of gravel required. Only Alternative D lands within BLM's projected range of gravel requirements at 8.87 million cubic yards. But, despite being the least impactful alternative, it is still higher than BLM's 6 million cubic yard lower bound.

Further, it is entirely unclear whether BLM and FWS factored in the need for additional gravel (e.g., for roads that expand in width during use) and river and stream crossings, vehicle turnouts, or storage pads into these figures. The agencies need to provide far more information about the potential gravel resources necessary for each alternative over the expected life of the program to adequately analyze potential impacts. BLM and FWS must then fully analyze the direct, indirect, and cumulative impacts of gravel mining for each action alternative based on those predicted gravel needs.

Moreover, gravel mining has very serious impacts that BLM and FWS fail to consider in the draft SEIS. In its explanation of potential environmental impacts, the agencies refer to impacts in general without undertaking any specific analysis. Regarding gravel mining, BLM and FWS note that gravel mining could result in the emission of criteria and hazardous air pollutants,[618] noise,[619] changes to topography,[620] disturbance of paleontological resources,[621] permanent loss of wetlands, vegetation, and wildlife,[622] and disturbance of soil, permafrost, and stream structure.[623] But the analysis simply refers to 'change,' 'alteration,' or 'losses.' Nowhere do the agencies actually analyze specific impacts or quantify the extent of impacts to be expected under each alternative. For example, when analyzing impacts to wetlands, BLM and FWS state that "site-specific acreages were not used due to hypothetical anchor development location and poor data quality"[624] Similarly, when analyzing impacts to birds, BLM and FWS note that gravel mining will cause habitat loss, but does not attempt to quantify or analyze impacts from that habitat loss.[625]

Gravel extraction is generally done in large open pit mines typically located away from major streams and lakes. It is not clear how such mines could be located in a way that protects the sensitive wildlife and biological resources of the Coastal Plain and the draft SEIS appears to assume and allow gravel mining in rivers.[626] Open pit mines require extensive overburden removal — for example, over 50 feet of vegetation and soil needed to be excavated to reach

[617] DSEIS at 3-85 to 3-86 (providing figures of 7.8 million cubic yards of gravel required for Alternative C and 5.49 million cubic yards of gravel required for Alternative D).
[618] DSEIS App. F at F-13 to F-14,
[619] *Id.* at F-15.
[620] *Id.* at F-16.
[621] *Id.* at F-17.
[622] *Id.* at F-25–F-31.
[623] *Id.* at F-18–F-20.
[624] *Id.* at F-26.
[625] *Id.* at F-32–F-33.
[626] *Id.* at F-29.

suitable gravel in the mines created for Kuparuk.[627] The resulting overburden stockpile disturbs tundra, and the gravel pit itself causes permanent changes to the area's thermal regime due to "thaw bulbs" forming in the permafrost around the unfrozen water during flooding.[628] Indirect effects such as these have led some researchers to approximate that a one acre (0.4 ha) gravel pit may impact as much as 25 acres surrounding the site.[629] BLM and FWS acknowledge that impacts to land could occur from gravel pit mining and impacts to streams could occur from gravel mining in streambeds, but fails to evaluate any of the resulting impacts from thawing permafrost or hydrological changes.[630] The agencies must adequately describe what those changes will be and how they will impact local ecology, not simply state that they will happen, in order to take a hard look at the impacts of the proposed gravel mines.

In addition to open pit mines, the draft SEIS indicates that gravel mining might occur in streams or rivers.[631] This should not be permitted, and BLM has failed to analyze the impacts from such a destructive activity. BLM has recognized in another EIS that gravel mining in rivers, streams and floodplains is incredibly damaging:

> Gravel material sites in the floodplain also have the potential to be flooded during snowmelt or high-flow events, risking breaching of the material site into the stream corridor and resulting in increased sediment flow into the stream. If floodplains of meandering streams are not avoided for material sites, the stream's migration over time may also breach the gravel mine site. This could result in increased sediment introduction into the watercourse, changes in streambed characteristics, and degradation of fish habitat. Most potential material sites are underlain by permafrost and development of the site, and removal of surface vegetation may result in local permafrost thaw or thermokarsting, especially if the mine site is filled with snowmelt/floodwater or located in the floodplain of rivers or streams. Gravel mining would create some localized dust that could be carried to water bodies and downstream.[632]

Gravel extraction is one of the most damaging activities to take place during the construction period, and the draft SEIS fails to account for the inherent risks of such an activity. Nor does the draft SEIS identify any specific modifying protective criteria to assure water and fishery resource protection in the affected area. Gravel extraction poses a significant risk to fisheries habitat. BLM and FWS must not allow gravel activities in riverbeds and floodplains, to the extent the agencies determine such mining is legally viable.

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[627] BENJAMIN SULLENDER, AUDUBON ALASKA, ECOLOGICAL IMPACTS OF ROAD- AND AIRCRAFT-BASED ACCESS TO OIL INFRASTRUCTURE 3 (2017), *available at* http://ak.audubon.org/sites/g/files/amh551/f/road_aircraft_access_report_final_0.pdf (internal citations omitted).

[628] *Id*. (internal citations omitted).

[629] *Id*. (internal citations omitted).

[630] DSEIS at 3-85, 3-122 to 3-123.

[631] DSEIS App. F at F-29.

[632] BLM, Ambler Road Draft Envtl. Impact Statement at 3-20 (2018).

BLM and FWS estimate the direct footprint of mining itself as being between approximately 160 and 310 acres,[633] but does not quantify or even discuss the indirect and far broader range of impacts to the sensitive ecosystems surrounding these mines. The agencies fail to explain how this figure was calculated, or why the range could now exceed the maximum estimated in the final EIS, which estimated a range between 280 and 300 acres of gravel mines.[634] BLM and FWS also note that "acreage required for gravel mining could increase or decrease, depending on local conditions," but fails to explain what those conditions might be, or what the actual total acreage could be.[635] Additionally, the agencies note that multiple material sources are expected to be used, but does not analyze impacts from multiple gravel mines, which could have a much greater impact on the Coastal Plain than a single mine.[636]

In addition to the agencies' insufficient analysis of the impacts of gravel mining, the proposed lease stipulations and ROPs are insufficient to mitigate impacts. The proposed NSO lease stipulations intended to protect water quality miss the mark because they continue to allow gravel mining within water ways. Lease Stipulation 1, which is intended to protect water quality and fish, subsistence, raptor habitat, cultural and paleontological resources, and reduce impacts on scenic and recreational values purports to restrict "permanent oil and gas facilities" within streambeds and within certain setbacks, but notes that "gravel mines could be permitted in setback areas."[637] Only in Alternative D does stipulation 1 prohibit gravel mining in setback areas, but continues to allow gravel mines in setback areas near rivers and streams that "do not support resident, anadromous, or endemic fish populations."[638] As such, lease stipulation 1 fails to address or mitigate impacts of gravel mining in or adjacent to stream and river beds.

Alternative D offers greater protection from gravel mining impacts for the Canning River Delta and Lakes (Stipulation 2), springs and aufeis fields (Stipulation 3), wilderness areas (Stipulation 10), ice-rich soils and permafrost (Stipulation 12), and requires any development to maximize use of existing gravel mining infrastructure that may be developed to reduce the footprint of mines and gravel infrastructure (Stipulation 13).[639] Groups urge the agencies to require setback areas from all waterways and other sensitive areas and to prohibit gravel mining within those setback areas without waivers, exceptions, or modifications to the stipulations and ROPs that impose protections.

ROP 24 provides unique standards for Alternative D to try to protect resources from gravel mining impacts. In Alternative D, ROP 24 provides a greater number of waterways where gravel mine sites are prohibited, and provides some protection for raptor species from cliffside gravel mining.[640] In all versions of ROP 24, however, gravel mines could be allowed within the

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[633] DSEIS App. B at B-25.

[634] FEIS at 3-36. BLM has not explained how the estimated gravel mining footprint could be *higher* in the DSEIS than in the previous estimates.

[635] *Id.*

[636] DSEIS at 3-84.

[637] DSEIS at 2-7 to 2-8.

[638] *Id.*

[639] DSEIS at 2-7 to 2-23.

[640] DSEIS at 2-57 to 2-58.

active floodplain of waterways.[641] ROP 24 should be amended to clearly state that gravel mines are prohibited in the setback areas and floodplains of the identified waterways under every alternative. In addition, ROP 24 contains unclear language regarding the standards and requirements for storage and reuse of sod or overburden material. BLM and FWS should explain how it plans to require the reuse of sod or overburden removed from gravel mines at other sites on the North Slope, and what the environmental impacts of transporting sod and overburden to those sites and emplacing it might be. Finally, ROP 24 states that it may allow gravel mines in rivers that also serve as water reservoirs, except for rivers or creeks that support resident, anadromous, or endemic fish populations.[642] It is troubling that BLM and FWS consider "mitigation" to include allowing the same waterway to be subject to both graveling mining and water extraction. The agencies must analyze the potentially significant impacts from allowing both activities to occur within the same waterways.

ROP 35 in its weakest (Alternative B) form requires site be reclaimed upon completion of operations at any oil and gas facility (including gravel mines) "to ensure eventual rehabilitation to the land's previous hydrological, vegetation, and habitat functions."[643] Alternative C and D require that the site be reclaimed "to ensure eventual ecosystem restoration to the land's previous hydrological, vegetation, and habitat condition, wild and scenic river (WSR) eligibility/suitability, and intent to restore general wilderness characteristics of the area."[644] This requirement is impossible in the case of gravel mines: gravel mins cannot be reclaimed or ecosystems restored. BLM and FWS acknowledge this impossibility, stating that "reclamation and restoration of original habitat value has not been proven for gravel removal in the arctic environment."[645] Setting aside the technical impossibility of complying with ROP 35 in the case of gravel mines, the agencies also inconsistently state that they do not intend to require compliance with ROP 35 for gravel mines. The draft SEIS's plan for reclaiming gravel mines includes permanent, non-remediated impacts, because the pits would be turned into ponds.[646] These ponds can create "thaw bulbs" around and under the pit, leading to increased permafrost thawing and the possible collapse of the pit walls.[647] Disruption of permafrost results in "permanent alteration of vegetation and morphology."[648] This is quite the opposite of ensuring eventual restoration to the lands previous condition. To comply with NEPA, BLM and FWS must evaluate the long-term impacts of gravel mining based on the reality that any gravel mine will not be reclaimed to previous functions.

BLM continues to discuss abandoned gravel mines as having "potential . . . for enhancing fish and wildlife habitat" in its considerations for mine siting.[649] This statement conflicts with BLM's statement in its responses to comments in the final EIS that "following the comment

[641] *Id.*
[642] *Id*.
[643] DSEIS at 2-68.
[644] *Id.*
[645] DSEIS at 3-182.
[646] DSEIS App. B at B-22.
[647] DSEIS at 3-85.
[648] DSEIS at 3-182.
[649] DSEIS at 3-97 to 3-98, DSEIS App. F at F-32.

period, BLM decided to strike the mention of habitat creation post gravel mining. This is not … a land-use strategy for wildlife refuges. Furthermore, these habitats may require maintenance long term to serve as usable fish habitats."[650] The agencies should remove these statements from the final SEIS.

In the final SEIS, the agencies should adequately explain its legal authority to permit gravel mining on the Coastal Plain, thoroughly assess the specific impacts those gravel mines and associated infrastructure may have, consider revising stipulations and ROPs to further limit the lands open to gravel mining, and require that mine sites are sited and remediated in a way that protects fish, wildlife, and cultural resources and does not leave lasting scars on the landscape.

F. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON WATER RESOURCES.

"Water is the lifeblood of the Arctic National Wildlife Refuge."[651] It forms the foundation of a highly integrated food-web of aquatic and terrestrial species.[652] The Coastal Plain is characterized by large rivers and their channels and tributaries, smaller streams, and seasonal waterways, as well as lakes and ponds, which are mostly concentrated in a few areas. Water resources are not evenly distributed across the Coastal Plain; despite most of the area being classified as wetlands, the ponds and lakes are shallow and cover less than one square mile.[653] Free-flowing and open water is also very limited in the winter.[654] Modifications to surface water flow could affect many fish and wildlife species and their habitat.[655] Climate change is modifying water resources and ecology of rivers, lagoons, nearshore estuaries of the Arctic Refuge and its adjacent waters due to changes in air temperature and precipitation. These changes are causing Brooks Range glaciers to shrink, deepening of the active layer, and degrading ice wedges, which has caused a suite of impacts to physical and biological processes within lentic and lotic ecosystems.[656] In 1987, DOI concluded that obtaining water for oil and gas activities in the Coastal Plain "has the potential for major adverse effects."[657] It also noted that there was limited information known about the water resources of the Coastal Plain.

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[650] FEIS App. S at S-963 to S-964.

[651] U.S. Fish & Wildlife Serv., *Water and Water Rights*, https://www.fws.gov/refuge/arctic/water.html (last updated Jan. 14, 2014).

[652] NRC, Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope, 30 (2003).

[653] LEIS at 13.

[654] LEIS at 33.

[655] LEIS at 119.

[656] Nolan, M., R. Churchwell, J. Adams, J. McClelland, K.D. Tape, S. Kendall, A. Powell, K. Dunton, D. Payer, P. Martin. 2011. Pp. 49 in: Observing, Studying, and Managing for Change: Proceedings of the Fourth Interagency Conference on Research in the Watersheds, 26-30 September 2011: Fairbanks, AK. Ed. By C.N. Medley, G. Patterson, and M.J. Parker. Scientific Investigations Report 2011-5169, USGS. https://pubs.usgs.gov/sir/2011/5169/.

[657] LEIS at 111, 113 ("The dedicated industrial use of the limited natural fresh-water sources of the 1002 area would be a major effect.").

Subsequently, FWS conducted additional investigations of water resources in rivers, streams, lakes, and springs during the late 1980's and 1990's,[658] which further substantiated limited winter water availability and significance of water resources to fish, wildlife, and their habitats.[659] For example, investigations found that during April, 90% of the water was located in just 9 of the 119 lakes surveyed, and in 237 miles of river channels studied, only 9 million gallons of water were estimated — an amount that would be sufficient for only 7 miles of ice roads under current practices.

The CCP states that threats to water resources of the Coastal Plain include oil and gas development, and gravel mining.[660] Despite this, the prior EIS failed to accurately describe the water resources of the Coastal Plain and failed to adequately analyze the impacts of the oil and gas program on the water resources, or to adopt mitigation measures to fully protect those resources. As the USGS explained, "[u]nderstanding water resources in the [Coastal Plain] informs questions related to multiple ecosystems as well as possible infrastructure development."[661] But as the FWS noted, temporal and spatial data on the water resources of the Coastal Plain is limited.[662] Groups recognize that BLM and FWS included some additional information about the water resources of the Coastal Plain than in the prior EIS. However, it is still unclear what data sources are being used and it does not appear that the agencies have recent information. Overall, information on the hydrology of the Coastal Plain is still greatly lacking and additional information and analysis is needed. General deficiencies associated with Water Resources section discussed below include the use of insufficient and outdated data; the inability of lease stipulations and ROPs to meet the stated objectives, and issues with unclear and undefined terminology.

1. Affected environment and baseline information.

The draft SEIS still lacks complete information regarding the water resources of the Coastal Plain. BLM and FWS largely did not obtain any new information to inform its SEIS. While there is some newer air and precipitation data,[663] the data on the major rivers and drainages in the Coastal Plain is still very old and limited to three months of the year (June, July,

[658] Elliott, G.W. 1990. Quantification and distribution of winter water within lakes of the 1002 area, Arctic National Wildlife Refuge, 1989. US Fish & Wildlife Serv., Alaska Fisheries Technical Report Number 7, Anchorage. https://www.fws.gov/alaska/fisheries/fish/Technical_Reports/t_1990_07.pdf; Trawicki, et al 1991; Lyons and Trawicki, 1994.

[659] U.S. Fish & Wildlife Serv., Aug 29, 1995, A preliminary review of the Arctic National Wildlife Refuge, Alaska Coastal Plain Resource Assessment: Report and Recommendation to the Congress of the United States and Final Legislative Environmental Impact Statement. Regional Director, Region 7, 20 pp.

[660] CCP at 4-38.

[661] 2018 USGS Report at 20.

[662] CCP at 4-38, 4-41.

[663] DSEIS App. H at H-1 to H-8.

and August).[664] Without more updated data for stream network hydrography, watershed area, and stream habitat classification, it is unclear how the agency can accurately analyze the impacts of an oil and gas program combined with climate change. Additionally, data on precipitation is not tied to information on water resources. This means that the agencies cannot tie these two pieces together to draw conclusions about recharge rates. It is critically important to understand the impact to recharge rates given the limited freshwater resources on the Coastal Plain overall and the specific Refuge purpose of protecting water quantity. Groups encourage the agencies to obtain this information now. If that is not possible, Groups ask that the agencies include a requirement to obtain all necessary information and conduct necessary studies to obtain baseline information as part of any applicable stipulation or ROP prior to submitting an application to conduct activities on the Coastal Plain.

a. Major deficiencies of baseline data relating to hydrology

i. Hydrography network

Due to the resolution of the current USGS National Hydrography Dataset (NHD), which uses a 20—30 m resolution digital elevation model as the input data source, and limited physiographic relief within sections of the Coastal Plain, the data used to estimate hydrography channel network is inaccurate. The current NHD delineated hydrography network does not provide an accurate assessment of active channel width and floodplain extent for streams within the Coastal Plain. It is particularly inaccurate throughout the Coastal Plain in areas with wide braided floodplains and low gradient streams, which are both very common landscape features. High-resolution IfSAR data (resolution 2.5—5 m) is currently available for the entire CP (https://www.usgs.gov/news/technical-announcement/alaska-mapping-update) and the current NHD hydrography needs to be updated with this best available DEM data and verified using high-resolution satellite imagery and field techniques in order to accurately quantify the affected environment. An example of an improved Arctic stream channel network that incorporates high resolution IfSAR DEM data can be seen at https://netmap-portal.squarespace.com/datasets. Section 3.2.10 of the draft SEIS uses inaccurate DEM and hydrography data, resulting in an inaccurate and incomplete discussion of the affected environment. This should be revised in the final SEIS.

ii. Seasonal hydrological flow processes

Information provided in the draft SEIS is vague, outdated, and inadequate to accurately describe seasonal hydrologic flow processes of Arctic rivers and streams within the Coastal Plain. Hydrological processes within lentic and lotic ecosystems are complex and vary spatially and temporally across the Coastal Plain. Information provided within the draft SEIS is too generalized to accurately and sufficiently describe baseline seasonal streamflow processes. A description of hydrological processes, ideally using empirical hydrological data from the Coastal Plain, should be completed based on hydrologic classification groups following best available methods (see Olden et al. 2012 for overview and appropriate methodology). Much of the information is drawn from areas outside the Coastal Plain, which makes the description of the

[664] DSEIS App. H at H-9 to H-21.

seasonal hydrologic processes (e.g., streamflow, flooding, snowmelt) inaccurate. Major differences in physiography, geology, and geomorphology for watersheds outside the Coastal Plain inhibit this information from being applicable. For example, information on spring flood dynamics provided within Bowling et al. 2003, which is collected in the Putuligayuk River watershed, cannot be applied broadly for all rivers and streams within the Coastal Plain, which are different ecological landscapes.

iii. Permafrost hydrology

Information provided in the draft SEIS does not adequately describe permafrost hydrology within the Coastal Plain. Arctic hydrology (surface and groundwater flow paths) is significantly influenced by permafrost features and dynamics, which vary heterogenously across the Arctic (Woo et al. 2008; Walvoord et al. 2012). Due to documented change in the Arctic permafrost and associated impacts on hydrology (Liljedahl et al. 2016; Walvoord and Kurylyk 2016), recent permafrost thaw impacts on hydrology need to be adequately described within the draft SEIS for all Coastal Plain watersheds. Additional considerations should be focused on providing a detailed description of various aquifers (i.e., supra-permafrost aquifer, sub-permafrost aquifer, sub-talik aquifer) and flow pathways (i.e., surface runoff, groundwater, taliks, conductivity) across the Coastal Plain in order the adequately describe the baseline — information that is essential for describing impacts of projected water extraction outlined within the draft SEIS (Appendix B, B-17).

iv. Streamflow

Information provided in the draft SEIS does not adequately describe streamflow regimes within the Coastal Plain. The natural flow regime is a critical element that maintains biodiversity and ecosystem integrity in lotic systems and altering the historical flow regime will have negative impacts to aquatic species in rivers and streams. (Poff et al. 1997; Bunn and Arthington 2002) New data on seasonal streamflow regimes that quantifies critical components of flow regimes (i.e., magnitude, frequency, duration, timing, rate of change) needs to be collected and new methods should be used to quantify streamflow metrics (see Olden and Poff 2003; Richter et al. 1996) in order the adequately describe the baseline. Historical information on surface water discharge is sufficient for instream flow water reservations but does not provide enough detailed baseline information to describe critical components of flow regimes, which is essential to understand projected water extraction impacts outlined within the draft SEIS (Appendix B, B-17).

v. Stream temperature

Information provided in the draft SEIS does not adequately describe stream temperature regimes within the Coastal Plain. Thermal regimes are another critical element that regulates metabolism in fish and invertebrates, influencing growth, phenology and survival, which in turn influences food webs and aquatic species communities (Caissie 2006; Webb et al. 2008; Steel et al. 2017). No information is provided on stream thermal regimes, which is essential and necessary baseline information to quantify impacts of habitat alteration, outlined within the draft SEIS, on aquatic species.

vi. Water biogeochemistry

Information provided in the draft SEIS does not adequately describe water biogeochemistry within the Coastal Plain. Biogeochemical processes in aquatic ecosystems influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (Huryn et al. 2005). No significant information is provided on water biogeochemistry in lentic and lotic habitats, which is essential and necessary baseline information to quantify impacts of habitat alteration on water quality.

vii. Climate change

Information provided in the draft SEIS does not adequately describe climate change impacts on water resources within the Coastal Plain. Current and future high-resolution climate data is currently available for the Coastal Plain including upstream areas within each watershed (see Cai et al. 2018) but is not provided in the draft SEIS. Baseline long-term and spatially explicit information on hydrology (e.g., streamflow, water temperature, water quantity, surficial, and groundwater permafrost flow dynamics) is not shown in the draft SEIS and therefore it is impossible to describe or assess the current and future effects of climate change. Due to major differences in physiography, geology, fluvial geomorphology, and climate it is inaccurate to suggest that the information provided in BLM (2018a), which describes lands west of Nuiqsut, is sufficient to describe climate change in the Coastal Plain.

2. Analysis of direct and indirect impacts remains flawed.

The agencies continue to rely on analysis from the Reserve to outline the impacts on water resources.[665] For example, BLM and FWS point to the GMT2 Final SEIS and Willow Master Development Plan Final SEIS to explain the climate change impacts on water resources.[666] Similarly, the draft SEIS relies on 2012 and 2004 analysis for the Reserve without explaining why those documents accurately describe the impacts to water resources on the Coastal Plain.[667] Reliance on documents explaining impacts in the western Arctic must be better explained, particularly in light of the fact that the agencies otherwise recognize that the areas are very different in ways that impact water resources.[668]

There is also a lack of sufficient analysis about the impacts of climate change on water resources. The draft SEIS notes that aufeis are melting at a significantly faster rate from 2010 to 2021 than from 1985 to 2009.[669] There is also a general discussion of the ways that earlier snow

[665] DSEIS App. F at F-23.
[666] DSEIS at 3-94.
[667] DSEIS at 3-94 to 3-95.
[668] *See, e.g.*, DSEIS at 3-88 (noting that lake distribution is very different in the two regions), 3-90 (noting that snow accumulation and distribution is different) & 3-100 (noting that lakes in the Coastal Plain are hydrologically isolated as compared to lakes in the Western Arctic and that its unclear if snowmelt is, therefore, adequate for recharge).
[669] DSEIS at 3-90.

melt, increased summer precipitation, and other changes may impact water resources.[670] But the analysis is wholly lacking. It is not enough to simply say "[t]he effect of climate change . . . could influence the rate or degree of direct and indirect impacts."[671] The agencies must actually analyze what those impacts will be in light of the proposed leasing program and its potential impacts on water resources.

Regarding the duration of impacts and reclamation, the draft SEIS indicates that the impacts to hydrology and water resources from gravel roads, pads, and airstrips may be limited to the life of the project, but then goes on to note that reclamation is not proven for gravel removal in the Arctic.[672] The agencies should, therefore, expressly state that the impacts to hydrology from the placement of gravel fill will be permanent. The permanence of impacts to water resources from ice roads, ice pads, and seismic activities should also be recognized as potentially permanent, as demonstrated by the fact that seismic exploration from mid-1980s has had permanent impacts on hydrologic patterns.[673]

Additionally, the list of future development activities that could affect water resources is incomplete, as it does not include use of snow for snow road, ice chipping for ice road and ice pad construction. These must be added and analyzed as well.

Finally, the assessment of the direct and indirect water resources in Section 3.2.10 is inadequate to evaluate impacts of an oil and gas program on streamflow, stream temperature, water biogeochemistry, groundwater, and climate change impacts because of the lack of sufficient information on each of these topics specific to the Coastal Plain, as detailed above.

3. Impacts from water withdrawals.

The draft SEIS states that freshwater would be used to construct ice road and pads, dust abatement, and to support operations. As outlined in the Reasonable Development Scenario contained in Appendix B, BLM estimates the following regarding water withdrawals:

- One exploration ice pad uses 5,000,000 gallons of water;
- One mile of ice road uses 1 to 1.5 million gallons of water;
- Drilling and completing one well uses 420,000 to 8 million gallons of water; and
- Water to maintain daily production of 50,000 barrels of oil a day will require 2 million gallons of water per day.

BLM does not include an estimate for the water needed to support seismic exploration, but a prior seismic exploration application would use at least 3,500 gallons per day (potentially more). BLM and FWS must be sure that the analysis includes all potential oil and gas program uses of water in the RFD scenario for the agencies to be able to evaluate the impacts.

[670] DSEIS at 3-93 to 3-94.
[671] DSEIS at 3-95.
[672] DSEIS at 3-97.
[673] DSEIS at 3-98.

It is hard to discern how much water would be used under each alternative because the agencies do not include that clear. BLM should add a chart to the final SEIS that clearly depicts how much water would be used for all phases of oil and gas under each alternative, based on its development scenarios for each alternative. Regardless, it would be an extraordinary amount of water. It is unlikely that there is even that quantity of water available for use on the Coastal Plain. For example, BLM estimates that there are only 1.1 billion gallons of water available by the end of the winter season, with 80% of that volume coming from seven lakes in the Canning River Delta.[674] FWS has previously found that there is only enough available water in the winter to construct a few miles of ice roads.[675]

Relatedly, it is unclear how BLM and FWS evaluated the "Outer limit of ice road from source lake" depicted on Map 3-13 and the Potential Ice Road extent on Table 3-26. Is this based on using all of the unfrozen water in lakes, is it based on application of stipulations or ROPs, etc.? This should be clarified in the final SEIS. Groups encourage the agencies to develop maps that would show the available water not only for ice road construction but for all operations by alternative.

The draft SEIS identifies that modeling shows that snowmelt may not replenish water volume under the development scenario and that additional information is needed.[676] BLM and FWS should evaluate whether they can proceed to adopt a leasing program, including developing stipulations and ROPs that regulate water withdrawals, without this information. This is critical information to have because it informs protections that BLM and FWS may adopt in the ROD and also ensures that the agencies have the information necessary to determine if the Leasing Program protects all of the Coastal Plain's purposes, one of which includes protecting water quality and quantity.[677] To the extent that the agencies cannot gather this information, the agencies should engage in additional modeling, including using climate models, to determine replenishment rates and whether stronger protections are needed to protect the water resources prior to issuing any leases.

The cumulative impacts analysis is also incorrect. It states that "[n]o other past, present, and reasonably foreseeable future actions that could affect water resources have occurred or would occur in the program area."[678] One of the reasonable foreseeable future actions that FWS is considering is an annual snow road from the western Coastal Plain boundary to the community of Kaktovik.[679] The use of snow to build this proposed road would impact water recharge, sheet

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[674] DSEIS at 3-89.

[675] *See* U.S. Fish & Wildlife Serv., *Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern* (Jan. 17, 2001) [hereafter "FWS 2001 Report"] (noting that the amount of water available in the winter in the Coastal Plain is only enough to maintain ten miles of ice roads); NRC Report at 210 (noting that "exploration will be hampered by the reduced availability of water during the winter" and that use of ice roads may not be feasible to access all areas).

[676] DSEIS at 3-100.

[677] *See supra* Section IV.C.2.

[678] DSEIS at 3-106.

[679] DSEIS App. F at F-10.

flow, changes in microtopography, and other changes to the hydrologic regime. Additionally, the application identified that the Kaktovik Inupiat Corp. may seek to build a gravel road to the community, which would cause considerable impacts to the water resources of the Coastal Plain. The cumulative impacts analysis needs to be revised to account for this project.

4. Instream flow reservation quantities must be analyzed and protected.

There are many instream flow reservation water right applications pending before the Alaska Department of Natural Resources for waterbodies on the Coastal Plain.[680] During the late 1980's and 1990's, the US Fish & Wildlife Service quantified water resources in the 1002 area with stream gauging and lake elevation and bathymetric studies. Based on these investigations, water rights applications were filed for at least 140 lakes and 12 river and stream segments to protect the habitat, migration and propagation of fish and wildlife. The purpose of these water-right reservations is for conservation and they identify the specific water flow necessary to achieve that goal. These reservation applications help meet Refuge purposes including protecting water quantity necessary to support conservation, wildlife populations and habitat. These water rights applications take precedence over other uses of water from these sources.[681]

Unfortunately, BLM and FWS have still not analyzed the impacts of an oil and gas program on FWS's water rights applications in any detail and no stipulations or ROPs have been proposed that would protect the requested water. Protecting these instream flows further reduces the already limited available freshwater resources on the Coastal Plain but is not considered by in the SEIS. A number of the applications cover the same waters that the agencies identify as unfrozen in the winter and potentially available for water withdrawals to support oil and gas activities.[682] BLM and FWS must analyze the applications, clearly identifying the waters that they are for, the fish, wildlife, and habitat resources that they support, and the impact that they have on potential water withdrawals and usage for oil and gas activities.

BLM and FWS should also include an unwaiveable stipulation that water cannot be removed from these waterbodies in amounts that would reduce the water below the quantities sought in the instream flow reservation application. That quantity is the amount of water that FWS identified as necessary to protect fish and wildlife, and protecting water quantity is a purpose of the Arctic Refuge. BLM and FWS must, therefore, protect the applied-for water quantities.

5. Measures to protect water resources must be strengthened.

The lease stipulations and ROPs applicable to water resources lack clarity in terminology and operationalization of how they would be implemented. Without a detailed description of the terminology and scientific methodology outlining the operationalization of the following items it is not feasible in many cases for the stipulations or ROPs to meet their objectives. The terms and phrases below need to be described scientifically and quantitatively (in some cases) within the

[680] DSEIS at 3-92.
[681] AS 46.15.050.
[682] DSEIS at Maps 3-31 & 3-20.

final SEIS or replaced with new terms or phases in order to be determined or implemented across the Coastal Plain for each watershed where stipulations or ROPs apply.

- Active floodplain
- Floodplain
- River delta
- 50-, 100-, 200-year flood for CP rivers
- Ordinary high-water mark
- Essential pipeline/road crossings
- Natural flow of rivers
- Disrupt flow from perennial springs
- Maintain natural runoff processes
- Minimize
- Natural function
- Disruption
- Water quality
- Local hydrologic conditions
- Protect natural flow
- River/Stream/Creek

The objective for lease stipulation 1 needs to be more clear to ensure it can be met. The current objective has several terms that are unspecific and should be changed in order to protect biologically sensitive areas. The terms “minimize”, “disruption of natural flow patterns”, “changes to water quality”, and “disruption of natural functions” do not have specific and quantifiable meanings. Groups propose the following solution: change “minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from” to “maintain natural flow regimes and the ecological integrity of lotic ecosystems (rivers and streams) resulting from.” Lease stipulation 1 also has no defined stipulations associated with the allowable exception to building pipelines, roads, or facilities in river deltas. Permenant pipelines, roads, or industrial facilities within the delta flood plain will negate the objective of the stipulation. Floodplains and deltas serve as important habitat for a host of fish species. Groups propose that the final SEIS use higher resolution IfSAR/InSAR data layers to update NHD layer for the entire Arctic Coastal Plain (ACP). An example of the dataset is currently available for the Canning River (https://netmap-portal.squarespace.com/netmap-portal) and can be produced for the entire ACP through third-party contractors.

The objective of lease stipulation 2 also needs to be clarified to ensure it can be met. The current objective has several terms that are unspecific and should be changed in order to protect biologically sensitive areas. The terms “protect”, “minimize”, “water quality, quantity”, “diversity of fish and wildlife habitats”, and “disruption of natural functions” do not have specific and quantifiable meanings. Groups suggest that the final define these terms or replace them with terms that are more specific and measurable such as “Maintain ecological integrity within aquatic and terrestrial ecosystems in order to conserve biodiversity of species”.

Additionally, lease stipulation 1 allows gravel mines near rivers and streams under all alternatives, including in setback areas, either by not prohibiting it outright or allowing a waiver to be granted.[683] Stipulation 2 is unclear whether it allows gravel mines under all alternatives including via a waiver for Alternative D. This should not be allowed. Gravel mines should be prohibited from areas that are not available for leasing and also in NSO areas because they alter hydrological flows, impair water quality, and alter natural fisheries biodiversity as well as riparian and stream bank vegetation. Additionally, the lease stipulations do not protect water resources from over withdrawal. BLM and FWS should develop an unwaiveable stipulation that prohibits water withdrawals in amounts that would take more water out of the water body than the amount FWS applied for in its instream flow reservation application to keep in the waterbody.

The objective of lease stipulation 3 needs to be clearer to meet its goal. The agencies should define terms or use terms with a more specific meaning. In the final SEIS, the agencies should change "protect the water quality, quantity, and diversity of fish and wildlife habitats, and populations associated with springs and aufeis across" to "maintain the natural flow regime and ecological integrity of springs and aufeis springs to conserve biodiversity of aquatic and terrestrial species and habitats associated with spring and aufeis ecosystems"

The objective of lease stipulation 9 also needs to be clearer to meet its goal, which can be accomplished by defining terms or using terms with a more specific meaning. The agencies should change "protect" to "maintain ecological integrity of" in the final SEIS. Additionally, there is no requirement/Standard for information about nearshore fish habitat mitigation. This should be required in the final SEIS.

ROP 8 does not include defined requirements associated with the allowable exception to removal of ice from rivers with defined limits. Due to no limit on river ice extraction or explanation on the authorization framework (like in ROP 9) ROP 8's exception negates the objective and the ROP objective may not be met. In the final SEIS, the agencies should clearly define the process of site-specific authorization including baseline research that needs to be conducted, how decisions will be made to determine the amount of ice allowed to be extracted, and locations where ice would and would not be allowed to be extracted. Additionally, ROP 8 for Alternative D prohibits the removal of ice aggregate from some but not all aufeis, without explanation for the differentiation.

The objective for ROP 9 needs to be more clear to meet its goal. In the final SEIS, the agencies should define terms or use terms with a more specific meaning, including changing "adequate habitat for" to "ecological integrity of habitat for". The optional water level and quality monitoring also does not allow for scientific assessment of impacts. Monitoring should be mandatory. ROP 9 also allows water withdrawals of a percentage of unfrozen or available water based on fish species, but BLM and FWS do not explain or justify how it arrived at the percentages.[684] Additionally, for Alternative B and C, it makes modeling and monitoring completely discretionary, further limiting BLM's ability to understand the impacts of water use

[683] DSEIS at 2-7.
[684] DSEIS 2-37 to 2-38.

and regulate it effectively. For Alternative D, it is unclear how the required modeling and monitoring will be factored into permitting and if BLM and FWS will be able to force operations to stop if water withdrawals are having too great of an impact.

ROP 11 lacks defined standards associated with the surfaces in which roads and industrial operations can operate. Terrain with high erosion potential due to slope and surficial geology is necessary to include within ROP or the objective will not be met. In the final SEIS, the agencies should add into the ROP requirement standard that "in order to protect watersheds and maintain the ecological integrity of aquatic ecosystems, travel over terrain with high erosion potential (determine from best available InSAR DEM) would be prohibited."

ROP 12's requirement/standards will not necessarily meet the objective. Even if the procedures are followed the objective may not be met. The agencies need to also require at site monitoring of streamflow prior to installing ice or snow bridge to determine the site-specific natural flow regime during the spring.

ROP 16 lacks defined standards associated with the allowable exception for BLM to authorize drilling in floodplains of fish-bearing rivers and streams, which will negate the ROP objective. Drilling will change water quality due to the quantity of water required for drilling and discharged water. Also, the term "fish-bearing" is unspecific. Fish move throughout lentic and lotic systems in the Arctic and use a variety of freshwater, estuarine, and marine habitats throughout their lives. Just because a fish is not detected at a specific time does not mean it did not use an aquatic environment for a portion of its life as important habitat. Information on Arctic fish species is limited and we know very little about fish movement patterns and resource selection. In the final SEIS, the agencies should change "fish-bearing water bodies" to "aquatic habitats with confirmed fish presence and the habitats connected by perennial or temporary aquatic water to locations with confirmed fish presence." Additionally, ROP 16 prohibits exploratory drilling in some rivers and streams to protect fish; exploratory drilling should be prohibited in all rivers and streams to protect water quality and hydrology.

ROP 19 terms "water quality" and "diversity" are unspecific within the objective which makes the objective poorly defined. The agencies should replace the existing objective with "Maintain ecological integrity within aquatic and terrestrial ecosystems in order to protect biodiversity of species." These terms (ecological integrity, aquatic, terrestrial, ecosystem, biodiversity) all have a specific scientific meaning. There is also insufficient scientific evidence documented in the draft SEIS to know if a 500 ft buffer is adequate for ROP 19 to meet its objective (i.e., protect aquatic and terrestrial species and their habitats). The term "fish-bearing" is also unspecific. Fish move throughout lentic and lotic systems in the Arctic and use a variety of freshwater, estuarine, and marine habitats throughout their lives. Just because a fish is not detected at a specific time does not mean it did not use an aquatic environment for a portion of its life as important habitat. In addition, if a species occurs in low numbers, its detection probably requires additional effort and multiple gear types for sampling (Haynes et al. 2013). Information on Arctic fish species is limited and we know very little about fish movement patterns and resource selection. To account for this, in the final SEIS the agencies should change "fish-bearing water bodies" to "aquatic habitats with confirmed fish presence and the habitats connected by perennial or temporary aquatic water to locations with confirmed fish presence."

The objective for ROP 22 needs to be more clear to meet its objective. Specifically, the term "natural drainage patterns" needs to be a more specific term. In the final SEIS, the agencies should change "alteration of natural drainage patterns" to "alternation perennial and temporary surface and subsurface water movement patterns." ROP 22 also lacks defined standards associated with the culvert installation, which potentially void the ROP objective. Terms within the ROP such as "natural flow" and "adversely affecting natural flow" need to be defined and detailed methodology need to be described. In the final SEIS, the agencies should change "natural flow" to "natural flow regime" and "adversely affecting the natural flow regime", which have specific scientific meaning (see Poff et al. 1997). ROP 22's stream crossing methods are unspecific and out of date (20 + years old). In the final SEIS, the agencies should consider the more recent impacts of culvert use on fish and aquatic species (e.g., Maitland et al. 2016). The agencies can look at NOAA 2023 for more recent fishway planning and design criteria to better develop a ROP that can meet the lease stipulation objective.

We also suggest that the agencies define or update the definitions for the following terms in the final SEIS:

- *Natural flow regime* - The natural flow regime is the magnitude, frequency, duration, timing, and rate of change of flow events that characterize the hydrology of a natural river environments.
- *Ecological integrity* - Ecological integrity is the capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition and functional organization comparable to that of natural habitat of the region.
- *Biodiversity* - Biodiversity is the variety and variability among living organisms and the ecological complexes in which they occur.
- *Water quality* - Water quality is the physical, chemical, thermal, and biological properties of water suitable for aquatic organisms within a particular aquatic ecosystem.

G. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON FISH AND AQUATIC SPECIES.

In general, the fish and aquatic species section of the draft SEIS suffers from insufficient and outdated data, unspecific lease stipulation objectives, overly vague required operating procedures, and ambiguous terminology, as described in more detail below. To ensure compliance with the Arctic Refuge's purposes of conserving fish and wildlife and habitat, meeting international treaty obligations regarding fish, wildlife, and habitat, continuing to provide for subsistence, and protecting water quantity and quality needed to meet fish, wildlife, and habitat needs, the final SEIS must remedy these deficiencies, including by analyzing and adopting an alternative with stronger protections for fish and aquatic species. At a minimum, this alternative must require that key baseline data and information gaps are remedied, scientifically rigorous impact assessments are conducted, and additional site-specific mitigation measures are developed and implemented prior to any exploration or development approvals.

1. Summary of Arctic Coastal Plain fish species, important aquatic habitat, and subsistence fisheries.

a. Missing information and data gaps for fish

Unfortunately, the majority of fish species remain understudied in Arctic regions and therefore little is known about movement patterns, important habitat utilized, and the diversity of life history types. From limited research on fish movement across the Arctic region, results generally show that fish frequently move among habitats and utilize habitats across large distances (Bradley et al. 2016; Heim et al. 2016; Brown et al. 2018; Leppi et al. 2021) emphasizing the importance of connectivity between habitats. All fish species require permanent and temporary aquatic habitat for spawning, foraging, refuge, and dispersal (Schlosser 1991; Heim et al. 2018). These habitats may change over seasons and life stages, and can be perennial or temporary, lasting days to months. Each of these habitats is important for the management and conservation of Arctic fish species, yet temporary aquatic habitats are generally unknown and often not considered in management plans (Acuna et al. 2017; Heim et al. 2018). Additionally, while recent research on life history diversity of certain fish species such as Dolly Varden (Gallagher et al. 2018; Brown et al. 2018; Gallagher et al. 2019) or Broad Whitefish (Leppi et al. 2022), has provided novel insights into the spectrum of life history variations and life-long movement patterns, information does not exist for most species in the Coastal Plain of the Arctic National Wildlife Refuge. This is a major deficiency for assessing the affected environment on fish species within the draft SEIS.

b. Diversity of fish species within the Coastal Plain and habitat use

Freshwater, estuarine, and nearshore marine waters of the CP contain numerous Arctic fish species (17–21 estimated species; U.S. Fish and Wildlife Service 2015), but limited information exists for most species. The two most abundant anadromous fish species, Dolly Varden (*Salvelinus malma*) and Arctic Cisco (*Coregonus autumnalis*; Craig 1984) extensively utilized areas within the Coastal Plain. Arctic Cisco has not been documented using estuary and delta habitat within the Coastal Plain, but mainly use nearshore habitat within the Beaufort Seas as important foraging habitat between their spawning migration to the Mackenzie River and overwintering location in the Colville River Delta (Reist and Bond 1988; Brown 2008). Dolly Varden have two major life forms which include freshwater resident (dwarf, lake, and spring forms) and anadromous forms that are present in freshwater, nearshore and marine habitats (Ward and Craig 1974; Brown et al. 2014; Brown et al. 2019). While extensive information exists on adult Dolly Varden spawning and overwintering areas, little research has been conducted on the diversity of life history types or juvenile fish habitat utilized. Both Chum salmon (*Oncorhynchus keta*) and Pink Salmon (*O. gorbuscha*) have historically been documented to be present within the Canning and Staines rivers as well as Coastal Plain nearshore marine areas (Craig et al 1984; Craig and Haldorson 1985), but little information exists on populations along with spawning, rearing, and foraging habitat used. Arctic Graying are likely another abundant fish species in the Coastal Plain. Arctic Grayling are typically observed in lotic and lentic freshwater environments, they also can tolerate a range of salinities and have been caught estuarine and nearshore habitats (West 1992; Moulton and Fawcett 1984; Craig et al. 1985) with salinity levels up to ca. 18 ppt (Moulton and Fawcett 1984). In other nearby

watersheds, Arctic Grayling have been shown to migrate seasonally between a diversity of habitats such as small headwater streams, beaded streams (Heim et al. 2016), main channel rivers, nearshore lagoons to meet life history functions (i.e., spawning, foraging, refuge, and dispersal) to maximize growth and survival. Other fishes within the Coastal Plain freshwater habitat include Lake Trout (*Salvelinus namaycush*), Burbot (*Lota lota*), Ninespine Stickleback (*Pungitius pungitus*), and Slimy Sculpin (*Cottus cognatus*; U.S. Fish and Wildlife Service 2015), and while not much is known about the distribution of these species it is likely that they inhabit a variety of habitat types extensively throughout the Coastal Plain.

c. Important fish habitat within the Coastal Plain

Lotic and lentic habitat within the Coastal Plain contains extensive fish habitat necessary for reproduction, foraging, and survival of Arctic fish. While historical research has only documented a snapshot of habitat use in space and time, it is likely that fish populations use extensive habitat across large areas (100's km) in order to fulfill necessary life history requirements such as spawning, refugia, and foraging (Schlosser 1991). Distinct overwintering areas are located at areas that do not freeze solid during the winter (i.e., perennial springs, deep sections of rivers and deep-water lakes; Craig and McCart 1974; Viavant 2009; Brown et al. 2014; Brown et al. 2019) and are necessary for survival. Another type of critical fish habitat, spawning areas, are located upstream of the Coastal Plain and many post-spawned Dolly Varden either migrate downstream and overwinter near perennial springs within the Coastal Plain or nearby watersheds (Brown et al 2014; Brown 2019). Rearing and foraging areas for both adult and juvenile Dolly Varden likely occur throughout watersheds within the entire Coastal Plain, in habitats specific for each life stage, though data is limited to document habitat use across spatial and temporal scales (e.g., Ward and Craig 1974; McCart 1980; Underwood et al. 1996). Limited information also exists on the abundance and distribution of salmon (Pink and Chum salmon) within the Coastal Plain, due to their generally low abundance in the Arctic, but species are likely attempting to colonize the Arctic (Dunmall et al. 2022) by using spring-fed rivers for spawning, and, if successful, salmon will need delta, tributaries, side channels, and nearshore areas for rearing. Arctic Grayling (*Thymallus arcticus*) occur in freshwater habitats within the Coastal Plain and, based on previous research (West and Smith 1992) and habitat suitability requirements, it is likely that populations extensively use the vast majority of Coastal Plain streams and connected lakes at some point in their lives, for reproduction, foraging, and survival.

d. Importance of fish species as a subsistence resource for Arctic Coastal Plain communities

Nonsalmon fish species are important subsistence resources for the Arctic community of Kaktovik. In addition to marine mammals and large land mammals, fish resources are the third most utilized wild food resource for the community of Kaktovik and represent 13% of total wild resources harvested (Kofinas et al. 2016). The annual mass of fish harvest within the subsistence fishery is significant and fishers harvest 12,468 kg of fish annually, which the vast majority (99%) are nonsalmon fish (Kofinas et al. 2016). Fish species with the greatest harvest quantities include Dolly Varden (ca. 9,478 kg), Broad Whitefish (ca.1,691 kg) and Arctic Cisco (ca.762 kg), which are harvested in both nearshore marine and freshwater habitats. In addition to being

directly consumed by Kaktovik residents, a large proportion of subsistence catch is shared within a food sharing network between Arctic coastal plain communities (Kofinas et al. 2016).

e. Ecosystem based management and importance of connected heterogeneous habitat

Ecosystem-based management strategies that allow for natural disturbance and portfolio concepts to occur are essential for sustaining Arctic fish populations in the Coastal Plain and need to be considered in the final SEIS. Disturbance processes across space and time create a mosaic of habitat types (Resh et al. 1988), which provides a diversity of habitat for fish species and creates a variety of options available across changing environmental conditions (i.e., a shifting habitat mosaic; Stanford et al. 2005) — buffering populations from both climate and anthropogenic impacts (Schindler et al. 2015). Due to displaced resources, movement by anadromous and freshwater fish is extensive; it is likely that a large majority of Arctic fish currently utilize entire watersheds (e.g., Waldman et al. 2016), from headwater streams to estuaries, to meet basic biological life requirements of reproduction, foraging and survival. The variation in environmental conditions and heterogeneity in habitats across the Coastal Plain has likely, as seen in other systems, created a diversity of life-history strategies, phenotypes and genetic diversity among fish, which helps maintain and sustain current populations (Schindler et al. 2015). As seen in other watersheds and can be expected to occur under draft SEIS action alternatives, fragmentation of connected habitat or disruption of natural disturbance processes, from roads, culverts, bridges, and development pads, will reduce habitat heterogeneity and increase fish populations vulnerability to long-term persistence (Penaluna et al. 2018). The homogenization and fragmentation of habitat will likely lead to loss of local populations, reduction of in local genetic and life-history diversity leading to less resilient Arctic fish populations, inconsistent with Arctic Refuge purposes that require protection of those populations.

2. Affected Environment.

a. Summary of fish and aquatic species habitat section and deficiencies of baseline data related to fish habitat and species occurrence

Overall, the assessment of baseline aquatic habitat within the Coastal Plain is scant and an inaccurate assessment of reality. The baseline assessment does not provide accurate estimates on the location, quantity, or type of fish habitat including rivers, streams, lakes, and tundra ponds within the Coastal Plain. A systematic survey should be conducted for the Coastal Plain to estimate fish species abundance (see Borcher et al. 2002 for methods) and identify important habitats for reproduction, foraging, and survival based on empirical relocation data (e.g., radio tracking), eDNA, and intrinsic habitat models that use habitat attributes to estimate habitat use across large spatial extents (e.g. Burnett et al. 2007; Bidlack et al. 2014; Matter et al. 2018; Leppi et al. 2021). While the draft SEIS addresses fish habitat at a high level, it does not adequately consider the affected environment for aquatic invertebrates and plants, two important habitat attributes that provide food and physical habitat for various life stages of fish. There is a tremendous amount of scientific literature available from the last 30+ years that explores and documents how to quantify and describe aquatic habitat and species occurrence across large

riverscapes — rivers, streams, lakes, wetlands, groundwater flow pathways, within a terrestrial landscape from the headwaters to the ocean (see Fausch et al. 2002; Naiman et al. 2005). Absent utilizing existing methodologies to identify fish habitat and species occurrence in the Coastal Plain, the final SEIS should, at a minimum, require such surveys to be completed at the project level.

b. Deficiencies of baseline data related to fish habitat and aquatic species occurrence

i. Accuracy of hydrography network

Due to the resolution of the current USGS National Hydrography Dataset (NHD), which uses a 20–30 m resolution digital elevation model as the input data source, and limited physiographic relief within sections of the Coastal Plain, the data used to estimate hydrography channel network is inaccurate. The current NHD delineated hydrography network does not provide an accurate assessment of active channel width and floodplain extent for streams within the Coastal Plain or correctly represent proposed stream buffers. It is particularly inaccurate throughout the Coastal Plain in areas with wide braided floodplains and low gradient streams, which are very common landscape features. High-resolution InSAR data (resolution 2.5–5 m) is currently available for the entire Coastal Plain (https://www.usgs.gov/news/alaska-mapping-update) and needs to be updated and verified using high-resolution satellite imagery and field verification techniques in order to accurately quantify the affected environment. An example of an improved Arctic stream channel networks from using high resolution IfSAR DEM data can be seen here at https://netmap-portal.squarespace.com/datasets. At a minimum, this should be required for any project-level approvals.

ii. Lake network classification, stream-lake connection is inaccurate

The assessment of lakes and stream-lake connections is inaccurate within the draft SEIS. To fully understand the distribution of lake types, stream-lake connectivity, and lake sensitively to climate change and water withdrawal across the Coastal Plain, an extensive lake-based database needs to be created and lakes must be classified based on a suite of attributes following methods outlined in Jones et al. (2017). First, InSAR digital surface model, high-resolution satellite imagery along with field data should be collected for all lakes and tundra ponds within the entire Coastal Plain. Then additional data layers such as surficial geology, lake surface area change, stream connection and landcover vegetation should be collected, and then a lake classification should be completed. Without a detailed understanding of lake types across the Coastal Plain, it is impossible to quantify the baseline of the affected environment. This in turn leads to likely inaccuracies in lentic fish habitat within the draft SEIS section 3.3.2 affected environment. At a minimum, the agencies should require creation of a lake-based database for any project-level approvals.

iii. Accuracy of anadromous fish habitat and species occurrence

The information on fish habitat within the Coastal Plain program area (Table 3-33 & Map 3-19) is inaccurate and needs to be updated. Fish distribution and habitat use information does

not provide a reliable estimate of species-specific habitats for freshwater, anadromous, and marine species that inhabit waters within the Coastal Plain. As stated in Johnson and Blossom (2017), "information from the anadromous water catalog (AWC) only reflects the extent of fish surveys or known anadromous fish use in a particular water body (e.g., stream, river, lake) and does not represent species occurrence or habitat use. A variety of habitat variables (e.g., water clarity, river size, and depth), sampling methods (e.g., weir, gillnet) and other factors (e.g., remoteness) influence the detection of fish species which the AWC does not take into account". The data from the AWC is not an accurate assessment of freshwater, anadromous, or marine species habitat use. A systematic survey should be conducted prior to exploration or development to estimate species abundance (see Borcher et al. 2002 for methods) and identify habitats for reproduction, foraging, and survival based on empirical relocation data (e.g., radio tracking), eDNA, and intrinsic habitat models that use habitat attributes to estimate habitat use across large spatial extents (e.g. Burnett et al. 2007; Bidlack et al. 2014; Matter et al. 2018; Leppi et al. 2021). Current estimates of fish-bearing and anadromous streams are incorrect and recent modeled data for a subset of the Coastal Plain suggests that anadromous fish habitat is much greater (see https://netmap-portal.squarespace.com/datasets). While data and scientific methods exist to develop accurate assessments of fish habitat, Section 3.3.2 of the draft SEIS uses inaccurate and limited available data to poorly quantify the affected environment. At a minimum, the agencies should require more complete and accurate assessments of fish habitat prior to any project-level approvals.

c. Deficiencies/data gaps by habitat type section

i. Estuaries, lagoons, and nearshore marine waters

Estuaries, lagoons, and nearshore marine waters are critical habitat features for a variety of aquatic species at various life-stages and seasonal periods (See Craig et al. 1981; Craig et al. 1984; Craig and Haldorson 1985; Craig 1989; West et al. 1992; Underwood et al. 1996; Dutton et al. 2012; Courtney et al. 2018). In addition to serving as important habitat for various fish species, these areas are also Essential Fish Habitat (EFH) for Arctic Cod (*Boreogadus saida*), Saffron Cod (*Eleginus gracilis*) and Snow Crabs (*Chionoecetes opilio*). Section 3.3.2 of the draft SEIS does not provide accurate and detailed information on the landscape features in relation to habitat use to quantify the baseline affected environment.

ii. Rivers, streams, and springs

River, stream, and karst-spring locations are not accurately identified, delineated, or described by Section 3.3.2 of the draft SEIS. The current NHD stream hydrography network provides an inaccurate estimation of channel location, length and extent for Coastal Plain lotic environments. Data on karst springs is limited and new methods, including satellite imagery and empirical data collection, should be used to quantify physical and biological features of habitat (e.g., Pavelsky and Zarnetske 2017). Limited information exists on streamflow, which is inadequate for quantifying the natural flow regimes for each stream. New data must be collected and methods should be used to quantify streamflow metrics (see Olden and Poff 2003). No information exists for stream thermal regimes, which is essential and necessary baseline information (see Steel et al. 2017). No channel reach morphology attribute information is

documented to classify and quantify lotic habitat, which is essential to quantify the baseline habitat information for rivers, streams, and springs (Montgomery and Buffington 1997). At a minimum, the agencies should require use of these new methods to quantify springs and streamflow metrics prior to any project-level approvals.

iii. Lakes and tundra ponds

Information on lakes and tundra ponds attributes within Section 3.3.2 of the draft SEIS is inadequate to quantify the baseline. Given the potential importance for lakes as overwintering fish habitat and the potential impacts from water withdrawal, detailed and unique information needs to be compiled for all lakes within the Coastal Plain using methods by Jones et al. (2017).

d. Deficiencies/data gaps in fish species occurrence

Information on fish species habitat use and occurrence within Section 3.3.2 of the draft SEIS is inadequate to quantify baseline information on fish species. The draft SEIS significantly underestimates fish species presence, occupancy, and habitat use. A rigorous and systematic survey for fish populations abundance, occurrence, and seasonal habitat use has not been collected to document how fish species use the Coastal Plain for reproduction, foraging and survival. Numerous methods that combine eDNA data, intrinsic potential models (also known as resource selection models), and radio tracking currently exist which are both feasible and appropriate for the Coastal Plain (see Falke et al. 2013; Fraley et al. 2018; Matter et al. 2018; Leppi et al. 2021). The agencies should require surveys prior to any project-level approvals.

e. Deficiencies/data gaps in aquatic invertebrate species occurrence

Information on aquatic invertebrate habitat use and occurrence within Section 3.3.2 of the draft SEIS is inadequate to quantify baseline information on aquatic species. No site-specific information is provided to quantify the distribution, occupancy, or abundance of invertebrate species in relation to channel morphology of aquatic habitat. Using the river continuum concept (Vanote et al. 1980), the serial discontinuity concept (Ward and Stanford, 1995), and theory on the tributary influences on network patterns (Fisher 1997), an invertebrate community assessment should be completed that incorporates site-specific information across all streams within the Coastal Plain. Additionally, references cited are not specific for the Coastal Plain, are over 18 years old, and do not provide an accurate assessment of the baseline for invertebrate communities. Further, there is no mention of other aquatic species beyond fish and aquatic invertebrates (e.g., plants). At a minimum, the agencies should require a complete invertebrate community assessment prior to any project-level approvals.

f. Deficiencies/data gaps in climate change impacts

Information on climate change impacts within Section 3.3.2 of the draft SEIS is inadequate. See the recent Intergovernmental Panel on Climate Change polar regions report for an extensive review of the physical, biological, and social impacts of climate change (Meredith et al. 2019). Current and future high-resolution climate data is currently available for the Coastal Plain including upstream areas within each watershed (see Cai et al. 2018), but is not provided in

the draft SEIS. Baseline long-term and spatially explicit information on hydrology (e.g., streamflow, water temperature, water quantity, and surficial and groundwater permafrost flow dynamics) is not shown in the draft SEIS and therefore impossible to assess the current and future impacts of climate change. Necessary information is needed to understand baseline information on Arctic lakes along with appropriate methodology documented by Arp et al. (2016). While Stuefer et al. (2017) provides a synthesis and analysis of observational data for three watersheds to the west of the Coastal Plain, it does not provide a reliable estimate of climate impacts for watersheds that flow into the Coastal Plain. To understand climate change impacts on lotic ecosystems in the Coastal Plain, a suite of information, models and empirical data needs to be collected to quantify thermal and streamflow regime (see Poff et al. 1997; Olden and Poff 2003; Isaak and Rieman 2013; Steel et al. 2018). No current geomorphic classification data on lotic and lentic habitats to quantify habitat types and anticipate future change (Montgomery and Buffington 1997) is documented within the draft SEIS, which is necessary to quantify climate change impacts to aquatic ecosystems. At a minimum, the agencies should require collection and analysis of data to provide a reliable estimate of climate impacts for Coastal Plain watersheds prior to any project-level approvals.

3. Summary Direct and Indirect Impacts to Fish and Aquatic Species.

Overall, the draft SEIS assessment of direct and indirect impacts to fish and aquatic species remains inadequate and incomplete. The draft SEIS fails to incorporate accurate baseline information, current scientific knowledge on habitat use, and behavioral impacts to fish species. The associated impacts from development (physical, chemical, and biological) outlined in the draft SEIS have a high potential to cause numerous other impacts not described. There is a tremendous amount of scientific literature available from the last 30 + years that explores and documents the impacts of various types of development proposed by the draft SEIS on fish and aquatic species.

Due to the limited amount of available winter liquid water, if ice roads are built using water extracted from rivers there will likely be both short and long-term impacts on fish populations. Impacts could include direct loss of overwintering habitat, reduced dissolved oxygen concentrations, and increased stress and mortality of Dolly Varden or other Arctic fishes (e.g., Gaboury and Patalas 1984; Evans 2007; Cott et al. 2008). Seismic exploration through noise or instantaneous pressure change has the potential to cause short-term, but severe impacts to overwintering fishes and could include negative behavioral changes (e.g., fleeing, herding), hearing loss, and direct mortality of fish and embryos (McCauley et al. 2003; Popper et al. 2005). Construction of gravel and ice roads, pipelines, and other infrastructure associated with river or streams crossings would mobilize sediment (Maitland et al. 2016), causing associated impacts to rearing, spawning, and overwinter habitat (e.g., Robertson et al. 2007; Chapman et al. 2014), as well as the health and behavior of fishes (e.g., Newcombe and Macdonald 1991; Reid et al. 2003; Robertson et al. 2006; Chapman et al. 2014). Within floodplain channels, infilling and various types of stream and river crossing structures (e.g., ice-bridges, culverts, concrete bridges) have the potential to cause long-term changes to the natural flow regime, and restrict channel movement and fish passage, causing negative impacts to fish populations (Wemple et al. 1996; Cocchiglia et al. 2012; Maitland et al. 2016). Additionally, with the construction and maintenance of a gravel road network, numerous other minor to severe impacts may occur such

as hydrocarbon and sump contamination (Schein et al. 2009; Kanigan and Kokelj 2010), introduction of non-native species and increased fishing pressure all of which would have both short and long-term impacts to fish populations (Schindler 2001).

a. Deficiencies of direct and indirect impacts to fish and aquatic species

Information on direct and indirect impacts to fish and aquatic species within Section 3.3.2 of the draft SEIS is inadequate to evaluate direct and indirect impacts of proposed development. In certain instances, impacts may take years to develop (e.g., Walker et al. 1987; Raynolds et al. 2014). The current draft SEIS is lacking accurate information on stream hydrology (surficial and groundwater), climatology, hydrography channel network and floodplain distributions, channel morphology, and distribution and abundance of fish and aquatic species, which are all necessary baseline information to fully evaluate impacts. As possible, the final SEIS should address these gaps using the best available information, and should, at a minimum, require more robust quantitative baseline information and analysis prior to any project-level approvals.

i. Direct and indirect impacts from loss or alteration of aquatic habitat

The assessment of the direct and indirect impacts from loss of aquatic habitat (both lotic and lentic) from development within the draft SEIS does not accurately describe the impacts. The removal and fill of aquatic habitats will have a variety of direct impacts beyond the described footprint of the development infrastructure (i.e., gravel roads, gravel pads, airstrips, pipelines, culverts, bridges, docks, barge landing zones, gravel mines) which may develop differentially over time (i.e., days–years) causing numerous short and long-term impacts (e.g., Walker et al. 1987; Raynolds et al. 2014). Classification of aquatic habitat based on climate, physiography, geology, and fluvial morphology using accurate spatially explicit data (e.g., Benda et al. 2015) is essential prior to understanding impacts, which is lacking in the draft SEIS. A complete understanding of the surficial hydrology through long-term data and hydrologic models is also necessary to understand direct impacts. Alteration of aquatic habitats, which rest above permafrost, will alter surficial and subsurface flow paths directly impacting streamflow, stream temperature and water quality (Liljedahl et al 2016; Walker et al. 2019). Changes in water quantity and quality will also have numerous negative direct, indirect and cumulative impacts on the amount of physical habitat in areas as well as the quality of habitat used for foraging, reproduction, and survival, which will cause impacts to aquatic species behavior, physiology, and fitness.

ii. Direct and Indirect impacts from industrial roads and road crossings

The assessment of the direct and indirect impacts from industrial road crossings within the draft SEIS does not fully or accurately describe the impacts. Roads, bridges, and culverts have been shown to alter surface hydrology through channelization and redistributing of flow to stream crossings (Wemple et al., 1996), which can destroy or create wetlands, reduce fish movement (Warren and Pardew, 1998; Trombulak et al. 2000) and access to seasonally important habitat (Brown and Hartman, 1988). Additionally, previous research has shown that vehicle traffic has the potential to introduce heavy metals, ozone, and nutrients to roadside

aquatic environments (Leharne et al. 1992; Schuler and Relyea 2018), which has the potential be transported throughout aquatic systems (Gjessing et al.1984; Schuler and Relyea 2018) to harm aquatic biota. Industrial road crossings will also affect the instream physicochemical habitat of river and streams. Due to upstream constriction effects, culverted streams are associated with higher percent fines, water temperature, water depth, and turbidity as well as lower dissolved oxygen and water velocity (MacPherson et al. 2012; Maitland et al. 2016), and sediment impacts will extend hundreds of meters downstream for each culvert (Lachance et al. 2008). Road culverts also have the potential to block or restrict fish passage at critical periods (see Morris and Winters, 2008 for Alaska specific example), which could add additional stress on populations during periods when resources are limited (Furniss et al., 1991; Warren and Pardew, 1998). Bridge crossings also contribute to increased sediment inputs from erosion at exposed road crossings, while over time stabilization can occur, storm or flood events (common in the Coastal Plain) can continually reactivate erosional processes (Maitland et al. 2016). Changes in aquatic habitat quality can directly and adversely impact fish and aquatic species and by increasing instream sediment (suspended and deposited) will likely impact Arctic fish species in the Coastal Plain, over different time periods (days–years) by reducing embryo survival, altering feeding behavior, and changing species abundance and richness (Chapman et al. 2014). The indirect impacts of road crossing in the Coastal Plain will likely include mortality, reduce fitness, changes in population abundance in impacted areas and may also impact population genetic and life-history diversity over the long term.

iii. Direct and indirect impacts from water use and seasonal redistribution of water

The assessment of the direct and indirect impacts from water extraction and redistribution on fish and aquatic species within Section 3.3.2 of the draft SEIS is inadequate to evaluate direct and indirect impacts of proposed development. In order to quantify the potential impacts of industrial water consumption (e.g., ice roads, drilling, camp facilities) and redistribution on fish and aquatic species, several analyses need to be completed for the Coastal Plain including; a specific lake network classification following methods in Jones et al. (2017), a physically-based 3D hydrology model to model water movement, survey of aquatic habitat in a systematic manner in combination with seamless digital layers to develop hierarchical habitat information (see CHaMP 2015). Finally systematic fish surveys need to be conducted across the Coastal Plain in combination with fish habitat models to quantify fish habitat at the species level. These analyses must, at a minimum, be completed prior to any project-level approvals. Industrial water use in winter and summer will extract water and ice from lakes, rivers, springs, and groundwater, which is hydrologically connected to a variety features, and has the potential to reduce habitat and redistribute water in patterns that will negatively impact fish and aquatic species. For example, removing water or ice from lakes and rivers during winter has the potential to impact fish and aquatic species by reducing dissolved oxygen, decreasing overwintering and littoral habitat, fracturing migration corridors, freezing sediments in littoral areas, which may kill fish eggs and invertebrates or cause physiological stress, which can affect growth, reproduction, or survival (Cott et al. 2008; Cott et al. 2015). The draft SEIS estimates that a tremendous amount of water (420,000 to 1,900,000 gallons) would be required to complete each well and another 2,000,000

gallons per day would be required to maintain each well during production.[685] Extraction of water in this quantity from industry preferred water sources on the Coastal Plain (groundwater aquifers, lakes, and rivers) is likely to cause major changes in groundwater and surficial flow paths affecting water quantity across all habitats hydrologically connected. Subsurface groundwater movement in the Coastal Plain is largely unknown and likely complex due to permafrost (see Kane et al. 2013; Walvoord and Kurylk 2016). If current groundwater hydrological connectivity is altered by water extraction there could be severe impacts to biologically important aquatic landscape features fed by groundwater (i.e., karst springs, lakes or rivers). The biological impacts and consequences of altering streamflow or water quantity for fish (particularly Dolly Varden and Arctic Grayling) and aquatic species need to be considered in greater detail within the draft SEIS and as part of any project-level approvals.

iv. Direct and indirect impacts from habitat alteration; change in streamflow, water temperature and water biogeochemistry

The assessment of direct and indirect impacts of habitat alteration within Section 3.3.2 of the draft SEIS is inadequate to evaluate impacts of proposed development on fish and aquatic species. Limited information exists on streamflow regimes and is inadequate for quantifying direct and indirect impacts to fish and aquatic species. The natural flow regime is a critical element that maintains biodiversity and ecosystem integrity in lotic systems and altering the historical flow regime will have negative impacts to aquatic species in rivers and streams (Poff et al. 1997). New data on seasonal streamflow regimes that quantifies critical components of flow regimes (i.e., magnitude, frequency, duration, timing, rate of change) needs to be collected and methods should be used to quantify streamflow metrics (see Olden and Poff 2003). Thermal regimes are another critical element that regulates metabolism in fish and invertebrates, influencing growth, phenology, and survival, which influences food webs and aquatic communities (Caissie 2006; Webb et al. 2008; Steel et al. 2017). No information is provided on stream thermal regimes, which is essential and necessary baseline information to quantify impacts of habitat alteration on aquatic species. Development will likely impact thermal regimes by reducing the quantity of water in certain habitats and the impacts have not been considered in the draft SEIS. Last, biogeochemical processes in aquatic ecosystems influence nutrient availability, biofilms, invertebrate abundance, which in turn influence Arctic food webs (Huryn et al. 2005). Habitat alteration from proposed development in the Coastal Plain (roads, culverts, bridges, infrastructure pads etc.) is likely to increase permafrost thaw, thermokarsting, erosion into lentic and lotic environments, and alter surficial and groundwater flow paths (Walker et al. 1987; Raynolds et al. 2014; Liljedahl et al. 2016; Walker et al. 2019) which, through changes in the habitat is likely to have negative impacts on the behavioral ecology (i.e., foraging, antipredation, reproduction, survival) of Arctic fish as well as the distribution and abundance of aquatic invertebrates (Cocchiglia et al. 2012).

4. Deficiencies in lease stipulation and required operating procedures.

[685] *See* below for a critique of ROPs 8 and 9, which do not adequately avoid or mitigate foreseeable impacts associated with water withdrawals.

Lease stipulation (LS) and required operating procedures (ROPs) within Section 2 of the draft SEIS lack adequate clarity in terminology and operationalization of how they would be implemented. Without a detailed description of the terminology and scientific methodology outlining the operationalization of the following items it isn't feasible in many cases for the LS or ROPs to meet their objectives. The terms below should be further defined according to best available science and, as possible, quantitative methods, or replaced with new terms to ensure successful implementation across the Coastal Plain for each watershed where LS or ROPs apply.

- Active floodplain
- Floodplain
- River delta
- 50-, 100-, 200-year flood for Coastal Plain rivers
- Ordinary high-water mark
- Essential pipeline/road crossings
- Natural flow of rivers
- Disrupt flow from perennial springs
- Maintain natural runoff processes
- Minimize
- Natural function
- Disruption
- Water quality
- Local hydrologic conditions
- Protect natural flow
- River/Stream/Creek

Lease stipulation objectives lack adequate specificity. Without clearer and more measurable objectives it will be difficult to determine if the proposed lease stipulation or ROP has indeed met the objective. Lease stipulations and ROPs are not specific enough to clearly determine how they impact the objectives, especially with allowable exceptions, waivers, and modifications in Alternatives B, C, and D. In addition, various requirements and standards are insufficient to ensure compliance with the objective. The final SEIS should incorporate the following improvements across action alternatives, as they are necessary to protect fish and aquatic species and their habitat, as required.

Lease Stipulation 1

- Objective: the objective needs to be clearer to meet its goal. The current objective has several terms that are unspecific and should be changed in order to protect biologically sensitive areas. The terms "minimize", "disruption of natural flow patterns", "changes to water quality", and "disruption of natural functions" do not have specific and quantifiable meanings. Solution: change "minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from" to "maintain natural flow regimes and the ecological integrity of lotic ecosystems (rivers and streams) resulting from."

- Requirement/standard: No defined parameters associated with the allowable exception to building pipelines, roads, or facilities in river deltas. Permeant pipelines, roads, or industrial facilities within the delta flood plain will negate the objective of the LS. Floodplains and deltas serve as important habitat for a host of fish species. Solution: specify what, if any, types of exceptions will be allowed in floodplains and require those exceptions maintain natural flow regime and the ecological integrity of lotic ecosystems.
- Requirement/standard: The resolution of the available National Hydrography dataset in Alaska is currently inadequate to determine stream locations. Solution: prior to any project-level approvals, use higher resolution InSAR data layers to update NHD layer for the entire Arctic Coastal Plain (ACP). An example of the dataset is currently available for the Canning River (https://netmap-portal.squarespace.com/netmap-portal) and can be produced for the entire ACP through third-party contractors.

Lease Stipulation 2

- Objective: the objective needs to be clearer to meet its goal. The current objective has several terms that are unspecific and should be changed in order to protect biologically sensitive areas. The terms "protect", "minimize", "water quality, quantity", "diversity of fish and wildlife habitats", and "disruption of natural functions" do not have specific and quantifiable meanings. Solution: define these terms in the SEIS or replace them with terms that are more specific and measurable such as "Maintain ecological integrity within aquatic and terrestrial ecosystems in order to conserve biodiversity of species".

Lease Stipulation 3

- Objective: the objective needs to be clearer to meet its goal. Define terms or use terms with a more specific meaning. Solution: change "protect the water quality, quantity, and diversity of fish and wildlife habitats, and populations associated with springs and aufeis across" to "maintain the natural flow regime and ecological integrity of springs and aufeis springs to conserve biodiversity of aquatic and terrestrial species and habitats associated with spring and aufeis ecosystems."

Lease Stipulation 9

- Objective: the objective needs to be more clear to meet its goal. Define terms or use terms with a more specific meaning. Solution: change "protect" to "maintain ecological integrity of". Requirement/Standard: information is missing about nearshore fish habitat mitigation. Solution: insert "fish and".

Required Operating Procedure 8

- Requirement/standard: No defined parameters associated with the allowable exception to removal of ice from rivers without defined limits. Due to no limit on river ice extraction or explanation on the authorization framework (Like in ROP 9) the ROPs exception negates the objective and the ROP objective may not be met.

Solution: clearly define the process of site-specific authorization including baseline research that needs to be conducted, how decisions will be made to determine the amount of ice allowed to be extracted, and locations where ice would and would not be allowed to be extracted.

Required Operating Procedure 9

- Objective: the objective needs to be clearer to meet its goal. Define terms or use terms with a more specific meaning. Solution: change "adequate habitat for" to ecological integrity of habitat for".
- Requirement/standard: Optional water level and quality monitoring does not allow for scientific assessment of impacts. Solution: monitoring should be mandatory.

Required Operating Procedure 11

- Requirement/standard: No defined parameters associated with the surfaces in which roads and industrial operations can operate. Terrain with high erosion potential due to slope and surficial geology is necessary to include within the ROP, or the objective will not be met. Solution: add requirement/standard that "in order to protect watersheds and maintain the ecological integrity of aquatic ecosystems, travel over terrain with high erosion potential (determine from best available InSAR DEM) would be prohibited".

Required Operating Procedure 12

- Requirement/standard: Even if the procedures are followed the objective may not be met. Solution: need to also require on-site monitoring of streamflow prior to installing ice or snow bridge to determine the site-specific natural flow regime during the spring.

Required Operating Procedure 14

- Objective: the objective needs to be clearer to meet its goal. Solution: delete "that fish prey on".
- Requirement/standard: how would the lessee and BLM demonstrate that "no additional impacts would occur on fish or aquatic invertebrates"? Solution: define the steps, procedures, and process for the standard.

Required Operating Procedure 16

- Requirement/standard: No defined parameters associated with the allowable exception of BLM authorized drilling in floodplains of fish-bearing rivers and streams will negate the ROP objective. Drilling will change water quality due to the quantity of water required for drilling and discharged water. Also, the term "fish-bearing" is unspecific. Fish move throughout lentic and lotic systems in the Arctic and use a variety of freshwater, estuarine, and marine habitats throughout their lives. Just because a fish is not detected at a specific time does not mean it does not rely on that aquatic environment for a portion of its life. Information on Arctic fish species is limited and we know very little about fish movement patterns and resource selection.

Solution: change “fish-bearing water bodies” to “aquatic habitats with confirmed fish presence and the habitats connected by perennial or temporary aquatic water to locations with confirmed fish presence”.

Required Operating Procedure 19

- Objective: the terms “water quality” and “diversity are unspecific, which makes the objective poorly defined. Solution: replace existing objective with “Maintain ecological integrity within aquatic and terrestrial ecosystems in order to protect biodiversity of species”. These terms (ecological integrity, aquatic, terrestrial, ecosystem, biodiversity) all have a specific scientific meaning, as discussed further below.
- Requirement/standard: Insufficient scientific evidence documented in the draft SEIS to know if a 500 ft buffer is adequate for ROP 19 to meet its objective (i.e., protect aquatic and terrestrial species and their habitats). Solution: conduct an assessment of stream buffer width to protect stream ecosystems prior to any project-level approvals.
- Requirement/standard: As discussed above for ROP 16, the term “fish-bearing water bodies” is unspecific and should be changed to “aquatic habitats with confirmed fish presence and the habitats connected by perennial or temporary aquatic water to locations with confirmed fish presence”.

Required Operating Procedure 20

- Objective: the objective needs to be clearer to meet its goal. Solution: change “Maintaining free passage of marine and anadromous fish” to “Maintain marine, estuarine, and freshwater fish migratory passage and habitat”. There are other fish classes besides marine and anadromous that use nearshore areas for movement.
- Requirement/standard: detailed methodology and planning and design criteria need to be listed to meet objective. Monitoring is important, but it will not ensure the free passage of fish. Solution: insert “to ensure free passage of fish, all nearshore infrastructure would adhere to best available methods, procedures, and protocol to maintain nearshore fish passage and habitats as defined by …”.
- Requirement/standard: Appropriate entities not defined (e.g., USWFS, NMPS) and expertise not defined. Solution: identify and list the appropriate departments and staff who have the expertise to meet objective.

Required Operating Procedure 22

- Objective: the objective needs to be clearer to meet its goal. The term “natural drainage patterns” should be replaced with a more specific term. Solution: change “alteration of natural drainage patterns” to “alternation of perennial and temporary surface and subsurface water movement patterns”.
- Requirement/standard: No defined parameters associated with culvert installation potentially void ROP objective. Terms within the ROP draft SEIS such as “natural flow” and “adversely affecting natural flow” need to be defined and detailed methodology needs to be described. Solution: change “natural flow” to “natural flow

regime" and "adversely affecting the natural flow regime", which has a specific scientific meaning (see Poff et al. 1997).

- Requirement/standard: Stream crossing methods are unspecific and out of date (20 + years old). Solution: new impacts of culverts on fish and aquatic species need to be considered (e.g., Maitland et al. 2016) and corresponding mitigation measures integrated into the ROP. See NOAA 2023 for more recent fishway planning and design criteria in order to better develop a ROP that can meet the objective.

Required Operating Procedure 28

- Objective: The objective does not include fish or aquatic invertebrates. Solution: Lacustrine and riverine geomorphic and ecological classification as well resource selection modeling for fish, and ground-based wildlife surveys need to be included in the ROP in order to identify and protect important habitat for aquatic invertebrates and all fish species prior to development. Recent research in Alaska has demonstrated that habitat modeling approached coupled with telemetry movement collection can provide an effective tool for understanding fish habitat use (Fraley et al. 2016; Huntsman et al. 2017; Jalbert et al 2021; Leppi et al. 2022).

a. Data gaps relating to lease stipulations and required operating procedures

The draft SEIS fails to include any scientifically justified rationale, backed by empirical data, to explain the width of stream buffers and selection of only a subset of streams. The final SEIS should respond to the following questions, using peer-reviewed scientific evidence:

- How was river buffer width determined and what scientific evidence was used to determine appropriate width to meet lease stipulation objective?
- Why do certain rivers not have buffers and what scientific evidence to was used to determine which rivers have buffers to meet lease stipulation objective?
- Why do all lower order streams not have a buffer and what scientific evidence was used to determine the appropriateness of this decision?
- Does the lack of stream buffers on lower order streams negate protective objectives of higher order streams due to the fact that they are connected hydrologically?
- How was aufeis/karst spring buffer width determined and what scientific evidence to was used to determine appropriate width to meet objective?
- What is the state of science around aufeis flow paths, habitat use of fish and invertebrates across seasons?

b. Terminology that should be defined or updated and used in the final SEIS:

- *Anadromous fish* - An anadromous fish is a fish or fish species that spends a portion of its lifecycle in both freshwater and marine habitats, where they spawn in and undergo early development in freshwater, enter marine habitats to grow and mature, and return to

freshwater to reproduce. Anadromous fish include both semelparous, which die after spawning, and iteroparous forms which spawn multiple times.

- *Migratory fish* - A migratory freshwater fish is a fish or fish species that migrates short or long distances between habitats, which can include inter and intra movements between freshwater, estuarine, or marine habitats, to complete its life cycle.
- *Resident freshwater fish* - A resident fish is a fish or fish species that completes its entire lifecycle within or near the same freshwater habitat.
- *Natural flow regime* - The natural flow regime is the magnitude, frequency, duration, timing, and rate of change of flow events that characterize the hydrology of a natural river environments.
- *Ecological integrity* - Ecological integrity is the capability of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition and functional organization comparable to that of natural habitat of the region.
- *Biodiversity* - Biodiversity is the variety and variability among living organisms and the ecological complexes in which they occur.
- *Water quality* - Water quality is the physical, chemical, thermal, and biological properties of water suitable for aquatic organisms within a particular aquatic ecosystem.

H. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON BIRDS.

New Science. A recent study in *Avian Biology*, found that nest survival decreased significantly near high-use oil and gas infrastructure in the Prudhoe Bay oil fields of Arctic Alaska for shorebirds, passerines, and waterfowl.[686] The researchers analyzed 17 years of data and attribute the cumulative impacts of oil field activities, including noise, dust, vehicle traffic, air pollution, and increased predators associated with infrastructure, to this decline. This paper's findings should be incorporated into the final SEIS.

Ice Roads and Pads. The draft SEIS correctly identifies the development and use of ice roads and ice pads as an impact to birds.[687] However, the draft SEIS fails to specifically disclose that because of their density, ice roads and ice pads tend to melt later than naturally occurring snow and ice. This delayed melting has the potential to impact the physical environment through altered hydrologic processes, but also the biotic community of what is below the ice pad or ice road. These specific impacts to physical and biological conditions, and their cascading impacts to bird habitats and life cycles, should be disclosed in the final SEIS.

Artificial Light. The draft SEIS fails to consider the impact of artificial light on birds. Artificial light, particularly during the Arctic's spring and fall, has the potential to displace birds

[686] See: McGuire, Rebecca & Robards, Martin & Liebezeit, Joseph. (2023). Patterns in avian reproduction in the Prudhoe Bay Oilfield, Alaska, 2003–2019. Journal of Avian Biology. 2023. 10.1111/jav.03075.

[687] DSEIS at 3-168 and 3-180.

from certain habitats, disorient and compromise their movement, and contribute to collisions.[688] The impacts of artificial light should be discussed in greater detail in the final SEIS.

Shrubification (the expansion of shrubs across the Arctic). Within the climate change section, BLM and FWS correctly disclose how altered climatic conditions will continue to lead to the increase of shrubs in the study area. However, how these changes may impact certain species of birds should be discussed in greater detail. For example, research on Gyrfalcon (*Falco rusticolus*), which has historically specialized on ptarmigan, has demonstrated a shift in prey because of increased shrubs on once open tundra.[689] Moreover, how projected impacts from climate changes, such as shrubification, may be compounded by potential impacts from an oil and gas program should also be disclosed within the cumulative impacts section of the final SEIS.

Global Importance. Birds from across the planet utilize the Coastal Plain to complete their lifecycles. As migratory science continues to develop and global conservation efforts take more of a full life cycle approach to bird protections, the national, hemispheric, and global importance of the Coastal Plain should be more fully disclosed. While there are general references to where some long-distance migrants travel and overwinter, and discussion of the global population percentages of certain species that utilize the study area, [690] the draft SEIS fails to meaningfully discuss the uniqueness of the Coastal Plain. For example, the fact that Bluethroat, Yellow Wagtail, Dunlin, Wandering Tattler, Arctic Tern, and American Golden-Lover travel from the far corners of the world to utilize the Coastal Plain is an extraordinary attribute of this landscape. This distinctiveness should be elevated within the final SEIS.

Moreover, the final SEIS should be explicit about how changes to avian habitat in other parts of the world, such as East Asia, will make intact Arctic nesting grounds even more important. As migratory birds continue to face lost habitat and dangers during migration and overwintering, ensuring the health and functionality of extremely high-quality nesting habitat is necessary for the conservation of populations and species of birds. The final SEIS should elevate the ever-increasing ecological value of the Coastal Plain.

Birdwatching and Bird-Based Tourism. Both the Bird (3.3.3) and Recreation (3.4.6) sections fail to explicitly mention bird watching or bird-based tourism. While wildlife viewing is mentioned within the recreation portion of the draft SEIS, bird watching is not discussed. The Coastal Plain is a highly sought-after birding destination and bird-based tourism contributes

[688] See: Adams, C.A., Fernández-Juricic, E., Bayne, E.M. *et al.* Effects of artificial light on bird movement and distribution: a systematic map. *Environ Evid* 10, 37 (2021). https://doi.org/10.1186/s13750-021-00246-8.

[689] See: Bryce W. Robinson, Travis L. Booms, Marc J. Bechard, and David L. Anderson "Dietary Plasticity in a Specialist Predator, the Gyrfalcon (Falco rusticolus): New Insights into Diet During Brood Rearing," Journal of Raptor Research 53(2), 115-126, (9 May 2019). https://doi.org/10.3356/JRR-15-58.

[690] DSEIS at 3-157.

significantly to Alaska's economy.[691] The final SEIS should discuss the impacts of an oil and gas program on this form of recreation.

I. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON CARIBOU.

Caribou (*Rangifer tarandus*) are the most abundant large terrestrial herbivore in the circumpolar arctic.[692] Known as reindeer in some countries, caribou populations stretch across North America, Europe, and Asia.[693] Although widely distributed, caribou and wild reindeer populations worldwide have faced strong declines, likely due to global changes in climate and anthropogenic landscape change.[694] Caribou play a critical role in the environment as well as for the culture, traditions, and food security of many Indigenous peoples and other people across the Arctic.[695] Movement is central to life for barren-ground caribou (*R. t. granti*), including the four herds that live on the North Slope of Alaska. Barren-ground caribou are renowned for their long-distance movements, covering thousands of kilometers each year in some of the longest overland migrations in the world.[696] These migrations allow caribou to take advantage of resources that change over space and time, such as moving to areas with greater winter food availability and shelter and then returning to calving grounds with lower densities of predators.[697] In addition to long-range migration, barren-ground caribou rely on unimpeded local movements and habitat selection, especially after calves are born, to optimize forage nutrition and availability while avoiding predators and harassing insects.[698] In light of these strategies, unhindered movement is essential for caribou response to variability in environmental and other conditions.

The Arctic National Wildlife Refuge is used by three of the four caribou herds that calve on the North Slope of Alaska. The Porcupine Caribou Herd (PCH) uses the Arctic Refuge throughout the year,[699] with the Coastal Plain providing essential calving, post-calving, insect relief, and other summer habitat.[700] Similarly, portions of the Central Arctic Herd (CAH) use the Arctic Refuge year-round, and the Coastal Plain primarily during summer[701] and in smaller numbers during winter.[702] The Teshekpuk Caribou Herd (TCH) uses parts of the Arctic Refuge

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[691] See: Schwoerer T, Dawson NG (2022) Small sight—Big might: Economic impact of bird tourism shows opportunities for rural communities and biodiversity conservation. PLoS ONE 17(7): e0268594. https://doi.org/10.1371/journal.pone.0268594.

[692] Bråthen et al. 2007. (Materials cited in this section are referenced in full at the end of the comment letter.)

[693] Festa-Bianchet et al. 2011; Mallory and Boyce. 2018.

[694] Russell et al. 2015; Vors and Boyce. 2009.

[695] Ballard et al. 1997; Berkes et al. 1994; Bjørklund. 1990; Borish et al. 2021; Cunsolo et al. 2020; Heggenes et al. 2018; Stark et al. 2015; Wolfe and Walker. 1987.

[696] Fancy et al. 1989; Joly et al. 2019.

[697] Dau. 2011; Fullman et al. 2021; Joly. 2012; Person et al. 2007.

[698] Griffith et al. 2002; Johnson et al. 2022; Severson et al. 2021.

[699] *See* Figure 1 in Garner and Reynolds. 1986 at 212.

[700] Caikoski. 2015; Clough et al. 1987; Garner and Reynolds. 1986.

[701] Arthur and Del Vecchio. 2009; Lenart. 2015.

[702] Clough et al. 1987 at 26.

as winter range, including occasional use of the Coastal Plain.[703] The Arctic Refuge Coastal Plain also provides a refuge from predators throughout the year, with lower predator densities than in the foothills to the south.[704] The PCH has the most healthy and stable population of Alaska's caribou herds and is the only large herd whose essential calving, post-calving, and insect relief habitats are free of roads, heavy aircraft use, and intensive seismic exploration.

The draft SEIS provides improvements in the analysis and consideration of impacts of potential Coastal Plain oil and gas leasing and subsequent development on caribou compared to the previous FEIS. However, major issues with the analysis remain, including areas for improvement to better align with the best available science. The sections below outline (1) general improvements, concerns, and issues with the caribou content in the draft SEIS, (2) specific aspects in which the proposed measures in alternatives B and C fall short of achieving reasonable protections for caribou, (3) the benefits of Alternative D for conveying meaningful caribou protections, and (4) areas for improvement in Alternative D.

1. General improvements, concerns, and issues regarding caribou.

There are several areas in which the analysis of potential impacts to caribou should be strengthened to better conform to the best available science. To start, the draft SEIS acknowledges the potential for changes in spring snowmelt timing, which could have effects on forage amount, timing, and quality,[705] but fails to meaningfully analyze the impacts of this change. Such effects are especially important given recent findings that female caribou select for fine-scale habitat patches that are snow free during the calving period, even when the landscape around them is still mostly covered in snow.[706] This could accentuate negative impacts of delays in timing of snowmelt and should be reflected in the SEIS.

The draft SEIS also indicates that few data are available on the effects of noise and light on caribou.[707] This would be an excellent place to rely more heavily upon Indigenous Knowledge and the experiences of subsistence hunters and other Indigenous people who have a substantial lived experience with caribou and their responses to various stimuli. For example, the draft SEIS acknowledges that traditional knowledge indicates that caribou and other species "are particularly sensitive to noise and human activity."[708] Inclusion of such knowledge would be in keeping with the recommendations of ROP 23.[709]

While the draft SEIS acknowledges that maternal caribou with young calves show avoidance of infrastructure, it indicates that this lasts until "calves are approximately 3 weeks of age, when the level of displacement declines."[710] It refers to this as corresponding to the calving

[703] Fullman et al. 2021; Person et al. 2007.
[704] Fancy and Whitten. 1991.
[705] DSEIS at 3-205.
[706] Severson et al. 2021.
[707] DSEIS at 3-206.
[708] DSEIS at 3-310.
[709] DSEIS at 2-55.
[710] DSEIS at 3-207.

and post-calving periods for the PCH. However, Johnson et al. 2020, which is not cited in support of these statements, found that displacement continues through the mosquito season as well, lasting at least four weeks after calving.[711] It is important that the amount of expected displacement not be underestimated in the SEIS and that reference to Johnson et al.'s findings and extended timeline of displacement be incorporated.

It is disconcerting that the draft SEIS claims that the same zone of influence (ZOI) "observed at existing North Slope oil fields would be expected in the program area with similar development and mitigation design"[712] given that it acknowledged in the previous paragraph that the PCH has had much less exposure to development and "would be expected to have stronger reactions to infrastructure than Central Arctic Herd caribou."[713] In light of the stronger effects expected for the PCH and the compounding effect of hunting being allowed from industrial roads (which the draft SEIS acknowledges), it would be in keeping with the best-available scientific information to describe a 3.11 mile displacement as the minimum expected and state that displacement could extend beyond this distance.

The above issues of displacement distance and timing also apply to the description of analysis assumptions provided in Appendix F. This states that maternal caribou may be displaced up to 2.5 miles from roads and pads up to three weeks after calving.[714] As is noted above, this ZOI estimate is shorter than the 3.11 miles stated in Section 3.3.4,[715] which itself is a minimum estimate for the PCH. Similarly, the best available science supports a longer duration of displacement.[716]

The draft SEIS indicates that traffic levels of "15 vehicles per hour or more ha[ve] been shown to deflect caribou movements and delay road crossings."[717] Such a statement underestimates the impacts of traffic based on the best available science. The draft SEIS later acknowledges that "maternal caribou exhibit some displacement from roads even with low traffic levels (< 8 vehicles /day) during calving."[718] The final SEIS should present this acknowledgement alongside the other traffic effect information first mentioned to not mistakenly imply that no effects will happen at traffic levels lower than 15 vehicles per hour. Similarly, a new study by the United States Geological Survey (USGS) found that adult female caribou selected areas with lower traffic volumes throughout the summer, with the greatest selection probabilities when traffic was < 5 vehicles per hour.[719] This new scientific information should be incorporated into the final SEIS to better conform to the best-available data.

[711] Johnson et al. 2020.
[712] DSEIS at 3-208.
[713] DSEIS at 3-208.
[714] DSEIS App. F at F-34.
[715] DSEIS at 3-213.
[716] Johnson et al. 2020.
[717] DSEIS at 3-208.
[718] DSEIS at 3-219.
[719] Severson et al. in press.

Groups are concerned that the treatment of habituation in the draft SEIS still is misleading and inadequate. While the draft SEIS acknowledges that maternal caribou with young calves are a notable exception, it still claims that "observation in existing northern Alaska oil fields indicates that caribou and other terrestrial mammals may habituate to low-level constant noise and oil field activities on roads and pads."[720] This statement is contradicted by the best available science. At the core of this issue may be a mistaken definition of habituation. While the draft SEIS does not specify how it is defining habituation, the examples provided in support of its statement — less displacement after calving and use of roads and pads for oestrid fly relief later in summer — seem to imply a definition of habituation as reduced displacement over the course of a single year. This, however, is not the most meaningful timescale for inferring habituation to infrastructure. Reduced displacement from infrastructure due to changing seasons does not imply habituation, but rather a change of stimuli affecting distribution and behavior. For example, showing less avoidance of roads during oestrid fly harassment does not imply that caribou are habituating to development, but rather points to the strong disruptive effects of flies on caribou behavior. This is reinforced by repeated observations of strong seasonal avoidance of infrastructure by caribou across years.[721] For this reason, it is not changes across seasons but rather changes in response patterns over broader periods of time that reveal evidence of habituation. This is the scientifically accepted approach used in many studies of habituation or acclimation in ungulates.[722] When considered at this scale, there is not evidence for habituation in caribou. Two recent studies of the CAH found consistent patterns of avoidance of infrastructure by adult female caribou in calving, post-calving, and mosquito relief seasons.[723] These behaviors continue to persist after more than 40 years of exposure to development, indicating a clear lack of habituation. This is in line with other studies of caribou and reindeer response to infrastructure which also find a lack of clear evidence of habituation and instead document evidence of impacts.[724] Similar lack of habituation responses have also been seen in other ungulate species in the United States.[725] Johnson et al. conclude that "our work suggests that habituation to industrial development by Arctic caribou is likely to be weak or absent,"[726] directly contradicting the conclusion of the draft SEIS. The draft SEIS correctly affirms in the Subsistence Uses and Resources section that "recent studies do not support the theory that caribou habituate to industrial infrastructure over time."[727] The text of Section 3.3.4 should be revised to match this and to better reflect the best available scientific information on this matter.

Important caribou calving and post-calving habitat continues to be defined in the draft SEIS as that used by collared caribou "during more than 40% of the years surveyed."[728] This is one of the primary metrics used in the draft SEIS for identifying potential impacts to caribou

[720] DSEIS at 3-208.
[721] *E.g.*, Johnson et al. 2020.
[722] *E.g.*, Aikens et al. 2022; Johnson and Russell. 2014; Sawyer et al. 2017.
[723] Johnson et al. 2020; Prichard et al. 2020.
[724] *E.g.*, Boulanger et al. 2012; Johnson and Russell. 2014; Nellemann et al. 2010.
[725] *E.g.*, Aikens et al. 2022; Sawyer et al. 2017.
[726] Johnson et al. 2020 at 410.
[727] DSEIS at 3-315.
[728] DSEIS at 2-15, 2-18, 2-20.

under the various alternatives.[729] No justification is given for why only areas used in more than 40% of years are important for caribou. A clear biological rationale, grounded in the best-available science, must be stated. For example, why would areas used in one out of every three years not be deemed important? Such a determination of "important" habitat neglects the value of more occasionally used calving and post-calving areas for the PCH, including those where large concentrations have occurred less frequently but in large numbers outside of the areas indicated as "high use." BLM and FWS must explain why an area used lightly in more than 40% of years is considered more important than an area used heavily in 35% or even 20% of years. It is crucial that BLM and FWS be clear on why the various use percentages analyzed in the draft SEIS are biologically meaningful and sufficient for demonstrating impact or lack thereof.

In general, treatment of climate change impacts upon caribou in the draft SEIS underestimates likely impacts. The draft SEIS correctly indicates that climate change is predicted to have multiple and sometimes counteracting effects on barren-ground caribou. However, because of this it concludes that "it is difficult to predict the impacts on the Porcupine Caribou Herd and Central Arctic Herd."[730] This diminishes the preponderance of negative impacts expected under a changing climate. The draft SEIS lists one positive potential effect of climate change[731] and about a dozen potential negative effects.[732] There are also other potential negative consequences not mentioned in the draft SEIS, such as sudden pathogen outbreaks that can lead to sudden and large-scale die offs of herbivores, such as was seen in 2016 in Russia when over 2,000 reindeer were killed by anthrax that was apparently exposed by melting permafrost.[733] In 2015, an outbreak of *Pasteurella* similarly killed off over 200,000 saiga antelope (*Saiga tatarica*), which calve in large aggregations somewhat similarly to caribou, reducing the global population by over 60%.[734] Warming temperatures may also directly threaten individual caribou survival. While the SDEIS notes that "caribou body condition and population fluctuations have been found to be influenced by large-scale climate oscillations,"[735] this falls short of explicit recognition that warmer summer temperatures, as are expected for the Coastal Plain,[736] have been correlated with higher adult female mortality rates in Canadian caribou.[737] With such a strong preponderance of potential negative effects arrayed against relatively few expected positive effects for cold-adapted caribou, BLM and FWS must clearly articulate reasonably

[729] *See e.g.*, DSEIS at 3-215, 3-216, 3-21, App. J Tables J-22, J-23, J-27.
[730] DSEIS at 3-201.
[731] Increased access to forage. DSEIS at 3-201.
[732] Increased shrub abundance, increased insect harassment, increased parasite incidence, more rapid annual decline in forage quality, increased predator densities and altered distributions, increased wildlife resulting in lower winter lichen availability, increased rain-on-snow events reducing access to forage, increasing energetic demands of acquiring it, and increasing mortality risk, phenological mismatch, earlier mosquito emergence, altered migration conditions due to earlier melting of ice and snow and earlier river breakup. DEIS at 3-201 to 3-202.
[733] Golovnev. 2017.
[734] Kock et al. 2018.
[735] DSEIS at 3-201.
[736] DSEIS at 3-201.
[737] Russell et al. 2018.

foreseeable negative impacts. That said, we do agree with and strongly affirm the draft SEIS' statement that:

> Climate change introduces additional uncertainty into projections of impacts due to development; therefore, alternatives that limit development to a smaller footprint and a smaller portion of the Porcupine Caribou Herd calving and post-calving grounds would allow caribou greater flexibility to adapt to changing conditions.[738]

Such recognition in the draft SEIS affirms that in order to meaningfully meet the original four purposes specified in ANILCA for the Arctic Refuge, BLM must select the most restrictive alternative it can.

Another way the implications of climate change are downplayed for caribou in the draft SEIS is the treatment of Severson et al. 2021. This recent study led by USGS examined resource selection and habitat use by the PCH and found that the distribution of adult female caribou during the calving and post-calving periods can be predicted by environmental factors like timing of snow melt and greening of vegetation.[739] Projecting these selection patterns into the future based on reasonable climate change scenarios, the authors found predictions of increased use of the Alaskan coastal plain during the calving and post-calving periods. We were pleased to see the draft SEIS mention this study and some of its findings,[740] and especially to see the results mapped[741] and used to define the PCH comprehensive calving and post-calving areas underlying the requirements of Alternative D in Lease Stipulation 6 and elsewhere.[742] Nonetheless, there were several instances where the draft SEIS seems to minimize or obscure the results of the study. For example, Map 3-33, which displays the results of the analyses, is not referenced in the text of Section 3.3.4. Furthermore, the supporting text on the map itself does not reference Severson et al. 2021 but only provides generic references to GIS resources of BLM, FWS, ADFG, and Environment Yukon. Such practices are not in keeping with good data transparency. Instead, the data source needs to be clearly stated and the description on the map should summarize what information is being displayed, going beyond simply "predicted caribou resource use."[743] For example, this could be similar to what is done for Map 3-38, which gives a description of what the map shows and attributes Russell and Gunn 2019 as the data source.[744]

In various places in the text of Section 3.3.4, BLM and FWS should be more specific in describing the findings of Severson et al. 2021 to better convey the potential impacts of the various alternatives under climate change. For example, the text acknowledges that "Severson et al. (2021) estimated that the median date of snowmelt in the area would advance by 8 days between 2012–2018 and the 2050s and the median onset greenness date would advance by 15

[738] DSEIS at 3-202.
[739] Severson et al. 2021.
[740] DSEIS at 3-202.
[741] DSEIS Map 3-33.
[742] DSEIS at 2-15.
[743] DSEIS Map 3-33.
[744] DSEIS Map 3-38.

days over that time period."[745] While this is important information, without more context and analysis, its importance is not easily understandable to the public. Including Severson et al.'s prediction of a 429% increase in projected suitable habitat in the Coastal Plain program area during calving and a 35% increase during post calving,[746] on the other hand, are much more easily understood and underscore the dramatic importance of the Coastal Plain under predicted climate effects more clearly than simply stating that "climate warming could result in a western shift in concentrated calving areas and more frequent calving in the program area."[747] Similarly, while the text acknowledges that Severson et al. used their models of current habitat selection to predict calving and post-calving distributions in future decades, only the current acreages of suitable calving and post calving area are reported in the draft SEIS.[748] Including the predicted future acreages for the 2050s and their corresponding percent increases would present a fuller picture of the importance of the Coastal Plain for use by caribou and increased potential for conflict with possible future development. We request that the specific percentages of predicted increase in suitable habitat be included in the final SEIS for better transparency. This is also important to better inform conclusions in the ANILCA Section 810 Analysis.

We appreciate the variety of maps included in the draft SEIS, including several caribou-relevant maps that are new since the FEIS. However, some updates to the maps are needed. The description given for the post-calving season in the text ("last week of June and first week of July")[749] does not match how the post-calving season appears to be defined in the maps, which show post-calving spanning June 11–30 for the PCH[750] and June 16–30 for the CAH.[751] The text of Section 3.3.4 also contains a reference to Map 3-38 to support a statement that "all of the area in the annual calving grounds of the Porcupine Caribou Herd (at least 30 percent of years) is thought to have low or medium HCP."[752] This map does not depict calving grounds or hydrocarbon potential, but rather depicts a subset from some years of documented large post-calving aggregations of PCH caribou. Even Map 3-39, which does depict the percentage of years that collared caribou were present on calving grounds, does not include hydrocarbon potential.[753] Either a map should be added depicting the stated information or the reference should be removed.

Map 3-31 and Map 3-32 show the extent of annual calving grounds and concentrated calving areas between 1983–2018.[754] It is unclear why the maps stop in 2018 as satellite collar monitoring has continued since that time. We request that maps be added for 2019–2023 to give a more complete picture of recent patterns of calving distribution. Furthermore, documentation of calving distribution extends before the years shown on these maps, with aerial survey and

[745] DSEIS at 3-202.
[746] Severson et al. 2021 at 4553.
[747] DSEIS at 3-202.
[748] DSEIS at 3-209.
[749] DSEIS at 3-198.
[750] DSEIS Map 3-30, Map 3-34, and Map 3-39.
[751] DSEIS Map 3-35 and Map 3-36.
[752] DSEIS at 3-208.
[753] DSEIS Map 3-39.
[754] DSEIS Map 3-31 and Map 3-32.

radio-telemetry studies documenting calving distributions in the Coastal Plain in the 1960s, 1970s, and early 1980s. Inclusion of these records is important to better demonstrate the historical record of use of the Coastal Plain for caribou calving.[755]

Updates are also needed for Map 3-39, which contains some symbols on maps that do not appear in the legend, like the dashed red boundary in the middle top map or the hashed purple area in that same map.[756] Finally, the PCH projected calving and post-calving habitat areas are an important part of the newly proposed requirements and standards under Alternative D for Lease Stipulation 6 but they are not clearly mapped anywhere in the draft SEIS. We request that a map be added for these, shown alongside the historic data for percent of years that caribou are present (e.g., as in Map 3-39) to give greater clarity on where these predicted boundaries lie and how they affect the resulting provisions under Alternative D.

2. Insufficiency of Alternatives B and C to protect caribou.

Neither Alternative B nor Alternative C provide sufficient meaningful protections for caribou to achieve the Arctic Refuge's purposes under ANILCA.

The description of impacts specific to Alternatives B and C contains several problematic statements or unsupported conclusions. For example, the draft SEIS states that no surface occupancy (NSO) areas would be "less likely to be subject to lease-specific seismic exploration."[757] This statement is not justified, nor does it clearly derive from the stipulations, required operating procedures (ROPs), or other requirements described for Alternative C. While NSO areas do not allow permanent surface disturbance, they do allow drilling, using horizontal extended reach drilling from nearby leases where surface occupancy is allowed. Based on the description of typical development described in Appendix B, seismic exploration is typically the first step towards identifying where such extended-reach drilling should be conducted.[758] Indeed, the section on alternative-specific impacts under Alternative D clearly states that "seismic exploration could occur on the 765,800 acres available to leasing."[759] According to Table 2-1, 765,800 acres for Alternative D comprises the total across all lease availability classes, including NSO.[760] Thus, it is not reasonable to assume a lower likelihood of seismic exploration in leased NSO areas. This should be removed from the final SEIS.

The text describing impacts for Alternative C also states that in NSO and no leasing areas "there would be no change from Alternative A and no impacts would be expected in these areas for Alternative C" except for possibly increased air traffic.[761] As we pointed out in our comments on the draft SEIS,[762] this is not accurate and does not align with scientific understanding nor with

[755] 2019 DEIS Comment Letter Appendix B at Maps 2 to 17.
[756] DSEIS Map 3-39.
[757] DSEIS at 3-217.
[758] DSEIS App. B at B-12.
[759] DSEIS at 3-218.
[760] DSEIS at 2-2.
[761] DSEIS at 3-217.
[762] 2019 DEIS Comment Letter at 251.

other statements in the draft SEIS. The draft SEIS clearly states that "there would be no direct or indirect impacts on terrestrial mammals from post-lease oil and gas activities under Alternative A."[763] The same cannot be said for NSO or no leasing areas under any of the action alternatives. A first issue with the assertion of no impacts in NSO areas is that it assumes effects of development will end at the boundary of NSO areas. The idea of "edge effects" — that conditions around the edge of a habitat patch will often be different than those in the interior of the patch — has long been recognized in landscape ecology.[764] In the context of the Coastal Plain the concern is that effects occurring in the non-NSO areas will "spill over" into the NSO areas. This phenomenon is affirmed in the description of impacts specific to Alternative C, which states that the area of potential PCH calving displacement based on prior scientific estimates of displacement observed with the CAH (588,000 acres, which represents a minimum displacement distance, as noted above), is larger than the area open to surface occupancy (329,000 acres).[765] This implies impacts and displacement in NSO and no leasing areas. Effects of light, noise, air pollution, visual effects, and more will continue across NSO and no leasing boundaries, making them diverge from conditions under Alternative A. Furthermore, NSO stipulations are subject to waivers, exceptions, and modifications across all action alternatives, and can be subject to ROW and easements such as for pipeline crossings. In these instances, it is clear that impacts would be different than under Alternative A and must be analyzed. BLM and FWS may not claim that no impacts will occur in NSO and no leasing areas.

The analysis of Alternative C impacts also states that NSO restrictions near the Canning River delta and various rivers "make it unlikely that development would hinder caribou movements in these areas."[766] This claim is subject to the issue noted above with waivers, exceptions, and modifications. The Canning River, in particular, will almost certainly require a pipeline crossing if development proceeds in the Coastal Plain, to connect the oil coming from one or more central processing facilities to the Trans Alaska Pipeline System (TAPS). Similarly, as is noted for Alternative D but similarly applicable here, "it is likely that roads will cross areas with NSO restrictions to access leased areas."[767] These, and any other infrastructure allowed, could have a detrimental affect on caribou and their ability for free movement. This is of special concern for the CAH, which use the Canning River delta in large numbers in some years[768] and which "may also potentially lose or reduce use of the only portion of the primary Central Arctic Herd mosquito-relief habitat that does not currently contain some development."[769] It is also of concern for the PCH, as scientists have mapped concentrated calving and post-calving use by the PCH in the Canning River Delta, Camden Bay, and nearshore areas in past years, all of which could be affected by infrastructure in these areas.[770] Such impacts are considerable and will be insufficiently mitigated by NSO stipulations.

[763] DSEIS at 3-204.
[764] Forman and Godron. 1981.
[765] DSEIS at 3-216.
[766] DSEIS at 3-217.
[767] DSEIS at 3-218.
[768] DSEIS at 3-217.
[769] DSEIS at 3-205.
[770] 2019 DEIS Comment Letter, especially Appendix B.

In addition to the above concerns, there are a variety of issues with the stipulations and ROPs outlined in the draft SEIS that highlight the inadequacies of Alternatives B and C for ensuring robust caribou protections.

Lease Stipulation 6 is intended to convey protections to caribou summer habitat and to "minimize disturbance and hindrance of caribou or alteration of caribou movements."[771] This is a high bar but is important for achieving the Arctic Refuge statutory purposes, which go beyond Tax Act provisions for oil and gas leasing. Due in large part to its importance for caribou and corresponding subsistence values, three of the four ANILCA purposes for the Arctic Refuge are related to conserving the PCH.[772] These purposes, along with the 1987 International Agreement on the Conservation of the Porcupine Caribou Herd, impose substantive duties on the Department of the Interior to preserve and protect caribou and their habitat. The draft SEIS acknowledges that these purposes are not superseded by the added purpose from the Tax Act,[773] making it essential that BLM take prudent actions to achieve them. In light of this, it is unreasonable that Lease Stipulation 6 does not add additional protections for caribou summer habitat and movements in Alternatives B or C, but solely relies on ROP 23. As is further described below, ROP 23 is inadequate for providing for "unhindered movement of caribou through the area" as is purported for management according to the note in Lease Stipulation 6.[774]

Lease Stipulation 7 focuses on measures to protect PCH primary calving habitat. Alternative B contains requirements for timing limitations, traffic speed limits, and aircraft altitude restrictions, however these are inadequate to protect caribou during the most sensitive period of their annual cycle — calving. Alternative B proposes traffic speed limits "when caribou are within 0.5 mile of the road."[775] Caribou can travel very quickly, covering half a mile in a matter of minutes.[776] It is thus important to extend this boundary and to use multiple monitoring methods to manage vehicle activities. These should include: 1) daily review of location data from collared caribou to examine general movement patterns long before caribou contact roads, 2) daily or alternate day aerial reconnaissance flights in buffer areas around roads using the least disruptive means possible (e.g., unmanned aerial systems or other comparable technology where feasible) to provide more detailed location information, including of non-collared individuals, and 3) road-based surveys to detect caribou proximity to roads. Traffic alteration must be started early and increasingly restricted as caribou near roads. Also, although BLM and FWS acknowledges that maternal caribou are displaced from roads during calving, even with low traffic levels (< 8 vehicles /day),[777] no limits on traffic volume are included here or in other stipulations and ROPs, only a speed limit. BLM and FWS should restrict traffic volume per hour whenever caribou are in proximity to roads but should better define what is meant by "in proximity to roads." It is also important that BLM and FWS include in the final SEIS data on road traffic volumes by season and operation phase (e.g., exploration, construction,

[771] DSEIS at 2-15.
[772] ANILCA § 303(2)(B); *see also supra* Section II.A.
[773] DSEIS at ES-2.
[774] DSEIS at 2-15.
[775] DSEIS at 2-19.
[776] Jim Dau (Alaska Department of Fish & Game caribou biologist, retired) pers. comm.
[777] DSEIS at 3-219.

production, etc.) from the NPR-A, Prudhoe Bay, and Kuparuk to better illustrate what traffic loads may be expected at different seasons of the year. Even these mitigation measures are unlikely to be ultimately effective, however, as the draft SEIS notes that "some level of displacement of calving caribou has been shown to occur even with low levels of traffic,"[778] which aligns with recent scientific findings.[779] The high sensitivity of calving caribou to human disturbance and sustained shifts in CAH distribution away from development areas in spite of mitigation measures[780] indicate that the requirements specified in this stipulation are unlikely to remove disturbance and displacement of female caribou with young calves during calving.

Under the standards for Alternative B in Lease Stipulation 7, aircraft would have to maintain an altitude of at least 1,500 feet above ground level over caribou calving range. Federal Aviation Administration (FAA) guidance recommends a minimum altitude of 2,000 feet above ground level over all National Wildlife Refuges and other noise-sensitive areas.[781] It is important that this minimum standard be included in this stipulation and elsewhere (e.g., ROP 34). In line with FAA guidelines for National Wildlife Refuges, this minimum altitude of 2,000 feet should apply to all alternatives and over the entire program area at all times. This will help meet the draft SEIS requirement to maintain the Refuge's original purposes under the 1960 PLO and ANILCA.[782] It will also be consistent with the importance of the entire Coastal Plain for calving and post-calving habitat over time. It should be noted, however, that even incorporating this minimum requirement is unlikely to prevent impacts to caribou. Flight ceilings often are lower than 1,500 feet due to weather, particularly during the calving season,[783] creating concern that weather exceptions will increase the impact of aircraft on caribou despite the guidance of Lease Stipulation 7 and ROP 34.

While the provisions for traffic and aircraft restrictions are inadequate under Alternative B for Lease Stipulation 7, it is notable that they are entirely absent from Alternative C, which only covers no leasing and NSO restrictions. It is important that strengthened provisions for reducing traffic and aircraft effects on calving caribou also be included into Lease Stipulation 7 for Alternative C.

Lease Stipulation 8 is intended to protect the PCH post-calving habitat area. However, the standard under Alternative B solely relies upon ROP 23 to achieve this, which as noted below is insufficient for achieving the desired outcomes. Alternative C adds controlled surface use (CSU) limitations and provisions for stopping traffic or even evacuating roads to support caribou crossing. Justification is needed based on the scientific literature to explain why the specific infrastructure limitations specified in the CSU restrictions were chosen and why those levels are expected to have a beneficial outcome on caribou. This is not explained in Section 3.3.4 or elsewhere in the draft SEIS. Further specification is also required for the traffic

[778] DSEIS at 3-214.
[779] Severson et al. in press.
[780] Cameron et al. 2005; Russell and Gunn. 2019.
[781] FAA. 1984.
[782] DSEIS at ES-2.
[783] Ken Whitten (Alaska Department of Fish & Game PCH caribou biologist, retired) pers. comm.

regulations. Traffic stopping is to occur when an attempted crossing by a large number of caribou "appears to be imminent."[784] It is unclear how an operator is to determine whether crossing "appears to be imminent," which could lead to varying interpretations of this requirement and varying levels of impact or even a complete lack of meaningful protections for caribou. Instead, it would be beneficial to include specific processes or distance thresholds at which decisions to halt traffic and evacuate roads would be made, as with Alternative D under Lease Stipulation 6. As is noted above for Lease Stipulation 7, even with these provisions impacts to caribou may remain. For example, altered movement behavior in the vicinity of roads has been noted at distances beyond the 2-mile buffer proposed for Alternative D under Lease Stipulation 6.[785]

While part of the objective for Lease Stipulation 9 includes minimizing "hindrance or alteration of caribou movement in caribou coastal insect relief areas,"[786] under Alternative B the only real requirement is to develop and implement a conflict avoidance and monitoring plan. No standards are given specifying the content or effectiveness expected for this plan, making it unclear whether it will have the desired effect of avoiding impacts to caribou insect relief habitat and behavior. Stronger standards, tied to specific requirements, are needed to ensure that caribou are able to access insect relief habitat unhindered. Harassment due to insects can have a negative effect on caribou body condition and overall populations,[787] leading to lower rates of calves being born in years following high insect activity.[788] It can also threaten the ability of caribou to replenish depleted body stores, as prolonged exposure to insects can shift lactating female caribou from positive to negative energy balance[789] and decrease the probability of survival.[790] This makes it very important that caribou be able to access insect relief habitat and move between insect relief areas and quality forage habitat as conditions and climate change. This is of special concern within the Arctic Refuge Coastal Plain as insect harassment estimates are higher for the PCH summer range than for much of the CAH summer range,[791] where previous studies have been conducted and impacts noted. Thus, insect harassment effects may be stronger on the PCH compared to the CAH, accentuating the effect of any hindrance of caribou in reaching insect relief areas. The final SEIS should acknowledge and account for this likely difference.

The requirements in ROP 23 for Alternatives B and C are the primary means by which impacts to caribou are expected to be reduced, according to Lease Stipulations 6-8. These may help reduce impacts from infrastructure on caribou but ultimately are insufficient. In alignment with Indigenous Knowledge, recent scientific studies have showed continued displacement and avoidance of areas near roads by CAH caribou, despite over 40 years of exposure and numerous mitigation measures.[792] In addition, other development involving the Trans-Alaska Pipeline and

[784] DSEIS at 2-20.
[785] Panzacchi et al. 2013; Wilson et al. 2016.
[786] DSEIS at 2-21.
[787] Dau. 1986.
[788] Johnson et al. 2022; National Research Council. 2003.
[789] Fancy. 1986.
[790] Johnson et al. 2022.
[791] Bali. 2016.
[792] Johnson et al. 2020; Prichard et al. 2020.

Dalton Highway corridor had major effects on the distribution and reproductive behavior of the CAH.[793] These observations indicate that the requirements in ROP 23 are unlikely to provide sufficient protection during the calving, post-calving, and mosquito relief periods. This is compounded by differences between the PCH and CAH that make disturbance responses even greater for the PCH (see further discussion of these differences in the ANILCA Section 810 section below) and by the lack of information about how very large groups of caribou, some larger than the peak herd size of the CAH, will respond to infrastructure when aggregated.[794] Such responses may also be seen by smaller groups of caribou, as affirmed by the draft SEIS statement that "under ROP 23, some groups of less than 5000 animals…may still be impacted and have difficulty crossing infrastructure."[795] Deflection and displacement of caribou are likely despite the provisions of this ROP.

Further issues to be addressed in ROP 23 include use of tentative language and unjustified time limits. The ROP states that ramps or buried pipelines "may be required by the BLM Authorized Officer."[796] Under what conditions would this decision be made? What circumstances would trigger use of buried pipelines or ramps? This needs to be made clear and justified with the best available scientific information. Similar tentative language is included in requirement *g*, which states that "traffic may be stopped throughout a defined area for up to 4 weeks, to prevent displacement of calving caribou."[797] However, specific details of what might lead to such a closure are not provided. Furthermore, no justification is given for why a four-week maximum is listed for closure. This should be changed to read: "…throughout a defined area whenever necessary to prevent displacement of caribou." This recommended language not only removes the arbitrary 4-week deadline but also broadens the focus from just calving caribou to reflect the importance of the post-calving and insect relief periods.

3. Improvements in Alternative D for supporting caribou protection.

We agree with the draft SEIS' assertion that in light of caribou requirements for flexibility in annual calving areas, larger cumulative impacts are expected under alternatives with greater potential for development.[798] Avoiding all oil and gas leasing and subsequent Coastal Plain development is the best way this can be achieved. While we agree that "of all the action alternatives, Alternative D would be the least likely to affect calf survival, overall herd numbers, and herd migration and movement,"[799] Alternative D is not sufficiently protective of caribou. We offer the comments below on how Alternative D can be strengthened to protect caribou without endorsing it.

We appreciate the addition of no leasing and no new infrastructure provisions with larger buffers around some springs and aufeis areas in Lease Stipulation 3 under Alternative D. These

[793] Cameron and Whitten. 1979; Cameron et al. 1979; Cameron et al. 2002.
[794] Russell and Gunn. 2019; DSEIS at 2-54.
[795] DSEIS at 3-219.
[796] DSEIS at 2-53.
[797] DSEIS at 2-54.
[798] DSEIS at 3-222.
[799] DSEIS at 3-323.

measures will help protect some of the insect relief habitat for caribou and should be retained in the final SEIS.

Lease Stipulation 6 is greatly expanded under Alternative D to become the primary means of protecting caribou calving, post-calving, and insect relief habitat, combining requirements from Stipulations 6–8 from the final EIS.[800] We appreciate the clarifying definitions provided for PCH projected and comprehensive calving and post-calving habitat. Given the realities of a rapidly changing Arctic, it is essential that management decisions take into consideration historic, current, and predicted future patterns of habitat use and distribution by caribou and other species. We appreciate incorporation of Severson et al.'s[801] groundbreaking research into the draft SEIS, which considers how climate change may alter use of the Coastal Plain by PCH caribou during the calving and post-calving seasons and finds strong increases in predicted habitat suitability and use. It is reasonable and prudent, in keeping with the best available scientific information, for BLM and FWS to use this research to inform decisions about potential oil and gas leasing that could span more than 50 – 85 years,[802] and we were pleased to see it incorporated into the definitions of comprehensive calving and post-calving habitat, and the resulting protections under Lease Stipulation 6.

Prohibiting leasing across the PCH comprehensive calving habitat area is an important step towards reducing impacts at a critical and sensitive time for caribou. However, it is important to note that such restrictions may not eliminate caribou displacement across the entire comprehensive calving habitat area as the zone of influence of infrastructure and impacts of things like noise, light, and pollution extend beyond the footprint of infrastructure and may overlap the no leasing area to some degree. In the timing limitations portion of Lease Stipulation 6, the inclusion of flexible language specifying that construction activities using heavy equipment will be suspended if caribou arrive at the Coastal Plain early or stay late is important for being responsive to greater variability in a changing climate and will enhance the ongoing robustness of the proposed measures. Nonetheless, the timing limitations are unlikely to be ultimately effective because the presence of infrastructure and people may still have an effect on caribou. While one recent study reported no clear evidence of caribou avoidance of an unoccupied, inactive/not operating elevated drill platform on calving grounds for one summer,[803] it is entirely possible that caribou response to a completely abandoned platform may differ from one in which humans are present and production continues, even if construction with heavy equipment is prohibited. Additionally, the observation included only one summer; drawing broad conclusions about displacement and the ability of timing restrictions to protect caribou based on such a limited timeframe is questionable. A report by well-published caribou experts recently stated, "We simply do not know whether… continuing drilling while shutting down construction (Time Limited stipulation) is effective mitigation."[804] Until such time as robust scientific studies demonstrate that such conditions will not disturb caribou and their calves, BLM and FWS should not presume such measures will prevent displacement.

[800] DSEIS at 2-15.
[801] Severson et al. 2021.
[802] DSEIS App. B at B-9.
[803] Prichard et al. 2022.
[804] Russell and Gunn. 2019 at 92.

A major addition to Alternative D is the requirement for an Adaptive Management Plan (AMP) to be developed by the lessee, operator, or contractor. This is described in Lease Stipulation 6[805] and expanded upon in ROPs 23 and 23.1.[806] It is noteworthy that while the AMP would be developed and financed by the lessee or their designated contractor, it would be reviewed and approved by the FWS, BLM, and the International Porcupine Caribou Herd Technical Committee (PCTC) and would be carried out by an organization or agency hired by BLM and FWS. This is an important balance of responsibility and rigor where the party poised to most benefit from leasing, the oil company or other development entity, provides the funding to support monitoring and mitigation of caribou and people that may be harmed by its actions and where there is independent review by qualified experts and work is carried out by a third party. However, we suggest that the organization or agency hired by BLM and FWS undergo a conflicts check or screening to avoid conflicts of interest. Similarly, the requirement for coordination with Tribal governments and involvement of Tribal observers in monitoring efforts should help ensure Indigenous Knowledge is involved in the AMP process. Data collected as part of the plan, such as vehicle traffic counts, times, speed, and caribou interactions will play an important role in providing information that has largely been lacking to date. With the exception of a few recent studies,[807] this kind of detailed information is rarely available for infrastructure in northern Alaska but can play an important role in understanding the responses of caribou and other species to human infrastructure and activity and what factors drive these responses. We strongly request that the AMP and its various components be retained in the final decision.

Lease Stipulation 12 applies only to Alternative D. While it is intended to protect ice-rich soils and yedoma deposits from additional thawing and melting, it also will have the effect of enhancing protections for important caribou habitat used especially during post-calving and insect relief seasons. We support inclusion of this stipulation in the final selected alternative and ask that it be strengthened to also prohibit seismic exploration, which could result in significant risks to these sensitive soils and permafrost.

Lease Stipulation 13 also applies only to Alternative D. It seeks "to minimize the areal extent of development and redundant infrastructure" through development of a Master Development Plan for each field development and requiring sharing of surface infrastructure whenever possible.[808] We urge that this plan incorporate the ultimately projected "full-field" development at the onset, rather than taking an incremental stance. Because caribou exhibit displacement responses beyond the footprint of infrastructure[809] and reduction of the surface footprint will also likely reduce the amount of additional disturbance for things such as gravel mining, this stipulation is likely to convey positive benefits for caribou and is an important addition to the SEIS. Studies of ungulates in the Contiguous United States have documented avoidance of development even at low percentages of the total landscape. For example, elk (*Cervus canadensis*) in Yellowstone avoid human development once the area developed

[805] DSEIS at 2-16 to 2-18.
[806] DSEIS at 2-54 to 2-56.
[807] Prichard et al. 2022; Severson et al. in press.
[808] DSEIS at 2-23.
[809] E.g., Dau and Cameron. 1986; Johnson et al. 2020.

exceeded 2.2% development.[810] Similarly, studies of mule deer (*Odocoileus hemionus*) have shown that even small percentages of industrial development and disturbance can lead to avoidance of migratory habitat and disruption of behavioral processes, such as tracking nutritious forage.[811] There is a significant relationship between energy expenditure for mule deer and both the size of oil and gas developments and their compactness.[812] The authors state that they expect a similar relationship exists for other mammals.[813] These studies reinforce the importance of minimizing the footprint of development, as this stipulation attempts, but also cautions that even this minimization is unlikely to avoid all impacts to migratory caribou. Ultimately, avoiding any exploration and development to secure the presence of large areas sufficiently far away from infrastructure and activity is the only way to ensure caribou are unlikely to be negatively affected.

We appreciate that the standards for Alternative D under ROP 21 includes a requirement that facilities and other infrastructure be located "outside areas identified as important for wildlife habitat, subsistence uses, and recreation at distances needed to protect from disturbance."[814] Explicit mention that such infrastructure needs to occur "at distances needed to protect from disturbance" is important recognition of the best-available scientific knowledge that the zone of influence of infrastructure may extend far beyond its footprint. We note that since the draft SEIS acknowledges that "all lands in the Arctic Refuge Coastal Plain are recognized as habitat of the PCH and CAH,"[815] and over time the entire Coastal Plain is important for caribou calving, post-calving, insect relief, and summer foraging,[816] the only way to fully comply with ROP 21 and to maintain the other Refuge purposes is to prohibit surface infrastructure within the Coastal Plain.

The requirements and standards in ROP 23 for Alternative D add many helpful clarifications and restrictions that will enhance protection for caribou in the Arctic Refuge. Specific beneficial additions include clarification that pipeline height measurements start at the top of tussocks, which provides functional protection for crossing space, daily monitoring of caribou collars to identify large aggregations and inform stopping of oil and gas activities, lessee-funded studies of caribou movement and space use, and inclusion of post-calving and insect relief seasons in the periods covered by the vehicle use management plan. As mentioned above, the provisions for greater Tribal consultation and involvement in many aspects of ROP 23 implementation is very important for ensuring Indigenous Knowledge is included alongside scientific information in decisions and that those who will bear the most direct costs of disruption to caribou, and who have lived experience observing caribou response to infrastructure and human activity, are provided explicit opportunities to share that knowledge to better support decisions that minimize harm to caribou and subsistence.

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[810] Gigliotti et al. 2023.
[811] Aikens et al. 2022; Sawyer et al. 2020.
[812] Chambers et al. 2022.
[813] Chambers et al. 2022.
[814] DSEIS at 2-51.
[815] DSEIS at 2-15.
[816] 2019 DEIS Comment Letter Appendix B at Map 49 and animation of caribou annual movements. *See also* Russell and Gunn. 2019.

ROP 33 requires sharing of geographic information system-compatible shapefiles depicting the footprint of all temporary and permanent infrastructure, including construction dates, widths, etc. This is very important data to enable BLM and FWS to keep infrastructure within the 2,000-acre limit established by the Tax Act, enable monitoring of environmental impacts, and facilitate scientific studies of any possible environmental responses to development. The additions in Alternative D, specifying that ice and snow roads, mines, reservoirs, islands, and docks be included in this geospatial information are important to provide an adequate picture of the full scope and footprint of development and should be retained in the final selected alternative. This information should also include seismic lines, camp move trails, water withdrawal site and quantity, and aircraft overflight dates, numbers, and altitudes. We also request that these data be made publicly available. In rare situations where data cannot be made available to the general public for legitimate reasons, they still should be made available upon reasonable request for scientific and other similar purposes.

ROP 34 lists requirements to minimize aircraft impacts. Alternative D adds a number of important features, such as expanding the area of higher minimum altitude to span the entire PCH comprehensive calving and post-calving areas, avoiding aircraft operations over caribou and calves wherever the animals are found rather than just in certain areas, prohibiting helicopter landings in the comprehensive calving and post-calving areas, and including flexibility in timing to allow restriction extensions if climate change shifts animal behavior earlier or later. These metrics should improve protection for caribou. We also applaud the requirement for developing a report on Traditional Knowledge regarding aircraft impacts on wildlife and subsistence, as this is a recurring concern voiced by subsistence hunters that has yet to be meaningfully addressed.

4. Areas for improvement in Alternative D to protect caribou.

While there are ways in which the stipulations and ROPs for Alternative D provide better protection for caribou as compared to Alternatives B and C, there remain numerous ways that these measures need to be improved. In the description of Lease Stipulation 1, the "Objective" description for Alternative C adds a sentence about protecting water quality, quantity, and diversity of fish and wildlife habitats and populations associated with springs and aufeis across the Coastal Plain that is not included in the objective of Alternative D.[817] As aufeis and gravel areas along rivers provide important insect relief habitat for caribou,[818] we request that this extra sentence also be added to Alternative D to reflect BLM's commitment to protecting caribou habitat and populations, as well as those of other species, via Lease Stipulation 1.

The requirement/standard for Lease Stipulation 2 under Alternative D indicates that pipelines and road crossings essential to carry out operations "would be permitted through setback areas" while Alternative C offers more tentative language, indicating that such facilities "may be considered."[819] Given the importance of the Canning River Delta for CAH insect

[817] DSEIS at 2-7.
[818] DSEIS at 3-195.
[819] DSEIS at 2-9.

relief,[820] and the uncertainties about large herds of caribou navigating barriers to movement,[821] it is important that such decisions be carefully evaluated and approved only if essential and if other alternatives that could have less impact upon caribou and other species are unavailable. Using more tentative language will reflect the importance of such due diligence and avoid automatic approval of proposed infrastructure in setbacks.

As is noted above, the Adaptive Management Plan (AMP) proposed for Alternative D under Lease Stipulation 6, ROP 23, and ROP 23.1 presents a number of important protections for caribou summer habitat. Nonetheless, improvement is necessary. One area in which the AMP should be strengthened is in ensuring that the results of monitoring and any other scientific studies required under the AMP and associated plans, including caribou movement and space use studies (ROP 23f), vehicle traffic monitoring (ROP 23i), and more, be made available to the public at a minimum, and we encourage that they also be published in the peer reviewed-scientific literature. Such findings and resultant reports/publications should first be reviewed by the PCTC or a comparable group of independent scientists to ensure they are meeting the intended standard of scientific rigor necessary to achieve the objective of Lease Stipulation 6. Since potential leasing and development would happen on federal public lands, it is important that the public be made aware of its effects and the data be made available, wherever possible, for independent verification. We appreciate that ROP 23.1 requires development of an "accessible and comprehensive data repository"[822] and request that it be specified that this will be made publicly available.

While specifying a distance at which traffic will be slowed to minimize impacts to caribou is an important improvement over the vague language for Alternative C in Lease Stipulation 8, the 2-mile threshold used in Lease Stipulation 6 for Alternative D still may not be sufficient for avoiding impacts to caribou. Wilson et al.[823] evaluated road responses of caribou to the Delong Mountain Transportation System (Red Dog mining road) at a broader spatial scale of over 9 miles from roads and found altered movement behavior and slow crossing for a portion of individuals. This was on a road system where traffic also was stopped when caribou were on or adjacent to the road, suggesting that some caribou may show altered movement behavior at greater distances than protected by the provisions of this stipulation.

One additional major shortcoming of Lease Stipulation 6 is the lack of attention to the CAH. While the note associated with the stipulation recognizes that "All lands in the Arctic Refuge Coastal Plain are recognized as habitat of the PCH and CAH," the language that follows only refers to the PCH with no specifications of CAH protections. While many of the proposed restrictions would apply to both herds, it is important that protections for both herds be specified as both are important ecologically and for subsistence.

As is noted above, ROP 23 under Alternative D adds a number of important provisions to enhance protections for caribou. However, there are some areas where these measures should be

[820] DSEIS Map 3-35.
[821] Russell and Gunn. 2019; DSEIS vol 1 at 2-54, 3-219.
[822] DSEIS at 2-56.
[823] Wilson et al. 2016.

strengthened. The ROP requires daily monitoring of satellite collar data to identify large aggregations of caribou within 30 km of infrastructure. However, no description is given of how "large aggregations" will be identified based on the use of collars. It is important to have more information provided about what numbers of collars at what distance thresholds constitute a "large aggregation" to be able to evaluate the effectiveness of this proposed measure. The expanded role of the PCTC in the AMP process and other parts of Alternative D will only strengthen protections for caribou if there is meaningful engagement, communication, and partnership with the PCTC. This includes sufficient funding to carry out the proposed activities, which should be provided by the lessee. BLM and FWS should include affirmation, or ideally a Memorandum of Understanding or similar agreement, indicating that the PCTC has agreed to partner with BLM and FWS and has the time and resources to be able to carry out the indicated monitoring and communication with lessees, along with the other functions stated in the draft SEIS, such as sitting on the AMP Steering Committee (ROP 23.1). If the PCTC does have capacity for these things, it would be helpful to have them added to the list of groups that will review and approve of a lessee's proposed vehicle use management plan (ROP 23i) to ensure independent scientific evaluation of any proposed plan. One other limitation of ROP 23 as currently phrased for Alternative D is the retention of a 4-week maximum duration of traffic stoppage to prevent displacement of caribou.[824] As is discussed above in the limitations of Alternative B and C, no justification is provided for this time limit. It should be removed and replaced by a requirement to stop traffic whenever needed to prevent displacement of caribou.

As we describe above, we are strongly supportive of the various requirements for increased consultation and incorporation of Indigenous Knowledge from Tribal Governments in Alternative D. We do recommend, however, that BLM and FWS ensure any requirements for consultation or creation of reports of Indigenous Knowledge (e.g., ROP 23j, ROP 34a) take into consideration the cultural sensitivities, capacity, and resources of communities and governments to ensure people are not being overburdened or expected to share time and cultural knowledge without compensation. Explicit statements should be made alongside requirements for consultation and reports about the resources that will be provided to enable these mitigation requirements and how those resources will be provided. For example, a similar requirement to that of the AMP, where the lessee is required to pay FWS for necessary studies,[825] could be used to ensure sufficient resources, training, and technical support exist to enable the requirements for reports and consultation to be met.

While ROP 34 includes several beneficial additions to minimize aircraft impacts under Alternative D, there are two areas for improvement. First, specification of a minimum flight altitude of 2,000 feet above ground level should not just apply to some places or times but to the entire Coastal Plain at all times, in keeping with FAA guidance for Wildlife Refuges.[826] Second, the language of "will maintain an altitude of"[827] should be replaced with language to specify that this is a minimum threshold to ensure pilots do not infer that they have to fly at 2,000 feet but can fly higher.

[824] DSEIS at 2-55.
[825] DSEIS at 2-17.
[826] FAA. 1984.
[827] DSEIS at 2-67.

There appear to be several typos in the materials for Alternative D that should be corrected. The description of impacts specific to Alternative D gives contradictory acreages open to surface occupancy. The text first states that "only 39,500 acres are available for leasing and allow surface occupancy" but later contrast the estimated PCH calving displacement area with "the 46,700 acres of the program area remaining open to surface occupancy."[828] Summing the values in Table 2-1 indicates 39,500 acres are available for surface occupancy.[829] This suggests the second figure quoted in the text is an error and should be corrected to present an accurate picture of potential impacts under Alternative D. Similarly, the text references Lease Stipulation 9 as limiting infrastructure and imposing timing limitations for Alternative D.[830] However, Lease Stipulation 9 no longer applies to Alternative D. Instead, the protections for post-calving habitat have been consolidated into Lease Stipulation 6. Again, this should be updated for clarity.

Finally, the requirements described under Alternative D do not show any responsiveness to changes in caribou population. The scientific field of conservation biology has long been aware of the greater risks of extirpation faced by small populations.[831] However, there is no consideration of this increased risk in the protections of the draft SEIS. The caribou protections of Alternative D, strengthened as described above, should be used as a baseline for requirements to avoid impacts to caribou. If the herd size of the CAH or PCH decreases, however, additional restrictions should be added to reduce pressures on caribou at a time of increased vulnerability. In determining the thresholds of these increased restrictions, it is important to remember that as a social and gregarious migrant that relies upon aggregations to reduce predation pressure and insect harassment, what counts as a "small population size" for caribou may be larger than that seen for other species. There also may be social and cultural consequences of reductions in population size that occur before genetic or behavioral consequences are observed. For example, reductions in population size may trigger corresponding reductions in allowable subsistence harvest by game management agencies. The Porcupine Caribou Management Board Harvest Management Plan recommends increased restrictions on harvest in Canada if the PCH population declines.[832] Similar restrictions are recommended by the Western Arctic Caribou Herd Working Group's Cooperative Management Plan in Alaska if the herd size of the Western Arctic Herd decreases.[833] There currently are proposals to greatly restrict subsistence harvest of caribou in response to persistent declines in the Western Arctic Herd.[834] This suggests one possible mechanism for increasing protections for caribou in a way that is responsive to needs both of the herds and of subsistence hunters. Protections for caribou as described under Alternative D and with the strengthening measures above may be able to be applied when the caribou herds are at their most liberal management level, with the fewest harvest restrictions. If herd sizes decrease, however, and the herd moves into more restrictive management levels,

[828] DSEIS at 3-218.
[829] DSEIS at 2-2.
[830] DSEIS at 3-219.
[831] E.g., Stacey and Taper. 1992; Caughley. 1994; Newman and Pilson. 1997; Saccheri et al. 1998; Briskie and Mackintosh. 2004; Matthies et al. 2004.
[832] Porcupine Caribou Management Board. 2010.
[833] Western Arctic Caribou Herd Working Group. 2019.
[834] Western Arctic Caribou Herd Working Group. 2023.

industrial activity should likewise be further restricted, such as involving more closures, larger buffers, less permitted activity, or denial and suspension of activities and leases. Such actions would increase the opportunity to avoid impacts to caribou and give the herds the best opportunity to rebound without further threatening population viability or subsistence harvest.

J. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON OTHER TERRESTRIAL MAMMALS.

1. Analysis of the Impacts to Muskoxen.

a. Importance of Muskoxen to the Coastal Plain

Among the United States states, muskoxen (*Ovibos moschatus*) occur only in Alaska. Muskoxen were hunted to extinction by the late 1800s in Alaska.[835] With support from Congress, they were reintroduced back into their traditional ranges in the Coastal Plain and Arctic National Wildlife Refuge with translocations in 1969 and 1970. Muskoxen are important subsistence species for meat, clothing and shelter made from hide, and tools and crafts made from bone and horn.

One purpose of the Arctic Refuge identified by ANILCA is to conserve muskoxen.[836] The BLM and FWS have not sufficiently evaluated the impacts of the oil and gas program in light of this management purpose. Additionally, notably absent is a map depicting the distribution range of muskoxen, including a map that shows muskoxen distribution by alternative. BLM and FWS should include such maps in the final SEIS so that the public can better understand the relationship between the oil and gas program and its potential impacts to muskoxen on the Coastal Plain. This is especially important given the critically reduced muskoxen population.

b. Assessment of the Affected Environment

The draft SEIS states:

> The population in northeastern Alaska and northwestern Canada was estimated at 700–800 animals in the mid-1990s, but it subsequently declined to approximately 300 animals from 2007 to 2014; about 200 were located west of the Arctic Refuge and 100 were located east of it in northern Yukon (Lenart 2015c; Arthur and Del Vecchio 2017). The population was estimated to be 297 animals in 2019 (Lenart 2021b). The decline was especially steep in the Arctic Refuge, where only one muskox was observed in 2006. A group of fewer than 25 animals, moved back and forth across the Canning River into the program area (Lenart 2015c, 2021b).[837]

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[835] Lent, P.C. 1999. Muskoxen and their hunters: a history. University of Oklahoma Press, Norman, Oklahoma.

[836] ANILCA § 303(2)(B)(i).

[837] DSEIS at 3, 3-199.

Despite acknowledging this alarming population decline, the draft SEIS does not fully describe the affected environment relating to muskoxen in a way that conveys baseline conditions essential to understanding how oil and gas leasing will impact the species and its habitats.

Indeed, the muskoxen population on the Coastal Plain is small, isolated, and declining. After being reintroduced to the Refuge, the population grew to a high of over 400 animals in the mid-1990s.[838] The larger population in northeast Alaska and northwest Canada dropped precipitously between 1998 and 2006,[839] largely due to losses from the Refuge. The dramatic decline is associated primarily with increased predation by grizzly bears,[840] but also disease,[841] winter weather,[842] distributional changes in the populations of other ungulates such as moose and caribou, and other factors.[843] Muskoxen continue to occur on the Arctic Refuge, though the Refuge may not currently have a permanent resident herd.

Predation, nutritional conditions, dispersal (which can all be affected by oil and gas development), and also weather are the primary influencers on the species' population dynamics.[844] Unlike other ungulates that inhabit the region, muskoxen do not migrate; rather they persist in the Arctic year-round.[845] They build fat stores in summer, and conserve energy in winter by trying to avoid movement.[846] Winter forage availability is typically of limited quantity

[838] Reynolds, P.E. 1998a. Dynamics and range expansion of a reestablished muskox population. Journal of Wildlife Management 62: 734-744; Reynolds, P.E., Reynolds HV, Shideler RT. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13: 79–84.

[839] Reynolds P.E., Reynolds, H.V., Shideler, R.T. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13: 79–84; Lenart, E.A. 2011. Units 26B and 26C muskoxen management report. In: Harper P., editor. Muskox management report of survey-inventory activities 1 July 2008–30 June 2010. Alaska Department of Fish and Game, Juneau, Alaska, pp. 63–84.

[840] Reynolds, P.E., Reynolds, H.V., Shideler, R.T. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13:79–84.

[841] Afema, J.A., Beckmen, K.B., Arthur, S.M., Huntington, K.B., and Mazet, J.A.K. 2017. Disease complexity in a declining Alaskan muskox (*Ovibos moschatus*) population. Journal of Wildlife Diseases 53(2): 311-329.

[842] Berger, J., Hartway, C., Gruzdev, A., and M. Johnson. 2018. Climate Degradation and Extreme Icing Events Constrain Life in Cold-Adapted Mammals. Scientific Reports 8(1): 1156.

[843] Barboza, P.S., Reynolds, P.E. 2004. Monitoring nutrition of a large grazer: Muskoxen on the Arctic Refuge. Int Congr Ser 1275: 327–333.

[844] Reynolds, P.E. 1998b. Ecology of a reestablished population of muskoxen in northeastern Alaska. PhD Thesis, University of Alaska, Fairbanks, Alaska, 106 pp. Reynolds PE, Reynolds HV, Shideler, R.T. 2002. Predation and multiple kills of muskoxen by grizzly bears. Ursus 13: 79–84.

[845] Jingfors, K.T. 1982. Seasonal Activity Budgets and Movements of a Reintroduced Alaskan Muskox Herd. Journal Wildlife Management 46(2): 344-350.

[846] Dau, J. 2001. Muskox Survey-Inventory Management Report, Unit 23. In Muskox. Federal Aid in Wildlife Restoration - Inventory Management Report, Grants W-24-5 and W27-1, Study 16.0, M.V. Hicks (ed.). Alaska Department of Fish and Game, Juneau, Alaska.

and of low nutritional quality. Muskoxen winter habitat is restricted to shallow snows, often along windswept ridges because they do not move well in deep snow.[847] Muskoxen survive the winter by using stored body fat and reducing movement to compensate for low forage intake.[848] Because of this strategy, muskoxen may be even more susceptible to disturbances during the winter. It is possible that repeated disturbances of the same animals during winter could result in increased energetic costs that could increase mortality rates.[849] Additionally, the species reproduces slowly — not breeding until age four or five, only breeding every other year at most, and only birthing one calf per cycle. These characteristics make the muskoxen vulnerable to oil and gas development activities, particularly in winter.

c. Failure to Take a Meaningful Look at Impacts to Muskoxen

In the draft SEIS, the BLM and FWS fail to take a hard look at the various impacts of the proposed lease sales and resulting oil and gas development activities on muskoxen and their habitats. Muskoxen are threatened by disturbance, displacement, and habitat degradation from seismic exploration activities and increased air and ground traffic; direct loss of habitat from gravel mining; barriers to movement from facilities, roads, and other infrastructure; increased hunting and poaching associated with increased human presence; increased predation due to increased numbers of predators attracted to human trash and food; and the additive and synergistic effects of climate change. According to the FWS,[850] oil and gas exploration and extraction activities, particularly along river corridors, can cause:

- displacement from preferred winter habitat;
- increased energy needs related to disturbance and displacement;
- decreased body condition of females;
- increased incidents of predation; and
- decreased calf production and animal survival.

d. BLM and FWS Fail to Adequately Consider Impacts to Muskoxen from Seismic Exploration and Other Activities in Winter.

The draft SEIS states of all alternatives:

Future seismic exploration is expected to occur in all portions of the program area

[847] U.S. Department of the Interior, Fish & Wildlife Service. 1999. Guide to Management of Alaska's Land Mammals. U.S. Department of Interior, U.S. Fish and Wildlife Service, Office of Subsistence Management. Anchorage, Alaska.

[848] Dau 2001.

[849] Department of Interior, Bureau of Land Management. National Petroleum Reserve – Alaska, Final Integrated Activity Plan/EIS. Vol. 2, Ch. 4 (November 2012) at 189.

[850] U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern (Jan 17, 2001), *available at*: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/arctic_oilandgas_impact.pdf.

> that are open to lease sales. It has the potential to affect terrestrial mammals by eliminating below snow habitat for small mammals, reducing forage availability during winter through compaction of snow and underlying vegetation, and disturbing denning grizzly bears and muskoxen. … Potential localized disturbance of the small number of muskoxen along the western boundary of the program area could result from seismic exploration activities in areas of High HCP.[851]
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> ***
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> Potential indirect effects of seismic exploration would include short-term compaction of snow cover in foraging habitats for herbivores. The timing of snowmelt during the spring following seismic exploration would change as a result of snow compaction and changes in snow drifting. Delayed snowmelt in the spring could decrease or alter the timing of forage available to caribou and other herbivores as well as the forage quality of vegetation (Cebrian et al. 2008). Some potential habitat alterations and long-term damage to forage plants for herbivores, such as tussock cotton grass and riparian willow shrub, is also likely to occur, as described in the Section 3.3.1 and in NRC (2003). Most trails recover within 8 years, but the amount of long-term damage to vegetation that occurs would depend on snow depth, topography and habitat types (NRC 2003; Walker et al. 2019). The program area typically has higher topography with more variable snow cover than areas to the west. This could result in more long-term vegetation damage (Walker et al. 2019) [852]

This description ignores some of the most significant impacts of seismic exploration to muskoxen. Seismic exploration and other winter oil and gas development activities, such as air and ground traffic, can disturb muskoxen and have detrimental impacts to the animals' energy balance.[853] Reactions to seismic activities can be variable, but animals have responded with alert behavior, assorting in defensive formations, and running from the disturbance from distances up to 2.5 miles away from operations.[854] This can result in the deaths of young calves that are left

[851] DSEIS at 3-204.

[852] DSEIS at 3-205

[853] Department of Interior, Bureau of Land Management. National Petroleum Reserve – Alaska, Final Integrated Activity Plan/EIS. Vol. 2, Ch. 4 (November 2012) at 189 and 191.

[854] Reynolds, P.E. and LaPlant, D.J. 1985. Effects of Winter Seismic Exploration Activities on Muskoxen in the Arctic National Wildlife Refuge. In Arctic National Wildlife Refuge Coastal Plain Resource Assessment. 1984 Update Report Baseline Study of the Fish, Wildlife, and Their Habitats, G.W. Garner and P.E. Reynolds (eds.). ANWR Progress Report No, FY85-2, Volume I. U.S. Department of Interior, U.S. Fish and Wildlife Service, Anchorage, Alaska; J.F. Winters and R.T. Shidler 1990. An Annotated Bibliography of Selected References of Muskoxen Relevant to the National Petroleum Reserve. Alaska Department of Fish and Game. Fairbanks, Alaska.

behind.[855] According to the BLM, "Where 3-D seismic exploration survey lines were located only 500 to 2,000 feet apart, localized displacement of terrestrial mammals could last for several days or *lead to complete abandonment of localized habitat*"[856] (emphasis added). Calving season — just before snowmelt from mid-April to mid-May — is a sensitive time, and anthropogenic disturbance can be particularly taxing.[857] If the same animals experience repeated disturbance, energetic deficits could lead to increased mortality rates.[858]

This information suggests that seismic exploration on the Coastal Plain would risk disturbing and displacing muskoxen, causing additional stress in the winter and early spring that could lead to abandonment of preferred habitat areas and increased mortality. The draft SEIS must address the significant potential impacts of seismic exploration on muskoxen in the Coastal Plain, particularly the animals currently using the program area, and explain how inflicting those impacts on this small population will be consistent with the Refuge purpose of conserving muskoxen.

e. BLM and FWS Fail to Consider Impacts to Muskoxen from Oil Spills and Resulting Release of Contaminants and Other Effects.

Oil spills can harm muskoxen by contaminating habitat and forage, causing air pollution, and causing disturbance with clean-up activities. Damage to tundra vegetation, including killing off macroflora, could persist for years, even decades.[859] Spills affecting waterways could have very detrimental effects to muskoxen because they congregate in riparian areas during summer months.

[855] U.S. Fish and Wildlife Service, Arctic National Wildlife Refuge, Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern (Jan 17, 2001), at p.9, *available at*: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/arctic_oilandgas_impact.pdf.

[856] Department of Interior, Bureau of Land Management. Northeast National Petroleum Reserve – Alaska, Final Supplemental Integrated Activity Plan/EIS. Vol. 2, Ch. 4 (May 2008) at 4-158.

[857] Department of Interior, U.S. Fish and Wildlife Service. Proposed Oil and Gas Exploration within the Coastal Plain of the Arctic National Wildlife Refuge, DEIS and Draft Regulations. (September 1982) at IV-34.

[858] *Id.*

[859] McKendrick, J.E. and Mitchell, W. 1978. Fertilizing and Seeding Oil-Damaged Arctic Tundra to Effect Vegetation Recovery, Prudhoe Bay, Alaska. Arctic 31(3): 296-304; McKendrick, J.E. 2000. Vegetative Responses to Disturbance. In The Natural History of an Arctic Oil Field: Development and the Biota, J.C. Truett and S.R. Johnson (eds.). Academic Press, New York, New York.

Muskoxen are difficult to study, given the harsh conditions of where they live. But studies of oil spill impacts to cattle may be comparative.[860] In the final SEIS, BLM and FWS must analyze the impact of oil spills and contact with contaminants on muskoxen.

f. BLM and FWS Fail to Consider Impacts to Muskoxen from Facilities Construction, Roads, and Other Related Infrastructure Associated with Oil and Gas Development.

Roads, pipelines, and other infrastructure can cause movement barriers, habitat fragmentation, and habitat loss.[861] Gravel mining associated with oil and gas facility and road construction can cause harm from habitat loss, water loss, disturbance, and displacement.[862] Mining often occurs in river floodplains, where muskoxen congregate in the summer. Vegetation disturbance could lead to encroachment of non-native vegetation, affecting forage availability. The draft SEIS fails to assess the impacts of each of these activities on muskoxen; these impacts should be thoroughly evaluated in the final SEIS.

g. BLM and FWS Fail to Consider Impacts to Muskoxen from Increased Human Presence and Activity.

Grizzly bears are the primary predator on muskoxen, and they have contributed to significant declines in the northeastern Alaska population, as discussed above. Increased human presence around oil and gas facilities is likely to attract predators due to trash and food accumulation. Predation not only causes mortality but also increases animal vigilance, stress, and energy use. Muskoxen typically respond to predation threats by circling into defensive groups. They may also respond by running and abandoning a resting site and leaving calves vulnerable to predation.

Increased human presence and access to the region due to an increase of roads can lead to increased hunting and poaching of muskoxen. Hunting pressure has increased in other areas inhabited by muskoxen and has had potentially significant impacts on abundance. Not only does hunting cause direct mortality, but the targeting of males for trophies can decrease the resiliency

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[860] U.S. Department of Interior, Bureau of Land Management, Draft Environmental Impact Statement for the National Petroleum Reserve – Alaska, Integrated Activity Plan, Vol. 2, Chapter 4 (sections 4.1 to 4.6) (March 2012) at 195; Edwards, W.C. 1985. Toxicology Problems Related to Energy Production. Veterinary and Human Toxicology 21: 328-337; Rowe, L., J. Dollahite, and B. Camp. 1973. Toxicity of Two Crude Oils and of Kerosene to Cattle. Journal of American Veterinary Medicine Association 16: 60-66.

[861] Garner, G.W., and P.E. Reynolds (eds.). 1986. Impacts of Further Exploration, Development and Production of Oil and Gas Resources. In Arctic National Wildlife Refuge Coastal Plain Resource Assessment, Final Report. Baseline study of Fish, Wildlife, and Their Habitats, Volume II. U.S. Department of the Interior, Fish and Wildlife Service, Anchorage, Alaska. Clough, J.G., A.C. Christensen, and P.C. Patton (eds.). 1987. Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment. U.S. Department of the Interior, Washington D.C.

[862] *Id*.

of whole herds.[863] Males play a significant role in defensive behavior in the presence of predators. The loss of males can lead to increased calf losses. The presence of humans caused general disturbance and energy-depleting responses as described above. Oil and gas development will increase helicopter and plane traffic, road traffic, and off-highway vehicle use.[864] The draft SEIS fails to assess the impacts of each of these activities on muskoxen; these impacts should be thoroughly evaluated in the final SEIS.

h. BLM and FWS Fail to Consider the Cumulative, Additive, and Synergistic Impacts of Other Threats in Combination with Climate Change Effects on Muskoxen.

Climate change is already affecting muskoxen habitat and is likely affecting the health of individuals. Warm, wet years can be detrimental to muskoxen populations, as shown by past research conducted in Greenland and Canada.[865] More erratic weather conditions in the Arctic are likely also contributing to mortality and morbidity. For example, rain-on-snow (ROS) events can cause direct mortality by freezing animals in the path of an extreme occurrence. Such an occurrence caused the sudden death of over 50 muskoxen in northwestern Alaska.[866] These events can also create icing conditions that prevent access to forage, and this may have an adverse impact on the long-term health of individuals, especially if they experience food deprivations as juveniles.[867] ROS events are likely to increase as climate warming increases. New diseases appearing in the northeastern population of muskoxen may be correlated with warming temperatures.[868] Illness causes mortality and can make animals more vulnerable to predation. The draft SEIS fails to assess the impacts of climate change on muskoxen; the impacts of climate change on muskoxen should be thoroughly evaluated in the final SEIS.

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[863] Schmidt, J.H., and Gorn, T.S.. 2013. Possible secondary population- level effects of selective harvest of adult male muskoxen. PLoS ONE 8(6):e67493; Berger, J. 2017. The Science and Challenges of Conserving Large Wild Mammals in 21st-Century American Protected Areas." Science, Conservation, and National Parks: 189.

[864] Murphy, S.M. and Lawhead, B.E. 2000. Caribou. In The Natural History of an Arctic Oil Field: Development and the Biota, J.C. Truett and S.R. Johnson (eds.). Academic Press, San Diego, California.

[865] Berger, J. 2017. The Science and Challenges of Conserving Large Wild Mammals in 21st-Century American Protected Areas. Science, Conservation, and National Parks: 189.

[866] Dau, J. 2005. Two caribou mortality events in northwest Alaska: Possible causes and management implications. Rangifer 25: 37–50.

[867] Berger, J., Hartway, C., Gruzdev, A., and Johnson, M. 2018. Climate Degradation and Extreme Icing Events Constrain Life in Cold-Adapted Mammals. Scientific Reports 8(1): 1156.

[868] Kutz S.J., Jenkins, E.J., Veitch, A.M., Ducrocq, J., Polley, L., Elkin, B., Lair, S. 2009. The Arctic as a model for anticipating, preventing, and mitigating climate change impacts on host-parasite interactions. Vet Parasitol 163: 217–228; Kutz SJ, Bollinger T, Branigan M, Checkley S, Davison T, Dumond M, Elkin B, Forde T, Hutchins W, Niptanatiak A, et al. 2015. Erysipelothrix rhusiopathiae associated with recent widespread muskox mortalities in the Canadian Arctic. Can. Vet. J. 56: 560–563; Afema, J.A., Beckmen, K.B., Arthur, S.M., Huntington, K.B., and Mazet, J.A.K. 2017. Disease complexity in a declining Alaskan muskox (Ovibos moschatus) population. Journal of Wildlife Diseases 53(2): 311-329.

2. Analysis of impacts on Dall Sheep

One purpose of the Arctic Refuge identified by ANILCA is to conserve Dall sheep (*Ovis dalli dalli*).[869] The BLM has not evaluated the impacts of the oil and gas program on the species in light of this management purpose. In the United States, Dall sheep occur only in the state of Alaska. They are an important prey species and used for human subsistence. They are also in decline in the Refuge, likely due to weather changes, though other factors have not been well-researched.[870] Additionally, notably absent is a map depicting the distribution range of Dall sheep, including a map that shows Dall sheep distribution by alternative. BLM and FWS should include such maps in the final SEIS so that the public can better understand the relationship between the oil and gas program and its potential impacts to Dall sheep.

Dall sheep are identified as an important subsistence resource in the program area.[871] Although the northern reach of the population appears to be at the southern edge of the program area, oil and gas activities will likely have direct, indirect, and cumulative impacts on the regional population. The animals are sensitive to air traffic, roads, artificial noise, off-road vehicles, and other anthropogenic disturbance.[872] Overflights by helicopter and airplanes can cause sheep to flee and use valuable energetic resources.[873] Increased hunting may result from an increase in humans near the area.[874]

The draft SEIS made no attempt to analyze the effects of climate change on the regional population. Dall sheep are sensitive to extreme weather events and changes in snow conditions.[875] Dall sheep are susceptible to parasites and bacterial and viral diseases[876] that may be a growing threat with climate change.[877] The final SEIS should thoroughly analyze the

[869] ANILCA § 303(2)(B)(i).

[870] U.S. Fish and Wildlife Service. 2018. Dall Sheep in Alaska Refuges.

[871] DSEIS at 3-320.

[872] AXYS Environmental Consulting Ltd. 2005. Problem Analysis of the Stone's Sheep Situation in Northeastern British Columbia. Draft Report.

[873] Frid, A. 2003. Dall's sheep responses to overflights by helicopter and fixed-wing aircraft. Biological Conservation 110:387-399.

[874] Draft Legislative Environmental Impact Statement. 1986. Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment.

[875] AXYS Environmental Consulting Ltd. 2005. Problem Analysis of the Stone's Sheep Situation in Northeastern British Columbia. Draft Report; Sivy, K.J., Nolin, A.W., Cosgrove, C., and Prugh, L. 2018. Critical snow density threshold for Dall sheep (Ovis dalli dalli). Canadian Journal of Zoology (ja); van de Kerk, M., Verbyla, D., Nolin, A.W., Sivy, K.J. and Prugh, L.R., 2018. Range-wide variation in the effect of spring snow phenology on Dall sheep population dynamics. Environmental Research Letters.

[876] AXYS Environmental Consulting Ltd. 2005. Problem Analysis of the Stone's Sheep Situation in Northeastern British Columbia. Draft Report.

[877] Jenkins, E.J., Veitch, A.M., Kutz, S.J., Hoberg, E.P. and Polley, L., 2006. Climate change and the epidemiology of protostrongylid nematodes in northern ecosystems:

potential impacts of all oil and gas activities on Dall sheep, particularly in light of the climate change.

K. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON POLAR BEARS.

As described above, the agencies' analysis of the ESA and MMPA protections for polar bears is inadequate. Polar bears (*Ursus maritimus*) were listed as threatened under the ESA in 2008 and are also federally protected under the MMPA.[878] Of the two polar bear populations (or stocks) found in the United States, the Southern Beaufort Sea (SBS) population is the most likely to occur on the Coastal Plain.[879] The SBS population is among the most imperiled stocks in the world, having declined dramatically since the 1990s.

Despite the importance of the Coastal Plain to SBS polar bears, the draft SEIS fails to properly describe the environmental baseline for the population and fails to adequately analyze meaningful alternatives and effective mitigation measures to avoid injurious or lethal impacts, particularly from seismic exploration. The draft SEIS further does not adequately analyze potential direct, indirect, and cumulative impacts of oil and gas oil and gas leasing on polar bears using the Coastal Plain.

Given FWS and BLM's draft SEIS analysis contains many of the same fundamental flaws as the prior EIS, we incorporate our prior comments on the draft EIS. We also incorporate by reference comments submitted in 2019 by Dr. Steven Amstrup, Chief Scientist Emeritus for Polar Bears International, and comments submitted with this letter by Dr. John Whiteman, Chief Research Scientist for Polar Bears International, which update and build on Dr. Amstrup's comments.[880] We also incorporate by reference and attach comments by Trent McDonald Ph.D., which describe the potential impacts of a road crossing the western portion of the Coastal Plain on newborn polar bear cubs using FWS's quantitative modeling approaches.[881]

1. Affected Environment.

BLM and FWS fail to include adequate baseline information on the SBS population of polar bears. Modeling predicts "significant declines in polar bear populations within three

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Parelaphostrongylus odocoilei and Protostrongylus stilesi in Dall's sheep (Ovis d. dalli). Parasitology 132(3):387-401; Aleuy, O.A., Ruckstuhl, K., Hoberg, E.P., Veitch, A., Simmons, N. and Kutz, S.J., 2018. Diversity of gastrointestinal helminths in Dall's sheep and the negative association of the abomasal nematode, Marshallagia marshalli, with fitness indicators. PloS one 13(3):p.e0192825.

[878] 73 Fed. Reg. 28,212 (May 15, 2008); 75 Fed. Reg. 76,086 (Dec. 7, 2010).

[879] 75 Fed. Reg. at 76,090.

[880] John Whiteman, PhD Chief Research Scientist, Polar Bears International, Letter re: Coastal Plain Oil and Gas Leasing Program Supplemental Environmental Impact Statement (Oct. 23, 2023) [hereinafter Whiteman DSEIS Comments].

[881] Trent MacDonald, PhD, McDonald Data Sciences LLC, Memorandum re: Arctic National Wildlife Refuge Coastal Plain Leasing Program SDEIS (Oct. XX, 2023).

generations"[882] The draft SEIS fails to mention that there is more than a 70% chance of a global polar bear population decline of 30% or more within three generations.[883] This recent study refers to significant declines in the *global* population, not just the SBS stock, which has already declined by approximately half since the 1980s.[884] BLM and FWS acknowledges the most updated population analysis estimated the Alaska SBS abundance to be 573 bears in 2015, though the estimate of 900 bears is currently used for management purposes.[885] But BLM and FWS should clarify that the SBS population has already experienced an alarming decline and is in a more precarious condition than most other polar bear populations. The agencies should also incorporate the findings of FWS's latest species status assessment and five-year listing review. In particular, the species status assessment notes that abundance for the Polar Basin Divergent Ecoregion (including the U.S. Chukchi and Southern Beaufort subpopulations) are projected to be "greatly decreased" for all time periods considered — including the short term (2020–2030).[886]

The draft SEIS states that "Regehr . . . documented decreases in vital rates of the SBS stock, including survival and breeding rates, corresponding to increases in the number of ice-free days per year in waters over the Beaufort Sea continental shelf."[887] While that statement is true, BLM and FWS ignore additional findings that those annual ice-free days are projected to continue to increase, which will mean further decreases in vital rates, including survival and breeding rates.[888] BLM and FWS fail to apply existing information and trends regarding increased ice-free days over the Beaufort Sea continental shelf to generate a relevant projection for SBS bears' survival and breeding rates. The draft SEIS acknowledges that ice-free days are increasing:

> Rapid environmental changes from lengthening of the ice-melt season and diminished sea ice cover have increased the bears' use of terrestrial habitats: the percentage of collared female SBS bears coming ashore tripled over 15 years since the late 1990s, with bears arriving onshore earlier, staying longer, and departing later (Atwood et al. 2016b; Rode et al. 2022). The mean duration of the open-water period increased by 36 days in that period, and the mean length of stay increased by 31 days.[889]

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[882] DSEIS at 3-227 (citing Regehr et. al. (2016)).

[883] Regehr et. al. (2016).

[884] Steven C. Amstrup, PhD Chief Scientist, Polar Bears International, Letter re: the DEIS describing proposed development of the Arctic National Wildlife Refuge Coastal Plain (Mar. 8, 2019) [hereinafter March 2019 Amstrup Letter] at 8 (citing Bromaghin et al. 2016).

[885] DSEIS at 3-228.

[886] FWS, Species Status Assessment for the Polar Bear (Ursus maritimus) (Aug. 18, 2023); *see also* FWS, Polar Bear Five Year Review (Aug. 2023).

[887] DSEIS at 3-227.

[888] *E.g.*, Bromaghin et al., *Polar bear population dynamics in the southern Beaufort Sea during a period of sea-ice decline*, 25(3) ECOLOGICAL APPLICATIONS 634–651 (2015) ("Reduced spatial and temporal availability of sea ice is expected to increasingly force population dynamics of polar bears as the climate continues to warm.")

[889] DSEIS at 3-230.

But the draft SEIS fails to examine impacts to polar bears from a continued increase in those ice-free days. The final SEIS must disclose the likely impacts to the SBS population from spending more time on land and the growing distances that bears must traverse from sea ice to land (see below).

Threatened polar bears den on the Coastal Plain and are using the area with increasing frequency for other activities. The majority of the Coastal Plain (approximately 77 percent) is designated as critical habitat for the species.[890] BLM and FWS fail to adequately support their assumptions about the number of denning female polar bears expected on the Coastal Plain. The draft SEIS states that, despite the SBS population using an area of widespread, low-density denning areas, "the highest density of maternal dens in Alaska 2000–2015 (2.06–2.32 dens per 100 km2) was located in the northwestern corner of the project area."[891] BLM and FWS further observes that the distribution of maternal dens in Alaska has shifted landward over the past three decades as sea ice has become less available and stable.[892] Problematically, as discussed below, BLM and FWS opted to make this high density denning area available for leasing and seismic exploration under every action alternative. The agency must explain this choice in light of its own acknowledgment that current scientific information indicates this is the highest density denning area in not only the project area, but the entire state of Alaska.

BLM and FWS state that based on the recent Patil 2022 study, it estimates that approximately 14 female bears may den in the program area annually, with a confidence interval of 5 to 30 dens.[893] While this may accurately reflect the current number of bears denning area, the Leasing Program area will likely remain important as the percentage of bears denning on land increases with continuing sea ice loss.[894] BLM and FWS must show some defensible calculation to support its estimate of the number of denning bears annually in the program area over the course of the program, which could last decades into the future if oil and gas leasing eventually leads to development.

Further, the draft SEIS fails to meaningfully characterize the extent to which climate change will reduce the stability of dens during the future time periods when oil and gas activities will also be disturbing denning bears. The draft SEIS discusses the key characteristics of denning habitat, but glosses over relevant projected changes in one critical characteristic — snow cover — stating only that:

> The warming temperatures and increased precipitation year-round and longer growing seasons that are predicted to occur in the future may have negative implications for the stable conditions required for maternal denning by polar bears, especially if warm temperatures prevent snow cover of sufficient depth from

[890] 75 Fed. Reg. at 76,086.
[891] DSEIS at 3-232.
[892] *Id*.
[893] DSEIS at 3-233 (citing Patil et al. (2022) and DSEIS vol. 3 App. J).
[894] DSEIS at 3-233.

accumulating early in the denning season.[895]

Yet that lack of snow cover early in the denning season is just what is projected for the Alaskan Arctic.[896] BLM and FWS must present the best available science indicating the likely timing and amount of snow cover arriving on the Coastal Plain throughout the life of the proposed oil and gas program and disclose the implications of that snow cover for SBS bears' breeding success.

Finally, BLM and FWS points to incidental take regulation (ITR) mitigation measures in both its consideration of the affected environment and impacts analysis for polar bears and assumes that such measures have been largely effective at minimizing impacts to bears from North Slope oil and gas activities.[897] FWS has acknowledged in other contexts, however, that previous ITR findings and past reported take underestimated take of denning cubs. Indeed, FWS and USGS developed quantitative modeling (Wilson and Durner 2020) because new information indicated impacts to denning cubs were more significant than previously understood.[898] FWS also explained that past take of cubs due to den disturbances would be underreported due to the limited extent of den detection surveys and monitoring, the difficulty of observing such take in the dark, and the latent nature of cub death caused by survival-impairing disturbances.[899] BLM and FWS's statement in the draft SEIS must be explained in light of these other findings.

The agencies should also explain its changed estimate regarding the number of acres of potential terrestrial denning habitat for maternal polar bears within the three zones of estimated hydrocarbon potential on the Coastal Plain. Table 3-39 in the draft SEIS estimates a total of 18,200 acres of denning habitat across the high, medium and low scenarios, citing Durner and Atwood (2018).[900] The 2020 final EIS estimated only 4,530 acres of potential terrestrial denning

[895] DSEIS at 3-243.

[896] *See* NOAA, Final Rule, Threatened Status for Arctic ringed seal (and other subspecies), 77 Fed. Reg. 76706 (December 28, 2012); *see also* Molly Rettig, *Need a Weather Forecast for 2030? Alaska climatologist can help*, ANCHORAGE DAILY NEWS (May 31, 2016), https://www.adn.com/science/article/need-weather-forecast-2030-cutting-edge-alaska-climatologist-may-be-able-helo/2013/05/11/.

[897] DSEIS at 3-228 to 3-229.

[898] FWS, Southern Beaufort Sea Proposed Incidental Take Regulations Questions and Answers Document (FWS document stating new information indicated significant impacts can occur to denning bears from human activities, leading FWS to develop model); Karimah Schoenhut, Sierra Club, Comment Letter on Beaufort Sea Proposed Incidental Take Regulations at 60 (July 1, 2021) (comment describing source of FWS Q&A document); *see also* 86 Fed. Reg. 42,982, 43,046 (Aug. 5, 2021) (FWS explaining model is based on new information with goal of analyzing "observable and unobservable take").

[899] 86 Fed. Reg. at 43,048–49 (FWS statement explaining lack of surveys or monitoring under prior ITRs to observe dens and potential disturbance, and impacts were not observable due to limited light and latent manifestation); *see also id*. at 43,061 (FWS statement acknowledging lack of monitoring information to detect latent cub mortality).

[900] DSEIS at 3-245.

habitat, citing Durner et al. (2010), Durner et al. (2006), and Durner et al. (2001).[901] While it appears that the draft SEIS is more likely the accurate estimate with its cites to the more recent Durner and Atwood delineation, BLM and FWS should nonetheless explain the variation so that the public can understand its methods.

Due to the lack of this information, BLM and FWS's assessment of the impacts that oil and gas activities will have on denning is measured against an inaccurate baseline. Polar bears are particularly vulnerable to anthropogenic disturbance during denning as compared to other times in their life cycle.[902] The draft SEIS thus fails to take into account how disturbances to denning caused by oil and gas activities will be even more severe in the future than they would be at present.

BLM and FWS also failed to consider existing or projected levels of human-caused lethal take of polar bears in its environmental baseline. The draft SEIS refers to FWS's 2017 SBS Polar Bear Stock Assessment Report, which explains that from 2006–2015 an average of an average of 19 bears per year were removed from the U.S. portion of the SBS stock, averaging 50 percent males, 27 percent females, and 22 percent unreported sex.[903] It also notes that 14.2 bears were removed from the Canadian portion of the SBS stock, with a sex ratio of 56 males to 44 females.[904] The draft SEIS explains that overall, from 2008–2017, there were 420 total human-caused removals of polar bears in Alaska (including both the SBS and Chukchi Sea stocks), but that the number attributable to SBS bears is not known. However, FWS's Polar Bear Five Year Review states that the average number of human-caused mortalities was between 2010–2014 at 36 SBS bears taken per year.[905]

The draft SEIS fails to examine how this current level of lethal take will adversely affect SBS polar bears, including the cumulative effects on annual rates of recruitment or survival combined with the additional impacts of oil and gas activities on the Coastal Plain. It completely ignores the Potential Biological Removal (PBR) level established for the SBS stock under the MMPA. PBR is defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its Optimum Sustainable Population (OSP).[906] PBR for the SBS stock has most recently been calculated at 14, far below the average number of bears removed via annual harvest alone.[907] According to a recent FWS memorandum, with at least 33.2 bears removed from the SBS population annually compared to a PBR of 14, it is clear that "the ability of the population

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[901] FEIS at 3-181.

[902] Steven C. Amstrup, *Polar Bear, Ursus Maritimus, in* WILD MAMMALS OF NORTH AMERICA: BIOLOGY, MGMT., AND CONSERVATION 587, 606 (G. A. Feldhamer, B. C. Thomson & J. A. Chapman eds., 2003).

[903] DSEIS at 3-229.

[904] *Id*.

[905] FWS Polar Bear Five Year Review (2017) at 27. Combined annual harvest from 1988–2007 averaged 56.9, and from 2006–2010 averaged 53.6. FWS Polar Bear: Southern Beaufort Sea Stock Assessment (2010) at 3, 5.

[906] 16 U.S.C. § 1362(20).

[907] FWS (draft) Polar Bear: Southern Beaufort Sea Stock Assessment (2017) at 11.

to reach OSP is [already] being compromised."[908] The draft SEIS neglects to consider this baseline information in its cursory evaluation of the status of the SBS stock or incorporate it into its cumulative effects analysis. As noted in the FWS memorandum and described above, it is reasonable to assume that any additional lethal take from seismic exploration would cause further adverse effects on annual rates of recruitment or survival.[909] Likewise, over the lifetime of an industrial oil field, from post-lease exploration to infrastructure construction and oil and gas development and production, it is reasonable to assume that some additional level of lethal take will occur.

Notably, while comparison to the PBR calculated by FWS demonstrates that oil and gas activities under the program are likely to cause impacts that the draft SEIS has failed to acknowledge, the PBR itself cannot rationally be used to show an acceptable take level in the context of a stock like the SBS population that is already experiencing such catastrophic decline.[910]

Further, as explained above, FWS has already authorized take by incidental harassment of nearly half the SBS population. As such, any further harassment of this population should not be considered as potentially compliant with the MMPA's mandate that FWS only authorize take of a "small number" of this population.

In sum, based on current levels of removal and the current depleted state of SBS bears due to climate change, the agencies can arrive at no supportable conclusion that additional oil and gas-related harassment and mortality on top of existing harassment and mortality will be consistent with the protections required by the MMPA for the SBS population.

2. Environmental Consequences.

The draft SEIS presents a range of action alternatives that fail to protect polar bears. BLM and FWS also do not accurately describe the reasonably foreseeable impacts of oil and gas activities on polar bears, including significant habitat loss and displacement, noise, seismic operations, and increased human-bear interactions. BLM and FWS also fail to assess the cumulative impacts of this proposal together with existing and foreseeable developments in the Arctic against a backdrop of climate change. Further, BLM and FWS make no attempt to quantify the number of polar bears that would potentially be harmed by oil and gas activities, nor explain how the program could affect the SBS population as a whole.

a. The agencies failed to consider a reasonable range of alternatives to protect polar bears.

[908] U.S. Fish and Wildlife Service, Memo re: 1002 Coastal Plain Incidental Take Regulation Application, September 2018 at 3, *available at* https://assets.documentcloud.org/documents/5647572/Alaska-Memo.pdf

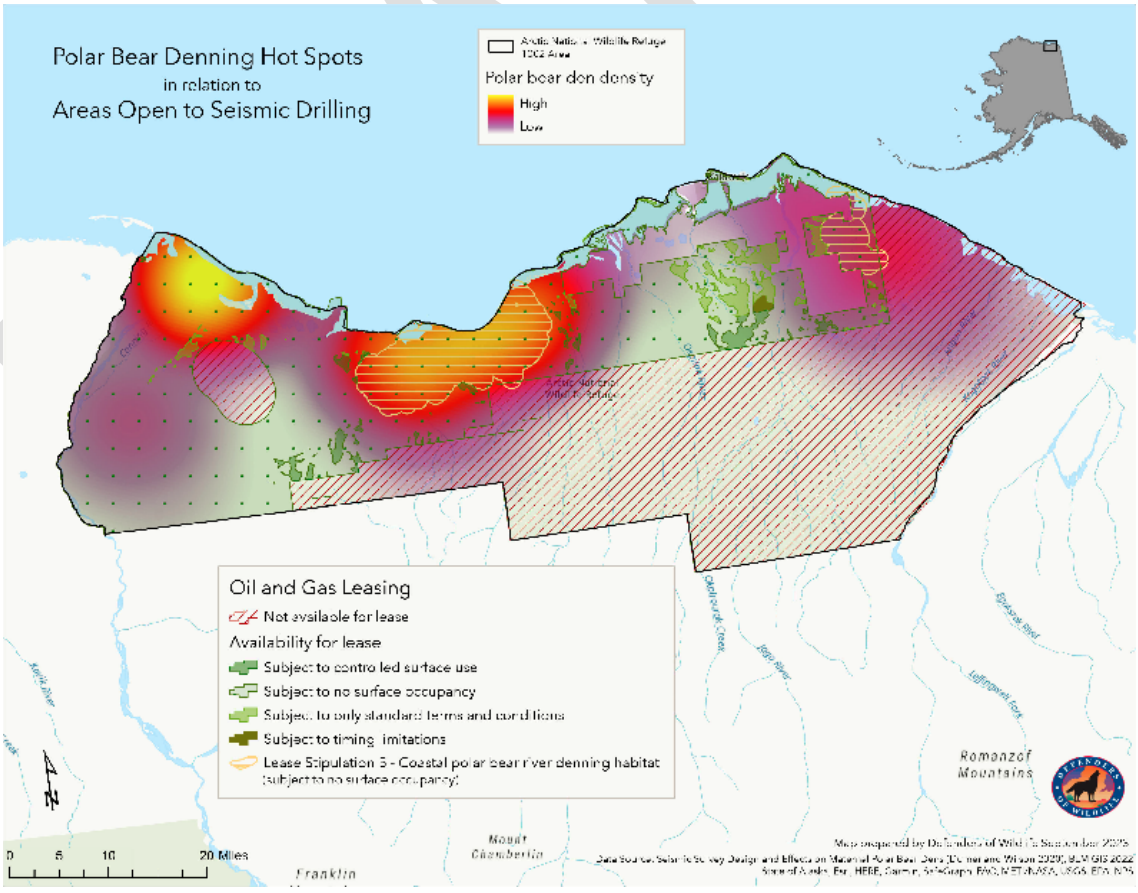
[909] *See id*; *see also supra* Section IV.D.1.

[910] *See* March 2019 Amstrup Letter at 33.

BLM and FWS's range of alternatives is inadequate.[911] The three action alternatives do not present a reasonable range sufficient to analyze differences in impacts to polar bears. The variations between the final EIS action alternatives and Alternative D do not offer a meaningful difference in impacts to polar bears and their critical habitat.

The draft SEIS misleadingly implies that NSO stipulations will protect the majority of polar den dens and denning habitat. Alternative D would offer the fewest acres of lands for leasing, including some areas in the eastern portion of the Coastal Plain which are important for denning (often referred to as "hotspots"). The agencies state that "[u]nder Alternative D, the areas not offered for lease and the NSO areas would encompass the locations of 99 percent of all dens and maternal denning habitat (Table 3-40 and Table 3-41), thereby affording the highest level of protection for denning polar bears among the action alternatives."[912] Critically, however, this obfuscates that Alternative D allows leasing in the central and western denning hotspots, thereby leaving the majority of important areas for denning available to lease. The draft SEIS thereby misleadingly inflates the benefit of the NSO stipulations.

The map below illustrates the Coastal Plain's denning hotspots with areas open or closed to leasing, and areas subject to NSO stipulations and Lease Stipulation 5:



[911] *See supra* Section IV.B.3.
[912] DSEIS at 3-265.

Even under BLM and FWS's own calculations in Table 3-40, Alternative D would mean that an average of 9.6 dens, with a confidence interval of 3–19 dens, would likely be located in areas open to leasing.[913] While BLM and FWS make much of Alternative D's provisions as effective to minimize impacts to polar bears, all or part of the three denning hotspots are located in areas which are open to leasing, and thus vulnerable to threats from oil and gas activities.

Unlike the prior EIS process, where all of the action alternatives assumed the entire Coastal Plain will be open to seismic exploration, the draft SEIS assumes that areas which are closed to leasing are closed to seismic exploration.[914] And while the draft SEIS makes a number of acres unavailable for leasing, BLM and FWS still leave what it acknowledges is the most important and highest density onshore denning habitat available for leasing and seismic exploration under Alternative D.[915] In identifying impacts common to all action alternatives, the draft SEIS states that the impacts from 3D seismic exploration "are of greatest concern" to polar bears and that such exploration "would occur across much or all of the program area."[916] Indeed, BLM and FWS acknowledge that under Alternative D, 8,900 acres of maternal denning habitat would be open to seismic exploration.[917] This poses unacceptable impacts and BLM and FWS must include meaningful variation among alternatives and heightened mitigation measures in the final SEIS.

Maps 2-5 & 2-6 show areas subject to NSO and other stipulations for Alternative D.[918] Map 3-40 shows polar bear critical habitat and maternal denning habitat on the Coastal Plain.[919] But all of BLM and FWS's maps conspicuously omit the previously-identified polar bear denning hotspots, and none of the maps overlap polar bear denning habitat with areas which are open to leasing and subject to polar bear-specific stipulations and ROPs. This is critical information for the public to understand how those mitigation measures correspond to locations where polar bears are denning onshore and how protective they may or may not be. BLM and FWS should include these maps in the final SEIS.

Under Lease Stipulation 5 in Alternative D, BLM and FWS would prohibit permanent oil and gas structures from being within 1 mile of the small portion of potential denning habitat located from the coastline to 5 miles inland on the Canning River, Niguanak River, Katakturuk River, Marsh Creek, Carter Creek, and Sadlerochit River, and all associated tributaries.[920] Similarly, under Alternative D, BLM and FWS would prohibit oil and gas activities within some, but not all, of that same small portion of the denning habitat from October 30 through April

[913] DSEIS at 3-261.
[914] DSEIS at 2-2.
[915] DSEIS at 3-232 ("The highest density of maternal dens in Alaska 2000–2015 (2.06–2.32 dens per 100 km2) was located in the northwestern corner of the project area (Patil et al. 2022).").
[916] DSEIS at 3-255.
[917] *Id*. at 3-265.
[918] DSEIS vol. 2, Map 2-5, 2-6.
[919] DSEIS vol. 2, Map 3-40
[920] *See* DSEIS at 2-14.

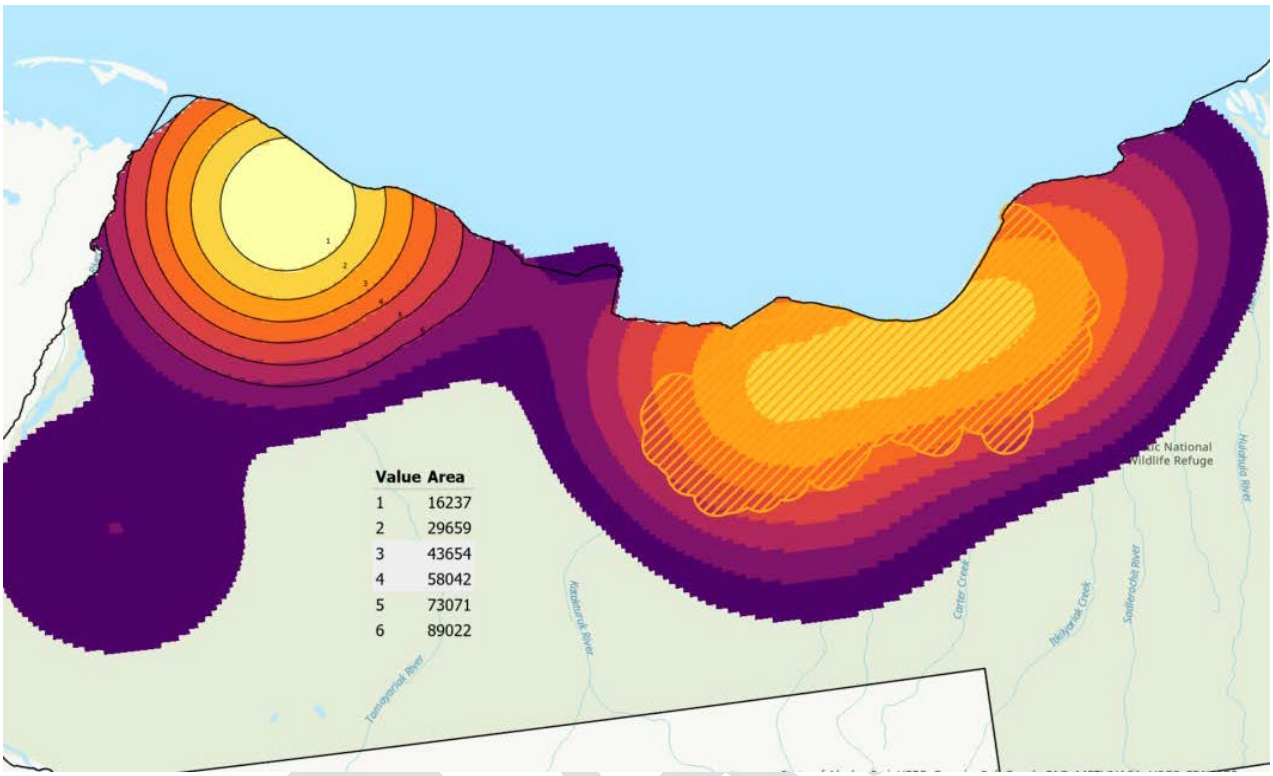
30.[921] Unlike Alternative C (Alternative D in the 2020 final EIS), new Alternative D includes a roughly two-week extension of the timing limitation from April 15–30.[922] BLM and FWS should adopt this extension of the timing limitation in the ROD in order to account for later denning periods.

Problematically, Lease Stipulation 5 includes the Canning River in its NSO provision, but not its timing limitation.[923] BLM and FWS provide no scientific basis to conclude that this portion of the suitable denning habitat is the only portion of the suitable denning habitat in the Coastal Plain that requires the protection conferred by Lease Stipulation 5. Nor do BLM and FWS explain why they opted to protect a one-mile buffer on either side of the Canning River via an NSO provision but did not apply the same timing limitation to this stretch of denning habitat. BLM and FWS also do not explain whether the agencies followed any scientifically sound approach to identifying areas within the suitable denning habitat that have a higher likelihood of den occurrence than other portions. This is particularly alarming given, as the map above demonstrates, the western hotspot is left vulnerable to seismic activities or other winter season oil and gas development with no timing restrictions to protect denning bears. Moreover, BLM and FWS failed to explain whether or how they have taken climate change impacts into account, and how such impacts may shift preferred denning locations in the future compared to historically observed preferences. As explained in the attached comments from Dr. Whiteman, NSO categorization allows extensive disturbance of denning polar bears by seismic exploration which could have potentially significant adverse impacts on denning polar bears and cubs and Lease Stipulation 5 does not sufficiently protect against these risks.[924]

The final SEIS should protect the critical northwestern denning hotspot from leasing, or at a minimum from seismic exploration in a manner similar to the protections conferred under the timing limitation of Leasing Stipulation 5 for Alternatives C and D or explain why it was not feasible to do so.

As demonstrated in the map below, the yellow core portion of the northwestern denning hotspot has a higher density of denning than any part of the protected central hotspot. As such, the core area of the northwestern hotspot — approximately 16,000 to 30,000 acres — should be made unavailable to leasing under Alternative D, at a minimum. To be consistent with the density of denning areas protected by Lease Stipulation 5's timing limitation, at least 43,000 to 73,000 acres in the northwestern hotspot should be submitted to that timing restriction.

[921] *Id*.
[922] *Id*.
[923] *Id*.
[924] Whiteman DSEIS Comments at 6–7.



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Even for leases that BLM and FWS describe in the draft SEIS as being "NSO," it is not clear whether the agencies would retain the authority post-leasing to permanently preclude activities on areas immediately adjacent to the NSO areas that would be required to access the oil and gas associated with the NSO areas. Moreover, BLM and FWS maintain the position from the prior EIS that it must allow "necessary" access across any portion of the Coastal Plain to enable oil and gas activities, even across NSO areas.[926] In short, it is not clear what BLM and FWS mean by "NSO" in this draft SEIS, and the agency should carefully explain whether it is retaining the authority to deny all development on the NSO lease permanently, or whether the "NSO" lease entails a right of access via adjacent areas, and therefore potential spill-over effects on the NSO areas themselves that BLM will not be able to entirely and permanently preclude after the leasing stage.[927] There is also no analysis of the reach of impacts from areas where surface oil and gas activities will be allowed. A proper analysis minimally would require mapping the areas where surface oil and gas activities will be allowed and then evaluating how much habitat falls within a buffer distance from those locations, where the buffer distance reflects some scientifically determined estimate of the distance required to ensure the habitat will be safe from various forms of harm resulting from those activities. Indeed, FWS has critiqued

[925] The Value Area amounts in this map are provided in acres.

[926] *See e.g.*, DSEIS at 2-5 ("PL 115-97 requires that the BLM authorize ROWs for essential roads and pipeline crossings, and other necessary access, even in areas closed to leasing or with a NSO stipulation.").

[927] *See supra* Section IV.B.5 (describing limitations in agencies' NSO analysis).

such an NSO approach and explained that NSO provisions are not sufficient because high density denning areas should be off-limits to all leasing and oil and gas activities.[928]

BLM and FWS must evaluate impacts from oil and gas activities on all terrestrial denning critical habitat on the Coastal Plain and consider measures to mitigate impacts to that broader geographic area. The agencies also should consider the impacts of alternative seismic exploration methods and seek to mitigate those impacts specifically.

b. BLM and FWS failed to analyze potentially significant impacts to polar bears from seismic exploration.

The draft SEIS, like the 2020 final EIS, underestimates the potential impacts to polar bears from seismic exploration. Seismic exploration presents a risk of lethal take to polar bears due to shortened denning time, den abandonment and the ensuing indirect mortality, or direct mortality caused by trucks running over bears and cubs in maternal dens.

In December 2019, FWS and USGS scientists released a study, "Seismic Survey Design and Effects on Maternal Polar Bear Dens," that attempted to quantitatively model impacts on polar bears from seismic surveys on the Arctic National Wildlife Refuge Coastal Plain (Wilson and Durner).[929] The study provided a method for quantitatively calculating take while considering mitigation measures such as temporal and geographic restrictions and den-locating technologies (aerial Forward Looking Infrared (FLIR or AIR) detection surveys).[930] The agencies have since made adjustments to their model. BLM and FWS should quantitatively model the potential impacts to denning bears in areas of the Coastal Plain that are open to seismic exploration and include those findings in the final SEIS.

BLM and FWS generally acknowledge that seismic exploration would likely impact bears under its current set of alternatives. As described above, the agencies concedes that seismic exploration would be the greatest concern for injury or mortality of bears across the program area and during all stages of an oil and gas program.[931] BLM and FWS also acknowledge that under all alternatives, given the large number of dens in high HCP area, that "seismic vehicles would be likely to pass within 165 to 660 feet of all dens in the program area, distances at which some maternal females have been known to abandon dens prematurely."[932] As discussed in more detail below, BLM and FWS also rely heavily on mitigation measures occurring via ITRs, and points to the purported efficacy of such mitigation on the western portion of the North Slope. BLM and FWS also acknowledge, however, that seismic exploration has never been conducted

[928] Letter from Gregory Siekaniec, Regional Director – Alaska Region, to BLM Project Manager Coastal Plain Oil and Gas Leasing Program Environmental Impact Statement (Apr. 8, 2019).

[929] Ryan R. Wilson & George M. Durner, *Seismic Survey Design and Effects on Maternal Polar Bear Dens*, 84(2) J. OF WILDLIFE MGMT. 201 (2020).

[930] *Id*.

[931] DSEIS at 2-255.

[932] DSEIS at 3-249.

anywhere with comparable denning habitat density and number of maternal bears.[933] But the agencies do not attempt to square the admission of this reality with the potential impacts to denning bears from the seismic exploration that they would be enabling via this Leasing Program.

As FWS recognized, "it is thought that successful denning, birthing, and rearing activities require a relatively undisturbed environment."[934] Polar bears are particularly vulnerable to anthropogenic disturbance during denning as compared to other times in their life cycle.[935] The best available science indicates that sows entering dens or denning with cubs are more sensitive to noise disturbance than other demographic groups.[936] Seismic exploration on the Coastal Plain will likely have particularly harmful impacts as it would occur during the winter months, overlapping with the denning season and the period when bears emerge with their young cubs to hunt prey on sea ice.[937]

FWS has expressly acknowledged the potentially lethal effects of winter oil and gas exploration on denning polar bears in the Arctic Refuge, finding that "[m]aternal polar bears with newborn cubs can be prematurely displaced from their winter dens by the noise, vibrations, and human disturbance associated with oil exploration activities. This displacement may result in potentially fatal human-bear conflicts, and may expose the cubs to increased mortality due to harsh winter conditions for which they are not yet prepared."[938] Cubs, which are born in mid-winter, are generally unable to survive conditions outside the den until March or April.[939] Female polar bears have an average of 1.8 cubs per litter, [940] and adequate time in a den is necessary to optimize cub development for withstanding harsh Arctic spring conditions and to synchronize

[933] *Id*. at 3-257 ("The greatest risk of injury and mortality from disturbance and premature den abandonment would occur during the short-term but intensive 3D seismic exploration phase, which has not been conducted previously in an area with comparable densities of denning habitat and numbers of denning female bears.").

[934] 81 Fed. Reg. at 36,673 (June 7, 2016).

[935] S. C. Amstrup, *Polar bear, Ursus maritimus, in* WILD MAMMALS OF NORTH AMERICA: BIOLOGY, MANAGEMENT, AND CONSERVATION 587, 606 (G. A. Feldhamer, B. C. Thomson & J. A. Chapman (eds.), John Hopkins Press 2003).

[936] 81 Fed. Reg. at 52,291 (Aug. 5, 2016).

[937] F. Messier *et al., Denning ecology of polar bears in the Canadian Arctic Archipelago,* 75 J. OF MAMMALOGY 2 (1994).

[938] U.S. Fish and Wildlife Service, *Potential Impacts of Proposed Oil and Gas Development on the Arctic Refuge's Coastal Plain: Historical Overview and Issues of Concern,* at 10 (2001), *available at*: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/arctic_oilandgas_impact.pdf.

[939] 81 Fed. Reg. at 52,292.

[940] Rode et al. *Variation in the response of an Arctic top predator experiencing habitat loss: feeding and reproductive ecology of two polar bear populations,* GLOBAL CHANGE BIOLOGY, v. 20, 82 (2014).

den emergence with peak prey availability.[941] If den site abandonment occurs before the cubs are able to survive outside the den, or if the female abandons the cubs, the cubs will die.[942]

A rational, scientifically legitimate analysis of the impacts of seismic exploration requires consideration of the areal extent of potential surveys during a given denning season and the number of den locations distributed in the proposed survey area, and must consider the high failure rate for the den detection methods that will be employed. BLM and FWS provided no such analysis in the draft SEIS. For example, taking into account the realities of heavy vehicle movement during recent seismic surveys in Alaska and the limitations on den detection technology, Dr. Steven Amstrup explained in 2019 that a seismic survey covering the entire Coastal Plain within a denning season would pose the risk that at least one undetected polar bear den would be directly run over by a vehicle and crushed, with potential immediately lethal consequences for the mother and cubs.[943] Indeed, BLM and FWS acknowledge this possibility, but do not analyze the impacts it would have on the SBS population.[944] Moreover, due to the density of 3D seismic survey grids, any undetected den would have a very high probability of being disturbed by the very close passage of heavy vehicles.[945]

As explained in detail below and in the attached comments from Dr. Whiteman, recent studies make clear that a 15–45% detection rate is roughly close to the highest that could reasonably be expected from FLIR surveys, with 15% being the most realistic, meaning denning bears are at serious risk of impacts from seismic exploration.[946]

BLM and FWS failed to take a hard look at impacts from seismic activities, which could have population-level impacts on threatened polar bears. BLM and FWS must thoroughly evaluate these impacts before leasing any areas or authorizing any seismic activity.

c. BLM and FWS failed to analyze impacts to critical habitat and potential maternal denning habitat.

As a threshold matter, the agencies fail to assess impacts to critical habitat in the context of their assumption that BLM cannot preclude roads and other rights-of-way through any part of the Coastal Plain. BLM continues to interpret the Tax Act to mandate it grant authorizations for access and infrastructure "necessary" to access the leased oil and gas.[947] The result of such an interpretation is that BLM is poised to allow the construction of pipelines and other permanent facilities deemed "necessary" across even the most sensitive denning habitat and designated

[941] Rode et al. *Den phenology and reproductive success of polar bears in a changing climate,* J. OF MAMMOLOGY, 99(1): 16 (2018).

[942] 75 Fed. Reg. at 76,090.

[943] *See* March 2019 Amstrup Letter at Table 2, columns 1 and 2 (showing 79% probability of running over at least one den if there are 10 undetected dens in survey area, and 90% if there are 15 undetected dens).

[944] DSEIS at 3-256.

[945] *See* March 2019 Amstrup Letter at 13–16.

[946] Whiteman DSEIS Comments at 2–5.

[947] *See supra* Section IV.A.3.

critical habitat. As Dr. Whiteman explains, the open-ended description of ROW construction implies that roads and pipelines could traverse critically important polar bear denning habitat, which would render the NSO categorization meaningless. [948] Critical habitat is so widespread across the high and medium oil potential areas that it is difficult to understand any assertion that critical habitat could be avoided post-leasing.

BLM and FWS also fail to assess quantitatively or qualitatively how much polar bear habitat would be lost under the Reasonably Foreseeable Development scenario, including areas for denning and travel to and from the coast. Absent the closure of areas to leasing, it is unlikely that the development footprint for the RFD scenario would be located in an area that is *not* critical habitat or potential maternal denning habitat since almost the entirety of the high and medium hydrocarbon potential areas are located in the within such habitats. [949] The draft SEIS provides no meaningful analysis of how much critical habitat and potential maternal denning habitat will be degraded, destroyed, or fragmented by the whole action.

In Appendix B, the draft SEIS describes the extensive industrialization of the Coastal Plain as a RFD scenario. It assumes there will be three or four central processing facilities (CPF), each with six satellite well pads connected by roads averaging eight miles in length. [950] Each CPF area would include oil pipeline connections to the Trans-Alaska Pipeline, and water and electricity pipelines to supply the CPF; these would total hundreds of miles. [951]

There would be barge landings, staging pads and a seawater treatment plant located along the coastline, connected to the CPF by thirty miles of road and pipeline. [952] In addition to each potential CPF, it is expected that a generator, airstrip, storage tanks, a communications center, waste treatment units, and a maintenance shop would be constructed on the anchor pad, as well as living quarters and offices on or off the pad. [953] Hundreds of miles of gravel roads, and undisclosed miles of ice roads, would be constructed, and gravel mines unearth hundreds of additional acres. [954]

This extensive system of coastal infrastructure would significantly alter and permanently fragment critical habitat for polar bears, rendering thousands of acres on the Coastal Plain either undesirable or completely unavailable. Although bears prefer sea ice habitat to hunt, roam and rest, both males and females are known to use land habitat in late summer and early fall, with

[948] Whiteman DSEIS Comments at 8.
[949] DSEIS at 3-245.
[950] DSEIS, App. B at B-22–24.
[951] *Id.* at B-20.
[952] *Id.* at B-15–19 ("A barge landing and an associated staging pad to store equipment and modules until ice roads can be constructed would typically disturb approximately 10 acres, including the barge landing and a gravel staging pad…. A road and seawater transport pipeline would be constructed from the seawater treatment plant to the [Central Processing Facility]. Typical gravel roads in the Arctic require 7.5 acres of surface disturbance per mile.").
[953] *Id.*at B-19.
[954] *Id.* at B-20, B-24 to B-26.

females remaining on land an average of 56 days and increasing.[955] The Coastal Plain has already become the denning habitat used by a large proportion of SBS bears, and will likely become progressively more important for bears to hunt, roam and rest, as well. As discussed further below, SBS polar bears are facing deteriorating health and the avoidance behavior and energetic losses posed by this project will worsen their existing conditions.

The draft SEIS fails to take a hard look at this enormous imposition of industrial infrastructure and associated activities on polar bear critical habitat, simply stating the following:

> Disturbance by activities at the barge landing and [seawater treatment plant] and on ice and gravel roads and pads would likely alter the use of habitats by bears nearby; however, those effects would diminish for facilities located farther inland because they would be less likely to be used by bears than other areas on and near the coastline. Overall, the effects of reduced use of habitats near oil and gas facilities likely would be minor and localized, although they would be long term.[956]

The draft SEIS fails to explain its assumption that during development and production, losses of polar bear habitat would be essentially limited to the gravel footprint of roads, pads and mines.[957] The draft SEIS also allows for gravel mining within NSO areas, and acknowledges that gravel mining will impact polar bears and their habitat.[958] Moreover, FWS explained to BLM in comments on the prior preliminary final EIS that "while denning is concentrated along the coast, dens can occur 20+ miles inland and a considerable number of dens are documented 5+ miles from the coast."[959] And there is no support for BLM and FWS's conclusion that effects from habitat loss and altered use of denning habitat by polar bears would be minor to moderate, or that mitigation measures would reduce these impacts to negligible.[960] BLM and FWS must assess the impact of the habitat fragmentation caused by the development of oil and gas facilities spanning hundreds of miles in designated critical habitat on the movements, behaviors, health and distribution of SBS polar bears.

The majority of the Coastal Plain is designated as critical habitat for the species, as described above. BLM and FWS focus much of its discussion on impacts within potential maternal denning habitat, rather than impacts within the boundaries of the critical habitat designation of terrestrial denning habitat.[961] But maternal denning habitat includes, inter alia,

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[955] DSEIS at 3-232

[956] DSEIS at 3-246.

[957] *Id*. at 3-245 ("During the development and production phases of post-leasing activities, long-term (essentially permanent), direct loss of polar bear habitat would occur as a result of gravel mining and placement for roads and pads within the estimated footprint of surface development.").

[958] *Id*. at 3-244.

[959] U.S. Fish and Wildlife Service. Memorandum Regarding Comments on the Preliminary Final Environmental Impact Statement (EIS) for the Coastal Plain Oil and Gas Leasing Program for the Arctic National Wildlife Refuge, Alaska (2019), Comment #70.

[960] DSEIS at 3-246.

[961] *See id*. at 3-266 to 246.

corridors between the dens and the coast, and BLM and FWS limit their analysis to the extent of the industrial footprint within such denning habitat, overlooking impacts from industrialization precluding the movement of bears in and around critical habitat.

Analyzing impacts to *only* mapped potential denning habitat overlooks the fact that polar bears must move between these riverine corridors to travel to the coast, reach their dens, and seek out food sources. BLM and FWS's failure to consider impacts beyond potential maternal denning habitat artificially limits the scope of its analysis by omitting impacts to critical habitat on the majority of the Coastal Plain. In sum, the draft SEIS fails to evaluate the direct, indirect, and incremental cumulative effects that could occur to polar bears due to this proposal. These include the exclusion or avoidance from feeding, resting, or denning areas; increased energetic costs; and disruption of associated biological behaviors and processes as a result of disturbance and displacement of their critical habitat caused by an oil and gas program. Ultimately, BLM and FWS provide no reasonable basis to support their surprising conclusion that the effects on polar bears of developing a large oilfield in the middle of designated polar bear critical habitat will be negligible.

d. BLM and FWS failed to analyze impacts from noise and human interactions.

Industry activities may disturb polar bears at maternal den sites, with polar bears reacting in a variety of ways depending on factors such as the level of exposure and distance from the den site from the industrial activity.[962] BLM and FWS acknowledge that "[b]lasting at gravel mines and pile-driving of bridge abutments during future winter construction would be sources of noise in polar bear denning habitat… Possible impacts on polar bears exposed to noise potentially include disruption of normal activities, displacement from foraging and denning habitats, and displacement of maternal females and young cubs from dens."[963] BLM and FWS acknowledge that "[d]espite the reduction in noise within closed dens, aircraft have a ≥75 percent probability of being detected by polar bears at distances ≤1.0 mile and ground-based sources have high probabilities of detection at distances ≤0.5 miles (Owen et al. 2021)."[964] The draft SEIS further relies on a report for ExxonMobil Co., MacGillivray et al. (2003) for the proposition that the "most audible disturbance stimuli measured from inside the dens is an underground blast, detectable in artificial dens up to 0.8 miles from the source."[965]

BLM and FWS do not clearly state the distance at which blasting and pile-driving noise would likely be detected by denning or non-denning bears, and entirely fail to examine the likelihood of the identified potential impacts occurring. As discussed elsewhere, the agencies also fail to evaluate the impacts of seismic testing, including noise impacts on denning bears. The final SEIS must evaluate whether winter construction activities such as blasting and pile driving could result in displacement, injury or death to polar bears. If a 2003 report prepared for ExxonMobil measuring noise at artificial dens represents the best available science on the sensitivity of actual denning polar bears to noise, then BLM and FWS cannot support a

[962] 81 Fed Reg. at 52,292 (Aug. 5, 2016).
[963] DSEIS at 3-250.
[964] DSEIS at 3-248.
[965] *Id*.

conclusion that all the noise associated with oil and gas activity on the coastal plain, including seismic exploration and winter construction, would not significantly affect polar bears.

Other industrial activities and noise will disturb non-denning bears as well. Routine snowmachine noise has been shown to prompt significant avoidance responses in polar bears at distances up to 3,272 meters — over two miles.[966] Except for male adults, bears studied "typically had a pronounced response and frequently fled snowmobiles and continued to flee the area at lengthy distances."[967] The draft SEIS notes this study but fails to mention the two-mile response threshold noted for some bears and understates the intensity of the observed fleeing response.[968] The final SEIS must disclose the known snowmachine impacts more transparently and discuss the likely impacts of the many other mobile sources of foreseeable industrial noise on polar bears, including trucks, bulldozers, airplanes, helicopters, etc. Disturbance to individuals and hazing would only exacerbate impacts to an already depleted population, and BLM and FWS cannot assume polar bears would simply walk through or around an oil field without basis.[969] Indeed, BLM and FWS's own admissions that polar bears using onshore habitat tend to spend more time fasting and have less energy logically undercuts its assumption that maternal bears would be simply be discouraged from denning near industrial activities and move away from them.[970]

BLM and FWS further state that FWS concluded impacts to individual bears from disturbance and interaction with humans resulting from oil and gas activities would be "short-term and localized," based on oil exploration and development west of the Arctic Refuge.[971] The agencies also state that while impacts to date have been deemed "negligible," this might not be the case in the future "if full-scale industrial development proceeds in the program area, polar bears continue to increase their use of terrestrial habitats, and the SBS population continues to decline."[972] There is no evidence to suggest that polar bears will decrease their use of terrestrial denning habitat or that the SBS population will suddenly bounce back, absent urgent reductions in greenhouse gas emissions.[973] And BLM and FWS are considering opening the Coastal Plain to full-scale industrial development. As such, BLM and FWS must analyze what the impacts of this development will be on polar bears, not simply raise questions as to whether such impacts will occur. Again, BLM and FWS should evaluate the potential of its RFD scenario to impact both denning and non-denning bears. Instead, BLM and FWS rely heavily on Incidental Take

[966] Andersen, M., and J. Aars. 2008. "Short-term behavioral response of polar bears (*Ursus maritimus*) to snowmobile disturbance." 31 POLAR BIOLOGY 501–507.

[967] *Id*.

[968] DSEIS at 3-247.

[969] *Id*. at 3-251 to 3-252.

[970] *Id*. at 3-252

[971] *Id*. at 3-251 to 3-252.

[972] *Id*. at 3-251.

[973] *See e.g.*, Molnár et al. (2020) (examining polar bear persistence under various emissions scenarios and finding "high greenhouse gas emissions … will jeopardize the persistence of all but a few high-Arctic subpopulations by 2100").

Regulations that do not yet exist for the Coastal Plain to conclude that noise from industrial activities will have no significant impact on bears.[974] This reliance is misplaced.

The track record pursuant to the Beaufort Sea ITR for preventing disturbances to polar bears is mixed at best, with examples of industry activity disturbing and displacing denning bears along with examples of bears largely unaffected despite fairly close proximity to industrial activity.[975] Indeed, the most recent ITR for North Slope oil and gas activities authorizes MMPA harassment of nearly half the SBS population. Moreover, the monitoring done pursuant to the ITR is not designed to measure overall bear responses to various stimuli at different distances in any scientific way. The monitoring information does not indicate that behavioral disturbances to polar bears have been minimal, and certainly does not support the conclusion that noise impacts from industrializing the Coastal Plain — with its unique site characteristics and different and changing usage by polar bears — would be minimal.

As noted herein and in the draft SEIS, the Coastal Plain has become a critically important denning area and will likely be of increasing importance for roaming and foraging as well, as sea ice continues to diminish. It cannot be said that relatively few animals will occur in the areas of industry activity on the Coastal Plain, or that bear interactions with that activity are unlikely. In short, the Coastal Plain is completely different than the Beaufort Sea ITR area in terms of the likely impacts on polar bears, and the Beaufort Sea ITR experience to date offers little assurance that those impacts will be insignificant.

In sum, the draft SEIS fails to disclose the specific noise sources and associated detectability distances expected. The potential impacts are significant, including abandonment of dens which can equate to death for cubs, and curtailed nursing time in the den, which also can impair cub survival. There have also been observed strong avoidance reactions of non-denning bears to sources of noise, which could have significant impacts given the energy deficient state of many onshore bears. BLM and FWS must fully analyze these impacts in the final SEIS and cannot rely on future, unspecified ITRs to protect polar bears from noise disturbance.

e. BLM and FWS must address methods for reducing human food, hazardous substances, and other attractants associated with Arctic Refuge Coastal Plain oil and gas development.

While the draft SEIS acknowledges that oil and gas activities lead to more human-bear encounters, it downplays the effects of those activities on the SBS population, particularly in light of the cumulative effects of climate change on the population.

BLM and FWS must disclose the foreseeable impacts to polar bears and describe how the increased human-bear interactions, increased incidences of hazing and other efforts to deter bears from seeking food sources in developed areas, and increased energetic costs for polar bears will translate into adverse impacts for the SBS population. For instance, BLM and FWS concede that "[a]ny injury or mortality from oil and gas development-related human/bear conflicts would pose

[974] *See e.g.*, DSEIS at 3-250 to 3-251.
[975] 81 Fed. Reg. 52,292 (August 5, 2016).

a problem because of the declining status of the SBS population."[976] And the agencies acknowledge that such impacts could occur during autumn/early winter when females prospect for dens, and again in spring when maternal bears and cubs leave their dens to move to the coast.[977] BLM and FWS also acknowledge that as polar bears increasingly use land, starving bears might attack more people in the future, leading to higher rates of intentional take than in the past.[978] But BLM and FWS then fail to assess the likelihood of such encounters occurring, again relying on information and mitigation measures from the western North Slope to minimize these impacts or point to decreasing rates of deterrence events.[979] But again, this fails to account for the higher concentrations of denning bears and critical habitat in the Leasing Program area as compared to the western North Slope, and the increasingly depleted state of SBS polar bears.

BLM and FWS also failed to assess and disclose the potential threats to polar bears from oil spills. While the draft SEIS states that accidental spills, leaks, and other sources of contamination exposure are a potential source of injury or mortality — potentially one of the largest threats to bears after climate related habitat loss, citing Routti 2019[980] — BLM and FWS brush aside the potential impacts by relying on assumptions that any spill would be small, on-land, and cleaned up quickly.[981] The assumptions underlying BLM and FWS's discussion of oil spills are faulty, and the agencies underestimate the potential environmental damage from spills on the Coastal Plain. Further, BLM and FWS state that spills associated with development projects on the mainland are less concerning for polar bears than marine spills.[982] This finding seemingly ignores the fact that polar bears are spending more time onshore due to climate change, so terrestrial spills are increasingly likely to affect their habitat and prey. BLM and FWS also failed to explore alternatives or mitigation measures to reduce spills and protect areas of particular importance to bears, like feeding and resting areas, summer refugia and winter denning areas. Thus, BLM and FWS's analysis of impacts to polar bears from oil spills is deficient.

f. BLM and FWS's analysis of climate impacts on polar bears is deficient.

The draft SEIS's discussion of cumulative impacts to polar bears is inadequate. The draft SEIS does not mention, let alone analyze, the majority of current and reasonably foreseeable circumstances and activities that are affecting and will affect polar bears cumulatively and synergistically with Arctic Refuge development. The draft SEIS fails to analyze the direct, indirect, and cumulative effects of the proposed action against a backdrop of continued climate change, which is already causing habitat loss, conflicts with humans, energetic costs, nutritional stress, and strenuous long-distance swimming for polar bears.

The most significant impact that will act cumulatively with Arctic Refuge drilling is loss of sea ice habitat from climate change. Regarding polar bears, BLM and FWS acknowledge that:

[976] DSEIS at 3-257.
[977] *Id*. at 3-259 to 3-260.
[978] *Id*. at 3-255 (citing Wilder 2017).
[979] DSEIS at 3-255, 3-259 to 3-260.
[980] *Id*. at 3-257.
[981] *Id*. at 3-256.
[982] *Id*. at 3-256.

> [The] impacts of climate change are occurring now and are predicted to continue until global action reduces the GHG emissions that are driving the changes. While it is challenging to project the incremental effects of burning the oil and gas that may be extracted from the program area, it is certain that doing so would contribute incremental impacts on climate change. As explained earlier, however, managing climate change is beyond the ability of the agencies responsible for managing oil and gas activities in the program area; thus, those agencies must focus instead on avoiding and otherwise mitigating other cumulative incremental effects on the polar bear population.[983]

The draft SEIS is devoid of any discussion or analysis of how the additive GHG emissions from Coastal Plain leasing and development, acting cumulatively with GHG emissions from other sources, will affect polar bears and polar bear critical habitat. Although the draft SEIS recognizes that sea ice loss and habitat degradation caused by climate change is the primary threat to polar bears, it is silent as to the Leasing Program's emissions and climate effects. BLM and FWS characterize the prospect of considering the Leasing Program's climate effects as "challenging," but does not consider available scientific information to assess the climate change-related impacts of BLM's action in approving leasing on the Coastal Plain — in particular how the program's future significant GHG emissions would further reduce sea ice extent and thus exacerbate the effects of climate change on polar bears. As Dr. Whiteman explains, the best available science allows FWS and BLM to assess impacts to polar bears from oil and gas development on the Coastal Plain, and the agencies should undertake this analysis to full consider impacts to polar bears from the Leasing Program. [984]

BLM and FWS have information available to it regarding the magnitude of direct, indirect, and cumulative emissions associated with the Leasing Program because the agencies quantified these emissions in the draft SEIS.[985] The draft SEIS presents the additive carbon dioxide equivalent (CO2e) emissions estimated to result from the program over its 50–70 year duration.[986] BLM and FWS also calculated indirect greenhouse gas emissions that would result from the processing and consumption of Coastal Plain oil and gas (i.e., downstream emissions).[987]

BLM and FWS's conclusions regarding the programs GHG emissions, particularly cumulative emissions, underestimate the project's climate impacts as discussed elsewhere in this letter. However, the draft SEIS nonetheless provided an estimate of GHG emissions that BLM

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[983] DSEIS at 3-267.

[984] Whiteman DSEIS Comments at 10–11.

[985] *See* DSEIS at 3-11 to 3-12.

[986] DSEIS App. Q at Q-44 to Q-49 (total CO2e 100-year emissions range from approximately 140 million metric tons in Alternative B to approximately 34 million metric tons in Alternative D).

[987] *Id*. at Q-55 to Q-60 (downstream CO2e 100-year emissions range from approximately 754 million metric tons in Alternative B to approximately 186 million metric tons in Alternative D).

and FWS should have considered in determining the Leasing Program's effects on polar bears. BLM and FWS's failure to evaluate how the Leasing Program's contribution to climate change would impact climate-vulnerable polar bears violates NEPA's requirement to consider all foreseeable effects of the agencies' action.

BLM and FWS possessed information necessary to gauge how much sea ice from the Arctic Ocean would be lost due to the additive emissions resulting from the Leasing Program, and thereby assess its impacts on polar bear survival and recovery and impacts to critical habitat. A 2016 scientific study quantifies the areal extent of sea ice loss per ton of anthropogenic CO2e emissions.[988] This important study provides an estimate of September sea ice loss area of 3.0 ± 0.3 m^2 per each ton of anthropogenic CO_2 emissions.[989] Given the finding that September sea ice will be completely lost by the middle of this century at current emissions rates, it also provides a means of gauging how much sooner those effects will happen due to any action that has the effect of inducing additional emissions.

Thus, given information about the tons of additional CO2e that the Leasing Program and reasonably foreseeable future oil development enabled by it would emit over the project life, it is possible to quantify the acreage of September sea ice loss that can be attributed to BLM's decision. Similarly, this information makes it possible to examine and quantify the extent to which the Leasing Program will undermine attainment of GHG mitigation necessary for polar bears to survive and recover. Such a quantitative analysis was not only possible, but available to BLM and FWS. Even if the agencies were not required to provide a quantitative analysis of the program's GHG emissions on sea ice extent, at a minimum, the agencies needed to qualitatively describe the climate impacts from its additional GHG emissions on polar bears.

Consistent with the 2016 study, the best available science indicates that due to the relationship between polar bears and sea ice, actions that undermine emissions reductions by generating additive emissions affect the survival and recovery of polar bears. A 2010 modeling study found that GHG mitigation could enable polar bears to persist in greater numbers and more areas than under the "business-as-usual" emissions case, where two-thirds of the world's polar bears could disappear by mid-century.[990] It found that, due to the linear nature of the relationship between sea ice loss and temperature, mitigating greenhouse gas emissions would mean "that previously predicted declines in polar bear distribution and numbers are not unavoidable."[991]

Another recent study examined the persistence of polar bear subpopulations based on projected relationships between sea ice decline and fasting period duration under both a "high" and "moderate" GHG emissions scenario. The study found that "with high greenhouse gas emissions, steeply declining reproduction and survival will jeopardize the persistence of all but a few high-Arctic subpopulations by 2100. Moderate emissions mitigation prolongs persistence

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[988] *See* Notz, Dirk and Julienne Stroeve, *Observed Arctic sea-ice loss directly follows anthropogenic CO2 emission*, 354 SCIENCE 747(2016).

[989] *Id*.

[990] Amstrup, S., DeWeaver, E., Douglas, D. *et al.*, *Greenhouse gas mitigation can reduce sea-ice loss and increase polar bear persistence*, 468 NATURE 955 (2010).

[991] *Id*. at 955 (internal citations omitted).

but is unlikely to prevent some subpopulation extirpations within this century."[992] The authors concluded that "[a]voiding continued sea-ice decline requires aggressively mitigating greenhouse gas rise, and our results explicitly describe the costs to polar bears of avoiding that mitigation."[993] Thus, again, the best available science shows that emissions mitigation will preserve more polar bear subpopulations for longer over a larger geographic area. Conversely, these studies demonstrate that authorizations for oil and gas projects which in turn increase future GHG emissions will contribute further to declines in sea ice, which in turn reduces polar bear populations.

The question of how much extra sea ice will be lost or how much sooner a given level of sea ice loss will occur due to the Leasing Program's approval is important to assessing the impacts of the action on polar bears and critical habitat. The scientific information to gauge this impact exists and will be submitted to BLM and FWS with public comments on the draft SEIS. According to the agencies' own calculations, the Leasing Program will result in millions of additive tons of CO2e being emitted between now and the mid-century that otherwise would not be emitted. Since these additional emissions can be directly translated into additional sea ice loss, and polar bear survival and recovery depends on delaying those sea ice losses, BLM and FWS cannot simply ignore the effect of these emissions on the species and its habitat.

The draft SEIS recognizes that climate change is causing, and will continue to cause, an increase in polar bears denning on land and spending time on land, which will lead to more bear-human conflict.[994] The draft SEIS does not, however, assess the myriad other ways climate change will act cumulatively with Refuge activities to increase threats to polar bears. For example, polar bears' decreased body condition will mean that any disturbance from oil and gas activities will take a greater energetic toll than it would on healthy bears. As Dr. Whiteman explains, any disturbance that causes a bear to flee has a high metabolic cost which is very damaging to energy-depleted SBS polar bears. [995] Moving at even relatively slow speeds results in bears expending 13 times more energy than they otherwise would.[996] The draft SEIS notes that polar bear walking is "less efficient" at speeds above 3.3 miles per hour, but does not analyze the energetic demands or consequences associated with these greater lengths and speeds of travel.[997] Female polar bears that are energetically stressed may forgo reproduction, rather than risk incurring the energetic costs of an unsuccessful reproductive process, and the persistent deferral of reproduction could contribute to a declining population trend, further threatening a species with an intrinsically low rate of growth.[998]

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[992] Molnár, P.K., Bitz, C.M., Holland, M.M. *et al, Fasting season length sets temporal limits for global polar bear persistence*, 10 NATURE CLIMATE CHANGE 732 (2020).

[993] *Id*.

[994] *See e.g*., DSEIS at 3-251 to 3-252, 3-255.

[995] Whiteman DSEIS Comments at 10.

[996] S. Schliebe, et al., Range-Wide Status Review of the Polar Bear (Ursus Maritimus), U.S. Fish and Wildlife Service (2006) at 75.

[997] DSEIS at 3-242.

[998] Schliebe (2006) at 20.

In a warming Arctic, polar bears have less energy to spare. As the draft SEIS observed, a recent study found that radio-tracked adult female polar bears in the SBS population increased their activity time and/or their travel speed to compensate for rapid westward ice drift in recent years, as ice drift rates increased due to reduced ice thickness and extent.[999] This additional activity increased their estimated annual energy expenditure, and "likely exacerbate[s] the physiological stress experienced by polar bears in a warming Arctic."[1000] Polar bears are also increasing their energy expenditure by swimming more due to the decline in sea ice. For example, one study documented an adult female making a 687-km continuous swim over nine days to reach the distant sea-ice edge, followed by an 1800-km walk and swim, during which time she lost 22 percent of her body mass and her yearling cub.[1001] The study "indicates that long distance swimming in Arctic waters, and travel over deep water pack ice, may result in high energetic costs and compromise reproductive fitness" and that "[a]ssociated declines in body mass and losses of dependent young may ultimately become an important mechanism for influencing population trends."[1002]

Satellite telemetry records from 76 bears in the Beaufort Sea during 2007–2012, coupled with earlier results, indicated that the frequency of long-distance swims increased with (a) increases in the distance of the pack ice edge from land, (b) the rate at which the pack ice edge retreated, and (c) the mean daily rate of open water gain between June and August.[1003] These results indicate that "long-distance swimming by polar bears is likely to occur more frequently as sea ice conditions change due to climate warming."[1004] Bears that move to land from the sea ice also expend seven percent more energy on average during the summer months than bears that remained on the ice.[1005] Again, this means that the bears that encounter Arctic Refuge drilling activities are likely to already be in an energy-deficit state, so disturbance from industrial activities will likely have a greater impact than it would have in the past.

BLM and FWS acknowledge dramatic sea ice loss, increases in the number of ice-free days in the Beaufort Sea, and the stress brought to polar bears by those factors. It notes that distances traveled by pregnant females from sea ice to denning habitat increased by 3.7 miles per

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[999] DSEIS at 3-230; G.M. Durner *et al.*, *Increased Arctic sea ice drift alters adult female polar bear movements and energetics*, 23 GLOBAL CHANGE BIOLOGY 3460 (2017).

[1000] Durner *et al.* (2017).; *see also* J.V. Ware *et al.*, *Habitat degradation affects the summer activity of polar bears*, 184 OECOLOGIA 87 (2017) (finding that SBS bears were substantially more active than Chukchi Sea bears in lower quality habitat types and that onshore, SBS bears exhibited relatively high activity associated with the use of subsistence-harvested bowhead whale carcasses).

[1001] G. M. Durner *et al.*, *Consequences of long-distance swimming and travel over deep-water pack ice for a female polar bear during a year of extreme sea ice retreat*, 34 POLAR BIOLOGY 975 (2011).

[1002] *Id.*

[1003] N. W. Pilfold, *et al.*, *Migratory response of polar bears to sea ice loss: to swim or not to swim*, 40 ECOGRAPHY 189 (2017).

[1004] *Id.* at 189.

[1005] A. Pagano *et al.*, *The seasonal energetic landscape of an apex marine carnivore, the polar bear*, 101(3) ECOLOGY e0259 (2020).

year from 1979–2006, a total of over 103 miles, and could increase to 10 miles per year out to 2060.[1006] The draft SEIS also notes that polar bears face "increasing difficulty" due to declining sea ice cover from climate change, including more time on land, higher activity levels while ashore, longer swimming distances, unusual predation behavior (including cannibalism) and increased human-bear interaction.[1007] It is undisputed that increased travel distances could negatively affect denning success and ultimately the population size of polar bears, but the draft SEIS does not offer any analysis of the consequences of these impacts, in conjunction with future exploration and development on the Coastal Plain, on polar bear populations.

While it acknowledges the additive distance that SBS bears will need to travel from sea ice to denning habitat, the draft SEIS does not estimate the actual energetic loss or nutritional stress that polar bears will have to overcome nor assign any expected additive mortality due to this dynamic. The draft SEIS thus understates the likely consequences for SBS bears.

Another recent study found that SBS polar bears cannot use a hibernation-like metabolism to prolong their summer fasting period meaningfully and that bears are susceptible to deleterious declines in body condition, and ultimately survival, during the lengthening period of ice melt and food deprivation.[1008] Scientists at DOI interpret these observations as a prelude to mass polar bear mortality events in the future: "[a]s changes in habitat become more severe and seasonal rates of change more rapid, catastrophic mortality events that have yet to be realized on a large scale are expected to occur."[1009]

Climate change and oil and gas development will also act cumulatively on polar bears' primary prey, ringed seals, likely reducing their abundance and availability for polar bears. Cumulative impacts and synergistic effects from potential Arctic Refuge Coastal Plain, Beaufort Sea Outer Continental Shelf, and state offshore lease sales, exploration, and oil drilling programs could affect seal feeding, pup survival, and vulnerability to a suite of predators. For example, icebreakers used to move drilling vessels and related equipment to leased areas may fragment sea ice that ice-dependent seals need to build lairs and raise and feed their pups. Seismic noise and related vessel activities may also disturb seals, thereby reducing seal availability to polar bears during critical feeding periods.

g. BLM and FWS's cumulative impacts analysis is deficient.

In addition to cumulative impacts from climate change, polar bears in the SBS population face cumulative impacts from a wide range of industrial activities, including onshore and offshore oil and gas development and increased shipping. BLM and FWS failed to identify and assess the many ongoing and reasonably foreseeable oil and gas activities that will affect polar

[1006] DSEIS at 3-230.

[1007] DSEIS at 3-242–3-243.

[1008] J.P. Whiteman *et al.*, *Summer declines in activity and body temperature offer polar bears limited energy savings*, 349 SCIENCE 295 (2015).

[1009] Convention on Int'l Trade in Endangered Species, CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II, Sixteenth meeting of the Conference of the Parties, Bangkok (Thailand), 3-14 March 2013, Prop. 3 at 5.1.

bears, including increased onshore oil development in the Reserve, including the future satellite pad at Willow and further westward development enabled by Willow. BLM and FWS also failed to fully consider impacts from increasing development on state lands adjacent to the Reserve, such as development of the Liberty offshore island in the Beaufort Sea.

Critically, BLM and FWS entirely fail to consider the impacts of the 20-year right-of-way (ROW) sought by the Kaktovik Iñupiat Corporation (KIC) across the Coastal Plain under Alaska National Interest Lands Conservation Act (ANILCA) Section 1110(b) to connect the community with the snow and ice road system on state lands to the west.[1010] While the agencies include the KIC ROW in its list of reasonably foreseeable future actions in Appendix F, it does not include any analysis of how the proposal will cumulatively impact polar bears in conjunction with leasing and potential future development of the Refuge.[1011] KIC's map of the proposed route indicates that its seeks a ROW across the western and central denning hotspots, and KIC proposes to use this road in the winter. BLM and FWS also state that they cannot preclude such a road passing through NSO areas.[1012] Given the fact that polar bears den in the Arctic Refuge in higher concentrations than other onshore areas on the North Slope, any impacts to polar bears associated with this proposal must be fully analyzed as a cumulative effect in the final SEIS.

Polar bears in the SBS population face extinction during this century if we do not take aggressive steps to decrease greenhouse gas emissions and limit other impacts to polar bears from industrial development. The draft SEIS does not acknowledge or analyze how Arctic Refuge oil activities will act cumulatively with climate change (as described in the section above) and other development to seal polar bears' fate.

3. BLM and FWS's Mitigation Measures are Insufficient to Protect Polar Bears.

BLM and FWS are obligated under NEPA to analyze appropriate mitigation measures to reduce impacts to polar bears. It fails to do so. Throughout its analysis, the agencies improperly rely on conclusory statements about Incidental Take Regulations (ITRs) mitigating impacts to polar bears.[1013]

For instance, the draft SEIS states:

> New ITRs to the program area, if promulgated, would be the principal mechanism to address [cumulative] potential impacts, such as possible mortality or injury from 3D seismic exploration, marine oil spills, and lethal takes around program facilities and activities. That would be in addition to the effects on polar bear movements,

[1010] Kaktovik Iñupiat Corporation's Application for the Marsh Creek East 3D Seismic Program: https://www.fws.gov/project/arctic-refuge-decisions-and-nepa-processes.

[1011] DSEIS App. F at F-10.

[1012] DSEIS at 3-271 ("In areas subject to NSO, new land uses would be precluded, except where ANILCA allowances would allow construction such as roads allowed under 1110(b).").

[1013] See e.g., DSEIS at 3-251 (explaining disturbance to denning females with cubs could cause major to moderate impacts where dens are undetected in advance of activities, but concluding the ITR process "would be required to reduce those impacts to negligible levels").

> energy budgets, and denning behavior from the increased presence of human infrastructure and activities in coastal habitats currently not subject to industrial activities.[1014]

The agency assumes such ITRs would be promulgated for this leasing program but does not explain its assumptions for what specific mitigation measures it believes will be in place at which phase of oil and gas activities or how those measures would reduce all foreseeable impacts to negligible. And as Dr. Whiteman explains, existing ITRs for oil fields west of the Coastal Plain are not instructive because the effectiveness of ITRs in those areas is not quantified or described, leaving it impossible to ascertain what "effective mitigation" means in terms of bear behavior, health, survival, or reproduction. Further, the geographic differences are significant, since bears on the Coastal Plain den on the mainland, where oil and gas activities are completed; but the majority of polar bear dens to the west den on barrier islands (Patil et al. 2022).[1015]

For Alternative D, BLM and FWS incorporate many or all of the mitigation measures contained in the current 2021–2026 Beaufort Sea ITR via Lease Stipulation 14 and ROP 10, where industry is carrying out onshore activities in "known or suspected" denning habitat.[1016] For instance, this stipulation requires that from November through April, lessees must make efforts to locate dens using "appropriate tools" like infrared imagery and/or dogs, and requires a 1-mile/1.6 km buffer around detected dens.[1017] It also requires monitoring to limit disturbance around known dens,[1018] and reporting results of that monitoring to FWS.[1019] Notably, Alternative B does not mandate pre-activity den-detection surveys for winter overland moves and seismic work.

The draft SEIS relies on a buffer zone around known dens to mitigate noise disturbance and other impacts from seismic, but as explained above, such a buffer is ineffective if den-detection surveys are not mandated in the first place.[1020] Since dens are not visible to the naked eye, it is unclear what "appropriate tools" would be used to detect a den prior to disturbing it absent a den-detection survey using FLIR.[1021] Further, even when pre-activity den-detection surveys are conducted, such a buffer will fail to protect dens that remain undetected due to the high failure rate of the den-detection method employed.

Alternative D, while stating that den-detection surveys for winter overland moves and seismic work would be conducted by parties subject to the ROP, does not specify the methods to

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[1014] DSEIS at 3-267.
[1015] Whiteman DSEIS Comments at 9–10.
[1016] DSEIS at 2-24 (pointing to USGS denning habitat map).
[1017] *Id*.; *see also id*. at 2-39.
[1018] *Id*. at 2-25.
[1019] *Id*. at 2-26 to 2-27 *see also id*. at 2-40 to 2-43.
[1020] *See* March 2019 Amstrup Letter at 22 (explaining that dens are not visible due to overlying snow and must be located using forward looking infrared camera surveys (FLIR) to detect heat); *id*. at 26 (explaining that polar bears do not return to the same exact den location from year to year).
[1021] *See* March 2019 Amstrup Letter at 22, 26.

be employed, the timing for any "best efforts" to locate dens, or the number of requisite infrared surveys.[1022] The draft SEIS thus leaves it to a decision by the lessee decide what survey methods will be used while misleadingly indicating that any infrared detection and the use of dogs will mitigate impacts.

There are a number of methods of infrared surveys which could be theoretically captured by this mitigation measure, but which would be ineffective at preventing impacts to denning bears. Assuming BLM and FWS's ROP refers to aerial FLIR, in its most recent ITR for onshore oil and gas activities on the North Slope, FWS assumed that this den detection technology would detect 41% of dens.[1023] The draft SEIS assumes 25–54% of dens would be detected.[1024] But as explained by Dr. Whiteman, this is an overestimate, and the likely detection rate is much lower — at best, within the range of 15–45%, based on the findings in Woodruff.[1025] Even assuming that den detection methods could successfully locate dens at least half the time, this means that nearly half of the bears denning within the areas open to seismic surveys will be exposed to disturbance at proximities that in the past caused mothers to open their dens.[1026] Those disturbances will bring energetic costs and may also lead to lethal results.[1027]

Despite the foregoing, BLM and FWS largely brush off the effects of noise, vibration, human presence and other disturbance to polar bears produced by seismic exploration activities. BLM and FWS assume effective mitigation will be implemented via ITRs that do not currently exist. The agencies cannot assume that such measures are wholly effective given recent research demonstrating the shortcomings of these surveys. FLIR surveys, while more effective at detecting polar bear dens than visual observations, cannot identify all of them. As described by Dr. Whiteman, research suggests that a 15–45% detection rate is probably close to the highest that could reasonably be expected from FLIR surveys, and 15% is the most realistic rate for any given survey.[1028] Additionally, locating dens on the Arctic Refuge Coastal Plain is even more complex than in other parts of Alaska's Arctic slope. This is because "den concentration areas" are typical in some other Arctic regions and can be protected with restrictions on industrial and other human activities. However, snow accumulation sufficient for denning in the Coastal Plain occurs mainly in narrow linear features following drainage courses, lake shores and coastal banks. These features and their associated denning habitat are so abundant that they can be considered essentially uniform on the Coastal Plain.[1029] This means that FLIR surveys are likely to be even less effective when applied in the Coastal Plain than other parts of Alaska.[1030]

[1022] DSEIS at 2-40.

[1023] 86 Fed. Reg. 42982, 43030 (Aug. 5, 2021).

[1024] DSEIS at 3-249.

[1025] Whiteman DSEIS Comments at 4–5.

[1026] March 2019 Amstrup Letter at 13 (anticipating at least 50% failure rate for den detection); *id.* (explaining that vehicles passing 65 meters from den caused premature opening in past); *id.* at 14 (calculating that if there were 15 undetected dens, on average at least 13 of them would be within 65 meters of vehicle passage).

[1027] *Id*. at 14–15 (describing latent lethal consequences for cubs due to disturbance).

[1028] Whiteman DSEIS Comments at 4–5.

[1029] *See* March 2019 Amstrup Letter at 14.

[1030] *Id*. at 23.

BLM and FWS nonetheless state that aerial FLIR has "proven to be an effective means" of locating dens across large area."[1031] "Using airborne FLIR, the best available data indicate a range of detectability from 24 percent to 54 percent, depending on the experience of the crew, the number of surveys flown, the weather conditions prevailing at the time of the surveys, and seasonal timing and snow depth (Wilson and Durner 2020; Smith et al. 2020; Woodruff et al. 2022b)."[1032] But BLM and FWS then go on to acknowledge that some occupied dens are likely to be missed even under good conditions, and that fox dens could be mistaken for polar bear dens.[1033] Exposing half to three-quarters of the maternal dens within a proposed seismic survey area to disturbance and potential crushing cannot be considered an "effective means" of locating dens and protecting denning bears. BLM and FWS estimate that 14 maternal dens may occur annually across the program area, of which 6 to 11 may go undetected.[1034] As described by Dr. Whiteman, using the range of 0.15 – 0.45, this should state that 8 to 12 occupied dens may go undetected. [1035] The agencies also acknowledge that seismic exploration vehicles may pass within 165 to 660 feet of all dens in the program area, leading female bears to abandon dens prematurely.[1036] BLM and FWS acknowledge this could cause "moderate to major direct impacts on the SBS population of bears if they abandon those dens prematurely (i.e., before 15 March) and the cubs die."[1037] Given the imperiled state of SBS polar bears, seismic exploration occurring with no restrictions in the western hotspot could have lethal impacts to denning cubs and their mothers posing potentially population-level effects. The draft SEIS must grapple with this reality and assess measures to avoid such impacts.

The draft SEIS also relies on a recent study, Woodruff 2022, which provides information on the "maximum possible detection probability if all dens were available to be detected by AIR surveys" but does not account for those dens which may be undetectable.[1038] Accordingly, the researchers note that it informs the "upper bound on how high detection could be."[1039] It is notable that only 7 of the 14 dens were detected after four AIR surveys by one crew, and seven of the dens in the study were never detected in any survey.[1040] Importantly, the researchers conducted the survey in favorable weather conditions, pausing the surveys if the weather

[1031] DSEIS at 3-249.
[1032] *Id*. at 3-249.
[1033] *Id*.
[1034] *Id.*
[1035] Whiteman DSEIS Comments at 5.
[1036] *I Id*. at 3-249.
[1037] DSEIS at 3-255 to 3-256.
[1038] Susannah P. Woodruff and Ryan R. Wilson, *Evaluating the efficacy of aerial infrared sensors to detect artificial polar bear dens*, 46(3) WILDLIFE e1324 (2022) [hereinafter Woodruff and Wilson].
[1039] *Id*.
[1040] *Id.* at 6; *see also* Memorandum from Trent McDonald, Ph.D., McDonald Data Sciences LLC to Karimah Schoenhut, Sierra Club, and Bridget Psarianos, Trustees for Alaska at 5–6 (July 1, 2021) (explaining that, based on these results, there are likely "easy" and "hard" to detect dens, but that FWS treated dens as all equally detectable in the ITR modeling) [hereinafter McDonald Memo 2021].

deteriorated and re-starting them when the weather conditions improved.[1041] As Dr. Whiteman explains, the study involved multiple subsets of data based on different approaches to AIR surveys. [1042] Subset 1 "was the most similar to industry AIR surveys as we used all available detection/nondetection data."[1043] For this subset, the estimated den detection probability was 0.15 with a confidence interval of 0.08 to 0.23, a result that is omitted from DSEIS despite being the most realistic and relevant result from the study.[1044]

Additionally, while this study concluded that there was not a correlation between den detection and the snow depth of the den cover, the researchers appear to have not actually measured the snow depth of the den covers at the time that the FLIR surveys were conducted.[1045] Den cover depth may change over the course of the denning period as weather and wind affect snow distribution. Therefore, the study's conclusion regarding snow depth and den detection is questionable. Regardless, the researchers conclude that AIR surveys are unlikely to detect dens and that additional methods should be used to reduce impacts to polar bears from industry activities.[1046] Given this study's results regarding den detection and that the results inform the question of the upper limit of den detection, FWS should not have treated all dens as equally detectable.[1047] Also, by averaging the results from this research in the den detection rates modeled with other studies, such as Wilson and Durner, BLM and FWS failed to account for the fact that the study intended to address the *upper limits* of detection. Both of these issues mean that BLM and FWS overestimate the efficacy of AIR/FLIR surveys to detect dens, which is probably closer to 15–45%, as described above.

These shortcomings will be made even worse if FLIR surveys are attempted during poor weather and visibility. Theoretically, FLIR detection should be most effective in early winter when snow cover over dens is minimal, as FWS acknowledged in the 2021–2026 Beaufort Sea ITR.[1048] However, FLIR detection is also fickle, and its accuracy may change as a result of airborne moisture including precipitation, fog, and clouds limiting FLIR effectiveness. Changing Arctic weather conditions further limit the utility of FLIR as a den detection and protection tool. BLM and FWS must include a requirement that FLIR surveys be conducted during optimal weather conditions for den detection, i.e., by setting a "floor" for visibility and wind conditions below which FLIR surveys for purposes of meeting MMPA requirements cannot be conducted.[1049]

[1041] Woodruff and Wilson at 6–7.
[1042] Whiteman DSEIS Comments at 3.
[1043] *Id*., quoting Woodruff et al. (2022).
[1044] *Id*.
[1045] *Id.* at 5–6, 7.
[1046] *Id.* at 8–9.
[1047] McDonald Memo 2021 at 5–6.
[1048] *See* 86 Fed. Reg. at 43,072.
[1049] Steven C. Amstrup, PhD Chief Scientist, Polar Bears International, Letter re: Marine Mammal Protection Act 5-year Incidental Take Regulations (June 30, 2021) [hereinafter 2021 Amstrup ITR Letter] at ¶ 64.

Such studies also demonstrate that multiple surveys will not detect all maternal dens even under optimal conditions. Alarmingly, BLM and FWS leave it to industry to determine whether to do only one or more surveys and have no requirements as to weather conditions.

Non-aerial infrared surveys provide little added protections to polar bears. For instance, a recent application for seismic exploration in the Coastal Plain conceded that vehicle-mounted FLIR cannot detect dens until the vehicle is within 60 meters of a den[1050] — if at all. There is ample evidence showing that den abandonment, early departure, or early emergence can be prompted by heavy vehicles operating within hundreds of meters of a den.[1051] For example, there has been a documented instance where the passage of a snow machine at a distance of 200 meters (656 feet) is believed to have caused a polar bear to abandon her den.[1052] This means that, at the point at which the vehicle or handheld FLIR is close enough to detect a den, it would be too late to prevent harmful disturbance — thereby negating the effectiveness of this mitigation measure.

There are also clear limitations on den detection success with the use of hand-held FLIR.[1053] A recent 2020 study found that the ability to detect artificial dens with ground-level FLIR was only one-fourth that of aerial FLIR, even when the exact location of the den was known.[1054] This study demonstrates the limited efficacy of ground based FLIR for surveying.

[1050] Kaktovik Iñupiat Corporation's Application for Incidental Harassment Authorization for the Marsh Creek East 3D Seismic Program at 81 (August 2020).

[1051] In one instance, a denning female abandoned her den in February or late January, a point at which her cubs could not have survived, and investigation of her den yielded evidence of a Rolligon path within 250 m (820 ft) of the den site and a well-traveled vehicle path at a distance of 450 to 500 m (0.28 to 0.31 mi) from the den site. S. C. Amstrup, *Human disturbances of denning polar bears in Alaska*, 46 Arctic 246, 248 (1993) (describing "bear 1"); *see also id*. at 249 (discussing "bear 12," who opened her den on March 19 in response to the presence of tracked vehicles and two light snow machines passing about 65 meters away and left the den with her cubs just two days later).

[1052] *Id*. (discussing "bear 6", who left her den shortly after March 9, 1984, possibly due to a snow machine passing about 200 meters away in late March).

[1053] *See* Robinson et al., *Factors Influencing the Efficacy of Forward-Looking Infrared in Polar Bear Den Detection* 64(8) BIOSCIENCE 735 (2014) (dens with more than 90 cm of snow cover not detectable; describing weather effects on handheld FLIR detection success); Richard T. Shideler, Grizzly Bear Use of the North Slope Oil Fields and Surrounding Region, Div. of Wildlife Conservation, Alaska Dep't of Fish & Game, Federal Aid Annual Research Performance Report (2014) (reporting that handheld infrared only detected 56 percent of dens surveyed); Smith et al., *Post-Den Emergence Behavior of Polar Bears (Ursus Maritimus) in Northern Alaska*, 60(2) ARCTIC 187 (2007) (describing 45 percent success rate of aerial FLIR surveys studied).

[1054] Pedersen et al., *Effects of Environmental Conditions on the Use of Forward Looking Infrared for Bear Den Detection in the Alaska Arctic*, 2(7) CONSERVATION SCIENCE & PRACTICE e215 (2020) (explaining that hand-held FLIR is useful for verifying previously detected dens but is of little value for first discovery), *available at* https://conbio.onlinelibrary.wiley.com/doi/pdf/10.1111/csp2.215.

Given the known limitations on aerial FLIR, this means that expected effectiveness of hand-held FLIR would be in the range of 11%.[1055] This is only when the exact location of the den was known, meaning that using hand-held FLIR to search broad expanses of habitat for dens is impractical. It is one thing to detect whether a heat source is "still there" when it has already been detected, but totally another to try to use that tool to go out into an area to scan for dens. As such, ground based FLIR is of limited value in a search context. Because ground-based detection capability is only one-fourth as effective as aerial surveys, and the effectiveness of aerial surveys is already low, BLM and FWS should be clear that any such infrared surveys must be aerial surveys.

BLM and FWS also fail to consider the efficacy of the use of dogs for den detection. For practical purposes, the use of the dogs is limited to confirming whether a suspected den already identified by the FLIR survey is actually occupied by a polar bear. Dogs cannot find dens that were not detected by the FLIR survey because researchers would have to tread over nearly every square foot of an enormous area with the dogs. Further, the dogs must be transported via vehicles that can cause disturbance to undetected dens. The dogs themselves can also cause den disturbance when they alert to a den by starting to dig.[1056] For purposes of a seismic survey of a large area within the complex habitat of the Coastal Plain, dog detection will be of limited utility to mitigate adverse impacts to polar bears. [1057]

Also, ROP 4 says the lessee/operator/contractor "would prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These bear interaction plans would be developed in consultation with Tribal Governments and the community of Kaktovik and approved by the BLM and USFWS." ROP 4 goes on to cite the 2021–2026 ITR requirements and notes that Coastal Plain plan may include similar measures, and points to a general list of items that must be included such as a waste management plan, but does not identify the specific measures, leaving them unexamined for efficacy. The final SEIS should identify the specific measures, and an actual evaluation of the impacts to polar bears from these interactions while considering these measures' efficacy.

And as discussed above, BLM and FWS fail to provide any science to indicate that a one-mile buffer will protect denning bears from foreseeable noise impacts, especially seismic testing, gravel mine blasting, and pile-driving. Also, the agencies provide no buffer for non-denning bears, despite evidence indicating strong aversion reactions of non-denning bears, especially females and cubs, to industrial noise. BLM and FWS must support its denning buffer with science and establish ROPs for non-denning bears designed to reduce the extreme energetic stress that industrial sources of noise are known to cause polar bears.

More generally, and as described above, it is deeply problematic that BLM and FWS attempt to frame a future ITR process, undertaken by a private applicant, as a mitigation measure in its impacts analysis. Future ITRs do not obviate the agencies' responsibility to provide for

[1055] 2021 Amstrup ITR Letter at ¶ 76.

[1056] *See* March 2019 Amstrup Letter at 24 (discussing limitations and adverse side effects of using dogs for den detection).

[1057] *Id.*

measures that minimize and avoid impacts to polar bears. And as Dr. Whiteman explains, the agencies' assumptions that future ITRs would develop new, currently unknown mitigation measures is speculative and unsupported by current science.[1058]

Furthermore, with regard to the effectiveness of its stipulations and ROPs, BLM and FWS totally ignored the question that the scope of discretion retained under the terms of the lease may affect how it applies mitigation in the future. It is vitally important for the draft SEIS to consider what mitigation measures may be waived, and whether BLM is retaining the authority to permanently and completely preclude surface disturbing activities if necessary to protect polar bears and their habitat, or whether BLM is merely retaining the authority to impose conditions to reduce impacts. Unless the lease terms do the former, BLM ostensibly would be giving away a critical component of its discretion — and the ability to protect polar bears from injury and disturbance — at the leasing stage. The draft SEIS, and the ESA consultation that is being reinitiated, must consider BLM's continued representations regarding its own inability to preclude "necessary" access to oil and gas under the Tax Act.

L. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON MARINE MAMMALS.

BLM and FWS must more thoroughly analyze impacts to other marine mammals likely to be impacted by the Leasing Program. The draft SEIS mischaracterized the affected environment for ice seals, particularly ringed seals, by misrepresenting baseline conditions, inadequately considering the effects of increased anthropogenic noise, and excluding traditional Indigenous knowledge of habitat use. It failed to assess the likely impacts to whales, and the impacts of ocean acidification to marine mammals. Finally, the program as adopted failed to include ROPs sufficient to protect marine mammals. These analyses need to be addressed in the final SEIS.

1. The final SEIS must accurately describe baseline conditions for ice seals.

The draft SEIS acknowledged that snow cover is forecasted to be inadequate for ringed and bearded seal lair formation in the future and that lethal impacts are possible. Seals need sufficient ice and snow cover not only through the pupping season in March and April but also during pup-rearing and nursing through mid-May and later.[1059] The Arctic is a dynamic area and seals are altering behaviors in response to the changing environment. As sea ice and snow cover are diminishing, the timing of life-cycle activities for seals are changing as well, with basking now sometimes observed before May.[1060] This illustrates the hazards of overreliance on historic temporal data to predict future behavior. Seals will be faced with decreasing snow cover and

[1058] Whiteman DSEIS Comments at 9.

[1059] Proposed Rules, Dep't of Commerce, Nat'l Oceanic and Atmospheric Admin, Endangered and Threatened Species; Designation of Critical Habitat for the Arctic Subspecies of the Ringed Seal, 86 Fed. Reg 1452-01, 1,455–56 (Jan. 8, 2021).

[1060] Kelly, B. P., et al. 2010. Seasonal home ranges and fidelity of breeding sites among ringed seals. Polar Biology 33:1095–1109.

forced to survive with lairs of lesser than historic snow depths in the future.[1061] Similarly, the draft SEIS mentions the increase of landfast ice in the spring during the pupping season but does not accurately assess the impact to changing ice conditions. [1062] The final SEIS should consider climate-driven changes in available seal habitat and likely behavioral responses as part of the baseline condition and over the program time horizon.

Despite clear evidence to the contrary, the draft SEIS insisted that ocean conditions have been "favorable for ringed seals recently" and mispresented a NMFS Biological Opinion addressing those conditions, claiming:

> [R]inged seals near Kaktovik are growing and maturing faster and at a younger age now than 30 years ago (Quakenbush et al. 2011). The broad distribution, diverse diet, and ability to haul out on land or ice suggest that ringed seals may be resilient to changes in sea ice availability (NMFS 2013), at least in the short term.[1063]

The Quakenbush et al. 2011 report is self-described as a retrospective analysis monitoring program from 1960–2010 which monitors "how parameters that affect [seal] population size and status may vary in time and how current conditions compare with past conditions."[1064] This report predates the dramatic warming effects and rates of climate change seen in the Alaskan Arctic over the past decade. More fundamentally, as noted in previous comments, the conclusion that ocean conditions are "favorable" to ringed seals stands in stark contrast to the fact that they are listed as threatened under the ESA due to unfavorable ocean conditions, i.e., vanishing sea ice. Evidence that seals in one small area are growing faster now than years ago hardly supports a broad assertion that ocean conditions are favorable for seals.

Furthermore, the draft SEIS mischaracterized the NMFS Biological Opinion by stating that ringed seals have demonstrated adaptive capacity to haul out on land or ice that suggests a promising type of resilience for the species. This is inaccurate; the cited document actually states that ringed seals' "broad distribution, ability to undertake long movements, diverse diet, and association with widely varying ice conditions suggest resilience in the face of environmental variability."[1065] The Biological Opinion does not state that ringed seals haulout on land or that they are likely to successfully adapt to the rapid disappearance of sea ice by hauling out on land, as implied in the draft SEIS. Despite our previous comments, BLM and FWS ignored the subsequent line of the Biological Opinion which states, "[h]owever, ringed seals' long generation time and ability to produce only a single pup each year may limit its ability to respond to

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[1061] E.g., Hezel et al., Projected decline in spring snow depth on Arctic sea ice caused by progressively later autumn open ocean freeze-up this century. 2012. Geophysical Research Letters, Vol. 39, L17505. doi:10.1029/2012GL052794.

[1062] DSEIS at 3-232.

[1063] DSEIS at 3-241

[1064] Quakenbush, Citta, and Crawford., The biology of the ringed seal, 1960–2010. 2011. National Marine Fisheries Service. Fairbanks, AK.

[1065] NMFS Biological Opinion on Oil and Gas Leasing and Exploration Activities in the U.S. Beaufort and Chukchi Seas, Alaska (2013) at 153.

environmental challenges such as the diminishing ice and snow cover."[1066] The Biological Opinion does not indicate any notable resilience or adaptive ability for ringed seals that would modify the science and findings behind the ringed seals' threatened status under the ESA. The final SEIS should honestly portray the reality of sea ice conditions for ringed seals generally and remove the mischaracterization of, and over-emphasis on, one 2011 study addressing growth rates in one small area.

2. *The final SEIS should estimate and evaluate the impacts of program-driven anthropogenic noise on ice seals.*

Like other marine mammals, ice seals are greatly affected by anthropogenic noise. Ringed seals are known to be disturbed and express avoidance behaviors and abandon breathing holes and lairs in response to a variety of anthropogenic noises such as seismic activity, helicopters, snowmachines, and skiers.[1067] Seals would be most adversely affected by this disturbance in late March through June, when the animals spend increasing amounts of time out of the water and movements are limited to small areas.[1068] Subsistence hunters expressed concern about the effects of noise disturbance to ringed seals in Alaska waters and subsequently researchers were able to document a lair abandonment rate from 13.5% to as great as 32.5% for seals subject to industrial noise, whereas seals in undisturbed areas had a much smaller abandonment rate of 4.0%.[1069]

Additionally, a new study indicates a limitation in Phocidaes' abilities to increase their call amplitude.[1070] While this study specifically looked at bearded seals, given the acoustic behavioral and physiological similarities between ice seals, it is likely that ringed seals also experience a vocalization threshold that creates a vulnerability to anthropogenic masking. Fournet et al., 2021 argues this threshold is "critical for developing management plans for an industrializing arctic."

Anthropogenic noise can mask important sound signals for ice seals and affect survivability and reproductive success. Vocalizations, and more specifically, intraspecies cryptic communication strategies are essential life functions for ringed seals that are important for social structure, predator avoidance, and prey detection. Excess background noise, especially of anthropogenic origin, that easily masks intentionally quiet ringed seal vocalizations is of concern

[1066] *Id*.

[1067] Kelly, B. P., J. J. Burns and L. T. Quakenbush. 1988. Responses of ringed seals (Phoca hispida) to noise disturbance. Pages 27–38 in W. M. Sackinger, M. O. Jeffries, J. L. Imm and S. D. Treacy, eds. Port and ocean engineering under arctic conditions, vol. II. Geophysical Institute, University of Alaska, Fairbanks, AK.

[1068] Kelly, B. P., O. H. Badajos, M. Kunnasranta, J. R. Moran, M. Ponce, D. Wartzok, and P. Boveng. 2010. Seasonal home ranges and fidelity of breeding sites among ringed seals. Polar Biology 33:1095–1109. doi:10.1007/s00300-010-0796-x

[1069] *Id*. at Kelly et al., 1988.

[1070] Fournet, Michelle E. H. et al. 2021. "Limited Vocal Compensation for Elevated Ambient Noise in Bearded Seals: Implications for an Industrializing Arctic Ocean." Proceedings of the Royal Society B: Biological Sciences 288(1945): 20202712.

to the survivability and reproductive success of the species. Ringed seals are known to vocalize year-round with a substantial increase in calls from March to April (when they rut) suggesting that calling rates increase as the breeding season progresses.[1071] "Masking of signals from conspecifics or environmental cues indicating the presence of prey or predators may result in loss of social cohesion, missed opportunities for feeding, or failure to avoid a predator."[1072] These quiet and short calls have evolved as a result of high predation pressures from polar bears.[1073] The final SEIS must adequately assess impacts to seals from increased noise associated with all stages of oil and gas activities on ringed seals.

3. The final SEIS should recognize Traditional Indigenous Knowledge of seals' habitat use.

While not well documented in scientific literature due to survey and sampling bias, multiple sources of traditional Indigenous Knowledge and local knowledge provide evidence that inshore areas such as river mouths, tributaries, and estuaries are important for ice seals. At a public hearing for proposed ice seal critical habitat on February 26th, 2021, Indigenous commenters from the northern Alaska region offered traditional Indigenous Knowledge indicating that ringed, bearded, and spotted seals use inshore coastal areas during the spring, summer, and fall. The final SEIS should recognize this important information and include it in the discussion about seals' habitat use and identification of important areas.

4. The final SEIS must adequately consider impacts to whales.

Whales in the expansive area impacted by the oil and gas program include bowhead, beluga, humpback, gray, fin, and Pacific right whales. Several of these species are listed under the ESA in addition to being protected under the MMPA. The final SEIS must fully consider impacts to all whales from vessel traffic, oil and hazardous substance spills, noise, and the possibility of ship strikes, in addition to accounting for climate-driven changes in prey availability and habitat use that affect that analysis.

In its response to comments, BLM stated there is no data that indicate ship strikes north of 60 degrees. The lack of data documenting whale-vessel collisions north of 60 degrees does not indicate that ship strikes would be unlikely to occur throughout the decades-long program, especially given the significant proposed increase of vessel traffic transiting through whale habitat. That additional vessel traffic also poses additive risks of toxic spills and noise pollution

[1071] Stirling, Ian, Wendy Calvert, and Holly Cleator. 1983. "Underwater Vocalizations as a Tool for Studying the Distribution and Relative Abundance of Wintering Pinnipeds in the High Arctic." ARCTIC 36(3): 262–74.

[1072] C. Erbe, C. Reichmuth, K. Cunningham, K. Lucke, R. Dooling, Communication masking in marine mammals: A review and research strategy. Mar. Pollut. Bull. 103, 15–38 (2016). doi: 10.1016/j.marpolbul.2015.12.007; pmid:26707982

[1073] Jones, Joshua M., et al. "Ringed, Bearded, and Ribbon Seal Vocalizations North of Barrow, Alaska: Seasonal Presence and Relationship with Sea Ice." Arctic, vol. 67, no. 2, 2014, pp. 203–222. JSTOR, www.jstor.org/stable/24363701.

to whales. The final SEIS must fully assess and disclose the threat of ship strikes to cetaceans from Dutch Harbor to the Coastal Plain.

The final SEIS also must fully assess the risk of a spill in or near the project area and its impacts on whales. In doing so, BLM should consider detailed comments critiquing the methodology to do so submitted to FWS with regard to the Beaufort Sea Incidental Take Regulation for polar bears and Pacific walrus.[1074]

5. The final SEIS should fully consider the impacts of ocean acidification on Arctic marine mammals.

The draft SEIS included one paragraph on ocean acidification and its effects on prey availability for marine mammals at large.[1075] This must be expanded in the final SEIS and that analysis should emphasize regional effects of ocean acidification to specific marine species in the area. Ocean acidification has specifically been documented as a concern for affected marine species. For example, in a 2016 stock assessment report, NMFS states:

> A second major concern, driven primarily by the production of carbon dioxide (CO2) emissions, is the modification of habitat by ocean acidification, which may alter prey populations and other important aspects of the marine ecosystem. Ocean acidification, a result of increased CO2 in the atmosphere, may affect bearded seal survival and recruitment through disruption of trophic regimes that are dependent on calcifying organisms. The nature and timing of such impacts are extremely uncertain. Changes in bearded seal prey, anticipated in response to ocean warming and loss of sea ice, have the potential for negative impacts, but the possibilities are complex. Ecosystem responses may have very long lags as they propagate through trophic webs. Because of ringed seals' apparent dietary flexibility, this threat may be of less immediate concern than the threats from sea ice degradation.

The Arctic Ocean is the most susceptible region to ocean acidification and associated ecosystem impacts with the Pacific-Arctic continental shelves being especially vulnerable.[1076] In addition, new studies conclude that there is greater regional anthropogenic carbon storage and ocean acidification than previously suggested. Elevated rates of acidification in the Arctic Ocean in tandem with the rapid physical and biogeochemical changes will intensify and hasten climate change-associated impacts at the ecosystem level.[1077] Additionally, a more acidic ocean creates

[1074] Lubetkin, Susan C., Critical review of the oil spill risk analysis as presented in the proposed rule concerning incidental take of walruses and polar bears in the Beaufort Sea and adjacent lands, 2021-2026. July 1, 2021.

[1075] SSEIS at 3-240.

[1076] Mathis, J.T., J.N. Cross, W. Evans, and S.C. Doney. 2015. "Ocean acidification in the surface waters of the Pacific-Arctic boundary regions." Oceanography 28(2):122–135, http://dx.doi.org/10.5670/oceanog.2015.36.

[1077] Terhaar, Jens, Lester Kwiatkowski, and Laurent Bopp. 2020. "Emergent Constraint on Arctic Ocean Acidification in the Twenty-First Century." Nature 582(7812): 379–83.

conditions for a noisier ocean that will affect marine mammals.[1078] The final SEIS must thoroughly discuss ocean acidification in regards to marine mammals in the program area including seals, walrus, sea lions, and whales.

M. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ARCTIC REFUGE LANDOWNERSHIP AND USE.

The current management of the Coastal Plain is as federal public lands.[1079] There are some private lands within the boundaries of the Coastal Plain, including native allotments and corporation land. Additionally, all Alaska Native Claims Settlement Act (ANCSA)-conveyed lands contain a limitation on use and disposition, imposed by section 22(g) of that act. Groups previously raised the need for BLM to analyze the impacts of an oil and gas program on private lands, including the need to consider activities on these private lands in its cumulative impacts analysis.[1080] Unfortunately, the draft SEIS analysis is similarly cursory and we, therefore, incorporate our prior comments here. We encourage BLM and FWS to evaluate more fully the impacts of the Leasing Program on Native allotments. Part of this analysis should include a more detailed review of what mitigation measures could lessen impacts and how. Right now, the draft SEIS includes largely general statements about how "[l]ease stipulations would mitigate some impacts"[1081] but is short on analysis.

Additionally, BLM and FWS note multiple times that an oil and gas program may lead to an expansion of infrastructure and facilities in the City of Kaktovik,[1082] but do not analyze what those impacts would be on Coastal Plain resources. The agencies must analyze all reasonably foreseeable impacts. BLM and FWS still have not adequately explained the legal status of ASRC lands and how any mitigation measures adopted in the Leasing Program may apply to those lands. It must do so in the SEIS, as it is a critical piece to understand the full extent of oil and gas activities and potential impacts on the Coastal Plain and its resources. Additionally, the draft SEIS notes that there are pending applications for a communications tower as well as a snow trail within the project area.[1083] There is little information provided about these applications and no meaningful analysis of the impacts of these actions in addition to the Leasing Program. A discussion of these impacts must be expanded in the final SEIS.

N. IMPACTS OF AN OIL AND GAS PROGRAM ON SUBSISTENCE USES AND RESOURCES.

[1078] Hester, Keith C., Edward T. Peltzer, William J. Kirkwood, and Peter G. Brewer. 2008. "Unanticipated Consequences of Ocean Acidification: A Noisier Ocean at Lower PH." Geophysical Research Letters 35(19): L19601.

[1079] *See infra* Section VIII (explaining Indigenous stewardship of the Coastal Plain since time immemorial and opportunities for co-stewardship).

[1080] 2019 DEIS Comment Letter at 300–01; 2021 Scoping Comment Letter at 172–73.

[1081] DSEIS at 3-273.

[1082] DSEIS at 3-274.

[1083] DSEIS at 3-274, App. F at F-7, F-10 to F-11.

The Arctic National Wildlife Refuge's Coastal Plain has irreplaceable subsistence importance for Indigenous people, and every community connected to this landscape through ecological and social systems. Gathering traditional foods "contribute[s] to mental health by providing necessary stability and cultural identity" and also serves to "strengthen the family unit, provide meaningful work, and fulfill needs for personal self-reliance, self-esteem, and self-fulfillment."[1084] The Gwich'in Nation considers this land sacred given the connection of the Coastal Plain to the Porcupine Caribou and the connection between the Gwich'in and the caribou. Oil and gas leasing on the Coastal Plain will significantly impact human connections to the lands, waters, and resources of the region through subsistence activities. Unfortunately, the draft SEIS does not address many of the deficiencies in BLM's previous analysis, as described below. As we have raised many of these issues in previous comments, we fully incorporate those comments here.[1085]

1. The Agencies should seek input from all affected communities and stakeholders.

Overall, the draft SEIS still lacks a robust subsistence analysis. In the draft SEIS, the agencies determined that oil and gas leasing on the Coastal Plain would only significantly restrict subsistence uses for Kaktovik. As a result, the draft SEIS indicates the agencies will hold a single public hearing regarding subsistence impacts in Kaktovik.[1086] However, the agencies have indicated that they will also hold ANILCA Section 810 hearings in Arctic Village, Venetie, and Fort Yukon. It is critically important that the agencies revise their ANILCA Section 810 analysis to consider impacts to all affected communities and, given the vital importance of the Porcupine Caribou Herd to the Gwich'in, include a clear and accurate ANILCA Section 810 analysis for all Gwich'in communities. A finding that there will be subsistence impacts to Gwich'in communities is appropriate given the potential reduced abundance and availability of subsistence resources as a result of the oil and gas program and its impact on caribou and waterfowl.

Confusingly, it is publicly unclear whether the agencies may have actually made ANILCA 810 "may significantly restrict" findings for additional communities. While the draft SEIS expressly limits this finding to Kaktovik, BLM's EPlanning website and announcement of hearings indicates that there will be ANILCA 810 hearings in the communities of Arctic Village, Venetie, and Fort Yukon, in addition to Kaktovik. A direct communication from BLM indicated that the agencies have not made "may significantly restrict" findings for those three Gwich'in communities but that the agencies are holding hearings now in case they make such findings in the future. This is confusing to the public and the communities. Additionally, there is extensive information already before the agencies that an oil and gas program on the Coastal Plain would significantly restrict subsistence uses. We strongly encourage the agencies to amend their preliminary findings to recognize these impacts and to ensure that the agencies are complying with ANILCA's mandates to protect subsistence.

[1084] MICHAEL JACOBSON & CYNTHIA WENTWORTH, KAKTOVIK SUBSISTENCE LAND USE VALUES THROUGH TIME IN THE ARCTIC NATIONAL WILDLIFE REFUGE AREA, 27 (U. S. FISH AND WILDLIFE SERVICE, NORTHERN ALASKA ECOLOGICAL SERVICES 1982).

[1085] 2019 DEIS Comment Letter at 305–17; 2021 Scoping Comment Letter at 176–181.

[1086] DSEIS App. E at E-24.

In addition, the agencies have seemingly not engaged in consultation as required by the International Porcupine Caribou Herd Treaty.[1087] Failure to fully comply with this treaty presents a significant risk to Canadian subsistence users' nutritional, cultural, and other essential needs. This risk is particularly high for the Canadian Gwich'in, in northern Yukon and Northwest Territories, who rely heavily on the Porcupine Caribou Herd.

2. The agencies should expand the scope of their analysis to include all impacted communities and meaningfully address all resources.

In assessing impacts to subsistence users and resources, BLM and FWS limited their analysis to just four communities —Kaktovik, Nuiqsut, Arctic Village, and Venetie.[1088] This approach is insufficient because oil and gas leasing on the Coastal Plain threatens numerous subsistence resources and users and will significantly impact human connections to the land beyond these communities. In particular, any change in caribou availability or abundance due to oil and gas activities on the Coastal Plain would impact subsistence uses for 22 Alaskan communities and seven Canadian user groups.[1089] This is particularly true for the Gwich'in of Alaska and Canada. The Gwich'in people live in fourteen villages extending across northeast Alaska, northern Yukon, and Northwest Territories. They are "Caribou People" for whom the Arctic Refuge is sacred ground.[1090] Their culture and way of life is heavily dependent on the Porcupine Caribou Herd and their communities trace the historic migratory route of the herd through the Gwich'in traditional homelands. As a result of this limited analysis, the agencies also overlook impacts to important subsistence resources that rely on the Coastal Plain and are consumed by communities outside the immediate program area.[1091] To adequately analyze the far reaching impacts an oil and gas leasing program will have on all communities that rely on the Coastal Plain and its resources, the agencies must greatly expand the communities considered for their analysis.

For several resources that were included within the agencies' scope of analysis, the draft SEIS provides incomplete analysis. For example, Dall sheep are an important subsistence resource for the Iñupiat people and the community of Kaktovik's use of this resource could be impacted by oil and gas leasing on the Coastal Plain.[1092] Any risk of additional impacts to subsistence use of Dall sheep is of significant concern because the species numbers have declined and there may be hunting limitations put in place.[1093] Yet, the alternatives analysis

[1087] *See supra* Section IV.E.1

[1088] *Id*. at 3-291.

[1089] *Id*. at 3-301.

[1090] *Id*. App. E at E-21.

[1091] *See Id*. App. M at M-1 to M-26 (limiting subsistence harvest data to Kaktovik, Nuiqsut, Venetie, and Arctic Village).

[1092] *Id*. at 3-294 (noting Dall Sheep are a primary subsistence species for Kaktovik residents); *id*. at 3-293 (recognizing Kaktovik's subsistence use area for Dall Sheep overlaps with the program area).

[1093] *See, e.g.*, U.S. Department of the Interior, Federal Subsistence Management Program, Changes in Federal Sheep Hunting Regulations in Units 24A and 26B (July 29, 2022), available

simply indicates that Kaktovik's use of Dall sheep could be impacted under all alternatives[1094] and that development under alternative B "may" impact areas "heavily used" by Kaktivok residents for Dall sheep hunting.[1095] This is insufficient analysis to understand how use of this important subsistence resource will be impacted by an oil and gas leasing program. Additional analysis explaining the extent of impacts to Dall sheep and to subsistence uses of this species under each alternative should be provided in the final SEIS.

The draft SEIS also improperly limits the scope of the subsistence analysis to post-lease activities.[1096] But, as addressed in prior comments, preleasing activities will cause direct harm to the Gwich'in people and other subsistence users by damaging the Coastal Plain.[1097] In the final SEIS the agencies must consider the full range of potential impacts to subsistence users and resources that could occur from all stages of the oil and gas program.

3. The agencies must accurately analyze the impacts of oil and gas on the Gwich'in and subsistence.

The agencies' analysis still significantly mischaracterizes the potential for subsistence impacts to the Gwich'in in light of the best available science and the agencies' economic predictions. Model predicted population declines for the Porcupine Caribou Herd due to development in the Coastal Plain could have "substantial impacts on communities that rely on the Porcupine Caribou Herd."[1098] This loss will be felt in numerous subsistence communities including all Gwich'in communities.[1099] Yet while the agencies predict some communities or households may be better able to "adapt" to reduced subsistence access as a result of increased income, the agencies explain Gwich'in communities are not expected to realize such benefits.[1100] With this disparity in mind, the agencies must revise their analysis to reflect the high intensity of impacts likely to result to Gwich'in communities.

Overall, the agencies' impact analysis must be revised to more accurately describe likely impacts and account for the limitations of NSO, CSUs and TLs. The draft SEIS largely refers to NSO, CSUs and TLs to describe impacts under each alternative and to broadly assert that such measures reduce impacts to subsistence. But, as explained in greater detail above, this premise is questionable. First, the NSO provisions do not necessarily prevent impacts because of the potential for waivers and exceptions. In addition, seismic exploration and exploratory drilling may still be allowed under the NSO provision and it remains unclear whether the ROW provision would mandate access in NSO areas. Reliance on CSUs is similarly problematic as

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at: https://www.doi.gov/subsistence/news/hunting/changes-federal-sheep-hunting-regulations-units-24a-and-26b.

[1094] *Id*. at 3-313.
[1095] *Id*. at 3-320.
[1096] *Id*. at 3-351 to 3-352.
[1097] 2019 DEIS Comment Letter at 307–08.
[1098] DSEIS at 3-329.
[1099] *Id*. App. E at E-21.
[1100] *Id*. at 3-355.

these provisions do not prevent all infrastructure and activities.[1101] TLs also have limited effectiveness in reducing subsistence impacts because they only limit when activities occur and do not limit the overall level of development under alternatives or prevent activities. With these limitations in mind, the final SEIS must actually describe the impacts likely to occur under each action alternative and should not rely on NSO, CSUs and TLs to protect subsistence resources.

Relatedly, the draft SEIS inaccurately indicates that infrastructure reclamation would "lessen[] the duration of impacts for individual developments."[1102] This assertion is contradicted by statements elsewhere in the draft SEIS that "reclamation and restoration of original habitat value has not been proven" in the Arctic.[1103] In addition, and as addressed in greater detail above, infrastructure causes long-term impacts in the Arctic that may never be restored.[1104] Even if developed areas could be restored to their original state, infrastructure that is in place for long periods may alter the movement patterns of subsistence species long after removal.

The agencies also fail to address how hunting from motorized vehicles and roads may impact subsistence resources and users. Regarding the Porcupine Caribou Herd's post-calving aggregations, the agencies state that "if hunting occurs from the roads during these movements, crossing rates may be lower and tolerance of roads is likely to be lower" depending on "the frequency, timing, and location of hunting."[1105] However, the draft SEIS leaves open the question of when, where, and how frequently hunting may occur in the program area. The draft SEIS indicates "hunting by local residents is likely to occur from roads in the program area."[1106] It also indicates "[h]unting from motorized vehicles during the summer in the program area would likely be limited to roads and would be conducted only by local residents."[1107] These statements do not clearly establish whether hunting will be allowed or whether regulations will limit hunting to local users. This is concerning and must be addressed in the final SEIS in order to allow the agencies to take a hard look at the impact of hunting along roads. The agencies must also explain the mechanism by which hunting, if it is allowed along roads, will be regulated. The draft SEIS currently indicates "ROP 38 would prohibit hunting, trapping, and fishing by lessees, operators, and contractors when persons are on work status" but that this restriction "would not apply once workers' shifts end and they return to a public airport or community."[1108] The agencies must explain how this statement relates to the assertion that hunting is likely to be limited to local residents.

In addition, the agencies' analysis does not sufficiently address impacts from noise on subsistence users and resources. First, regarding noise from seismic activities, the analysis incorrectly states that "regardless of the availability of lands for leasing, seismic activities could

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[1101] *See, e.g.*, *id*. at 2-16 (not allowing CPFs but allowing well pads, roads, airstrips, and pipelines in CSU areas).

[1102] *Id*. at 3-322

[1103] *Id*. at 3-182; *see also id*. at 3-97.

[1104] *See supra* Section V.C.

[1105] DSEIS at 3-211.

[1106] *Id*. at 3-209

[1107] *Id*. at 3-211.

[1108] *Id*. at 3-314 to 3-315.

occur across the entire program area."[1109] This is no longer accurate based on the various alternatives and the analysis should be corrected. Second, the draft SEIS does not fully account for the impacts of increased aircraft traffic to subsistence harvesting of caribou and other resources. Aircraft traffic, including plane and helicopter traffic, reduce subsistence harvest opportunities for important subsistence species including birds, marine mammals, and caribou. Aircraft traffic also impacts whale hunts[1110] and is considered by many to be the most common impact to caribou hunters because noise may divert or delay caribou.[1111] Despite detailing the negative effects of noise, and in particular aircraft noise, the draft SEIS does not assess impacts from air traffic noise in their alternative's analysis. Regarding Alternative B, the agencies simply state that noise impacts could occur. The agencies do not address aircraft noise specifically or the magnitude of noise impacts overall for this alternative.[1112] The agencies do not mention noise impacts for Alternative C. For alternative D the agencies briefly mention noise in regard to seismic exploration but make no mention of aircraft noise or address the magnitude of noise impacts likely to occur under this alternative.[1113] More meaningful analysis of noise impacts is necessary because noise can cause "widespread changes in migration or abundance" and "cause regional impacts extending outside the program area."[1114]

The agencies also notably fail to meaningfully address impacts to waterfowl. Waterfowl are an important subsistence resources consumed in all four of the communities included in the agencies' subsistence analysis.[1115] As addressed in more detail above, development in the program area could impact the availability or abundance of waterfowl including eiders in communities including Nuiqsut and Utqiagvik.[1116] Yet, the agencies' impact analysis fails to address how waterfowl subsistence hunters will be impacted under the action alternatives. The sum total of the agencies' analysis of waterfowl impacts is the acknowledgement that all action alternatives could impact waterfowl harvests[1117] and that such impacts would be lowest under Alternative D.[1118] Waterfowl are also not addressed in the agencies' transboundary impact analysis beyond noting waterfowl are relevant to the analysis and rely on the Coastal Plain.[1119]

The agencies must also provide more detailed analysis of how sharing will be impacted by the leasing program. Existing sharing networks distribute food widely, where communities are able to receive resources they are otherwise unable to obtain. Despite the importance of such networks,[1120] the draft SEIS merely mentions that reduced harvests could disrupt sharing

[1109] *Id*. at 3-310.
[1110] *Id*. at 3-311.
[1111] *Id*. at 3-310.
[1112] *Id*. at 3-320.
[1113] *Id*. at 3-323.
[1114] *Id*. at 3-312.
[1115] *Id*. at 3-294 (Kaktovik,); 3-296 (Nuiqsut); 3-298 (Arctic Village); 3-299 (Venetie).
[1116] *See supra* Section VI.H.
[1117] *Id*. at 3-308 to 309.
[1118] *Id*. at 3-324.
[1119] *Id*. at 3-305.
[1120] *Id*. at 3-302 to 3-303.

networks[1121] and that the loss of such social connections could "increase vulnerability in communities."[1122] These statements are perfunctory and fail to identify the communities most likely to be impacted. This is a significant oversight given inner-village dependency across the region and the potential for impacts to North Slope Borough and Interior trade routes. Such impacts could lead to food insecurity across the entire North Slope and Interior Alaska and into Canada. In the final SEIS, the agencies should consider the sharing practices in specific communities, address the communities most likely to be negatively impacted by reduced sharing, and further analyze the extent of food insecurity likely to result under each action alternative.

4. The agencies must strengthen subsistence mitigation measures.

The agencies must also revise their analysis and reliance on ROPs. First, the agencies point to mitigation measures such as ROP 23 to reduce impact to the Porcupine Caribou Herd.[1123] However, as explained above, such measures are insufficient to reduce impacts within calving and post-calving habitats.[1124] In addition, several subsistence impacts in the draft SEIS are not addressed by mitigation measures despite appearing to lend themselves to straightforward timing limitations. For example, the agencies note that spring geese hunting could be affected if ice road or seismic activity continues into May.[1125] Notably, ROP 37 — "Avoiding Conflicts Between Subsistence Activities and Seismic Exploration" — contains no timing limitation. Other ROPs specifically contemplate seismic activity in May.[1126] The agencies should adopt a ROP that would prohibit seismic activities in the spring that could affect geese hunting. We also note that Lease Stipulation 1 establishes a river set back of 1 mile for the Okpilak River under Alternative B but reduces the setback to just .5 miles for Alternative D.[1127] This is concerning because the Okpilak River is an important subsistence river. The final SEIS should revise the setback for this river under Alternative D to be at least 1 mile or larger to protect subsistence resources and users.

Moreover, mitigation measures which are specifically targeted to address impacts to subsistence users fall far short of avoiding and minimizing impacts to affected communities. ROP 36 requires operators to "provide opportunities for subsistence users to participate in planning and decision-making" by working "directly with affected subsistence communities."[1128] But the ROP provides no guidance regarding how to determine which communities may be affected by proposed development or exploration. Without guidance, operators may underestimate the scope of impacts likely to result from their activities and proceed without the input of all impacted communities. ROP 39 requires operators to develop a subsistence access

[1121] *Id*. at 3-312.
[1122] *Id*. at 3-318.
[1123] *Id*. at 3-321.
[1124] *See supra* Section VI.I.2.
[1125] DSEIS at 3-312.
[1126] *Id*. at 2-11 ("[S]eismic exploration, and testing, are not allowed on the major nearshore marine waters, lagoons, barrier islands, and coastal islands between May 15 and November 1.").
[1127] *Id*. at 2-8.
[1128] *Id*. at 2-69.

plan prior to exploration or development but only in consultation with Kaktovik.[1129] The agencies should expand this coordination and consultation opportunities beyond Kaktovik in light of the abundant evidence that Gwich'in subsistence users will be significantly impacted from oil and gas leasing on the Coastal Plain.

We also note that ROP 36 contains no clear mechanism for actually reducing impacts to subsistence activities. There is no provision that allows a local community to prevent any oil and gas activity from moving forward if there would be significant impacts on subsistence use — rather, the community would merely be informed ahead of time. Without providing for a substantive role in the decision, such measures are essentially meaningless. Moreover, subsection (c) requires that applicants prepare a plan to describe how they will avoid subsistence impacts and submit that plan to BLM. For such a plan to have any value, it must be shared with potentially affected communities to determine whether the plan would effectively avoid unreasonable conflicts with subsistence and allow the community to provide input on the proposed plan. Finally, we note that several of the "requirements" of this ROP are existing legal mandates that should not be considered mitigation measures. This includes the requirement for government-to-government consultation in subsection (b) and the requirement for barge operators to avoid unmitigable adverse impacts, as determined by NMFS, on the availability of marine mammals to subsistence hunters in subsection (c)(vi).

5. The agencies' cumulative analysis must be revised.

Overall, we agree with the agencies' conclusion that the availability of resources such as caribou, sheep, moose, small land mammals, fish, waterfowl, and vegetation, would likely be reduced from the cumulative impacts.[1130] The agencies correctly acknowledge that such impacts would be felt by Iñupiat, Gwich'in, and Inuvialuit subsistence users.[1131] While stronger protections are needed,[1132] we also agree that Alternative D would contribute the least to cumulative effects on subsistence uses and resources.[1133] However, the agencies' findings highlight the need for further specificity surrounding the subsistence "tipping point" the agencies warn against.[1134] Simply acknowledging the possibility of a food security and cultural disaster occurring on a regional scale is not enough. The final SEIS should use predictive models of future development, such as those indicating declines in the Porcupine Caribou Herd, to give more context about what level of development would risk a subsistence tipping point. The agencies should also provide more specific information about how they anticipate subsistence users will "adapt" to predicted declines in resource availability. At a minimum, the agencies must address whether any of the action alternatives, in combination with reasonably foreseeable future actions (RFFAs), are likely to lead to a subsistence tipping point.

[1129] *Id*. at 2-74.
[1130] *Id*. at 3-330.
[1131] *Id*. at 3-331.
[1132] *See infra* Section VI.O.
[1133] DSEIS at 3-332.
[1134] *Id*. at 3-331.

The agencies must also revise their analysis to account for the best available science. In their cumulative analysis the agencies improperly discount studies predicating population declines for the Porcupine Caribou Herd as a result of oil and gas activities in the Coastal Plain.[1135] Without identifying any study by name, the agencies state: "[t]he models are based on various assumptions, some of which are not supported in the literature; thus, the conclusions may overestimate the effects on the Porcupine Caribou Herd."[1136] Brushing aside model estimates in this way is unjustified. This is especially true given that the agencies recognize such models as the best available science elsewhere[1137] and note that population declines predicted by such models could have a "substantial impact" on communities that utilize the Porcupine Caribou Herd[1138] beyond the immediate program area.[1139]

The draft SEIS's cumulative analysis also fails to include all relevant RFFAs. Adequately analyzing cumulative impacts to subsistence requires consideration of all projects likely to impact the Porcupine Caribou Herd and Central Arctic Herds throughout their ranges. But the agencies do not address RFFAs beyond the program area.[1140] The agencies should also include more analysis on the impacts to waterfowl, which are an important subsistence resources for communities in both Alaska and Canada. We also note that the agencies have not included analysis of the Point Thomson and Liberty developments in their analysis as addressed in our prior comments.[1141] The cumulative analysis also fails to address the potential risk of contamination from oil spills. This oversight is significant as the agencies recognize the potential for oil spills under all scenarios.[1142]

The draft SEIS also states that "other" RFFAS including "new permanent and seasonal roads . . . through the ASTAR program" may impact subsistence.[1143] Generalizing subsistence impacts from roads in this way prevents meaningful analysis of the ways a particular road might shift traditional hunting areas, alter and destroy vegetation, deflect and injure wildlife, or lead to increased competition in the event a road is eventually made open to the public. The intensity of such impacts will depend greatly on the particular location and plans for construction and usage of proposed roads. Referencing road impacts as part of a generalized category is made more problematic by the lack of clarity in the draft SEIS regarding how and when hunting might occur

[1135] *Id*. at 3-329 to 30.

[1136] *Id*. at 3-329.

[1137] *Id*. at 3-222 (explaining population models "are based on different assumptions and development scenarios but provide the best available quantification of the magnitude of potential demographic impacts on the Porcupine Caribou Herd that could occur as a result of development.").

[1138] *Id*. at 3-329.

[1139] *Id*. at 3-330.

[1140] *Id*. at 3-328 (failing to address RFFAs south of the Brooks Range such as the Ambler Road or projects in Canada).

[1141] 2019 DEIS Comment Letter at 314.

[1142] DSEIS at 3-328.

[1143] *Id*. at 3-363 to 64.

from roads in the program area.[1144] The agencies should clarify this point and specifically address roads that are likely to impact subsistence in the final SEIS. For example, BLM and FWS failed to specifically identify the annual snow road proposed by Kaktovik Inupiat Corporation as an RFFA that is relevant to the agencies' cumulative impact analysis. The proposed road would span from the western Coastal Plain boundary to the community of Kaktovik impacting subsistence resources such as polar bears, birds, fish, and caribou.[1145] In addition, as the application for the road indicates, Kaktovik Inupiat Corporation may seek to build a permanent gravel road; a potential permanent road is not analyzed.

The agencies also fail to accurately analyze and describe subsistence impacts due to climate change. For example, the agencies note climate change "could influence the rate or degree" of cumulative impacts to subsistence resources.[1146] Indicating that climate change "can" affect resource availability and "could" impact subsistence resources in the cumulative case is not analysis. This section is also misleading. The statement that subsistence hunters "may" be required to travel farther suggests climate change is an impact that may occur only in the future.[1147] But, as the agencies acknowledge, climate change has been impacting subsistence resources for decades.[1148] The agencies must revise their cumulative analysis of subsistence impacts to reflect the fact that climate change impacts are already occurring and that subsistence users are currently grappling with the effects.[1149]

O. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON SOCIOCULTURAL SYSTEMS.

Assessment of sociocultural systems is essential for understanding the effects oil and gas leasing on the Coastal Plain will have on affected Indigenous communities. The Gwich'in and Iñupiat people have strong cultural ties to the Coastal Plain of the Arctic Refuge. Indigenous people have lived on and used the Coastal Plain since time immemorial. The Gwich'in people live in fourteen communities across northern Alaska and Canada along the migratory path of the Porcupine Caribou Herd. The Gwich'in identify as the Caribou people and consider any disturbance to the calving grounds of the Porcupine Caribou Herd an affront to their human rights — the Coastal Plain is so sacred to the Gwich'in that they do not set foot in this area. Oil and gas development on the Coastal Plain will cause disruptions to land and subsistence activities and uses, which will have severe social, cultural, and health impacts that the agencies must analyze.

[1144] *Id*. at 3-209 (noting without further detail that "[s]ome hunting by local residents is likely to occur from roads in the program area").

[1145] *Id*. App. F at F-10.

[1146] *Id*. at 3-327.

[1147] *Id*. at 3-327.

[1148] *Id*. at 3-330 (explaining climate change has been linked to caribou population declines in "recent decades").

[1149] *See e.g*. *id*. App. C at C-18 (quoting Macarthur Tritt, DEIS Public Meeting, February 9, 2019, Venetie, Alaska).

The village of Kaktovik and the Iñupiat people also stand to be significantly impacted by oil and gas leasing on the Coastal Plain. Kaktovik is a largely Iñupiat community located on the northern edge of the Arctic National Wildlife Refuge. Kaktovik includes Barter Island, 90 miles west of the Canadian border and 280 miles southeast of Utquiagvik. Though the current village site was not established until the 1960s, "[t]he people of Kaktovik have a longstanding history and relationship with the program area that is based on the seasonal harvests of subsistence resources."[1150] That history is interwoven into the landscape and, today, the ruins of old Kaktovik can be seen from the road into the village from the airport. Like other communities in the region, subsistence hunting, fishing and whaling play a major role in the local subsistence economy. Kaktovik residents hunt the nearby area for subsistence resources such as Dall sheep, moose, caribou, and fox.[1151] As Former Kaktovik Mayor, Archie Brower explained "[t]he Brooks Range all the way to the ocean is our garden. We feed on that - the sheep, caribou, fish, seals, and whales."[1152]

Although we have raised issues regarding the need to consider a broader range of sociocultural factors, additional communities, fulfill treaty consultation requirements, fully address impacts to the Gwich'in, Iñupiat, and Inuvialuit peoples, and provide more meaningful analysis, the draft SEIS does not correct these issues as described further below. As many of the issues addressed below have been raised in previous comments, we fully incorporate those comments here.[1153]

1. *The Agencies should Seek Input from all Affected Indigenous Communities, Stakeholders, and Rightsholders.*

Overall, the draft SEIS is deficient for failing to seek input required for a robust sociocultural analysis. In the final EIS, the agencies determined that oil and gas leasing on the Coastal Plain would only significantly restrict subsistence uses for Kaktovik. As a result, the draft SEIS indicates the agencies will hold a single public hearing regarding subsistence impacts in Kaktovik.[1154] However, the agencies have indicated that they will also hold ANILCA Section 810 hearings in Arctic Village, Venetie, and Fort Yukon. It is critically important that the agencies revise their ANILCA Section 810 analysis to consider impacts to all affected communities and, given the vital importance of the Porcupine Caribou Herd to the Gwich'in of Alaska and Canada, include a clear and accurate ANILCA Section 810 analysis for all Gwich'in communities. A finding that there will be subsistence impacts to Gwich'in communities is appropriate and will allow the agencies the opportunity to solicit community feedback regarding the sociocultural impacts likely to flow from reduced abundance and availability of subsistence resources in all impacted communities.

[1150] *Id*. at 3-334.

[1151] *Id*. at 3-293.

[1152] MICHAEL JACOBSON & CYNTHIA WENTWORTH, KAKTOVIK SUBSISTENCE LAND USE VALUES THROUGH TIME IN THE ARCTIC NATIONAL WILDLIFE REFUGE AREA, 28 (U. S. FISH AND WILDLIFE SERVICE, NORTHERN ALASKA ECOLOGICAL SERVICES 1982).

[1153] 2019 DEIS Comment Letter at 317–30; 2021 Scoping Comment Letter at 182–84.

[1154] DSEIS App. E at E-24.

Confusingly, it is currently unclear whether the agencies may have actually reached a "may significantly restrict" ANILCA Section 810 finding for additional communities. While the draft SEIS expressly states that the agencies made this finding only for Kaktovik, BLM's EPlanning website and announcement of hearings indicates that there will be ANILCA Section 810 hearings in the communities of Arctic Village, Venetie, and Fort Yukon, in addition to Kaktovik. We strongly encourage the agencies to amend their preliminary findings to support and explain their decision to hold hearings in these communities.

In addition, the agencies have not solicited necessary consultation as required by the International Porcupine Caribou Herd Treaty. Failure to fully comply with this treaty presents a significant risk to Canadian subsistence users' nutritional, cultural, and other essential needs. This risk is particularly high for the Canadian Gwich'in, in northern Yukon and Northwest Territories, who rely heavily on the Porcupine Caribou Herd. However, as explained in more detail above, it is currently unclear how or whether the United State has met its treaty obligations.[1155]

2. The agencies must revise their analysis of direct and indirect impacts to sociocultural systems.

One notable improvement to draft SEIS is the agencies' inclusion of a dedicated section on climate change impacts relevant to sociocultural systems.[1156] This is an important change. The sociocultural impacts stemming from reduced availability and abundance of subsistence resources and impacts due to increased food insecurity are difficult to overstate. However, much of the rest of the agencies' analysis follows BLM's previous approach. Like the final EIS, the draft SEIS provides an overly narrow analysis that does not accurately capture impacts to the Gwich'in, Inuvialuit, and Iñupiat people outside of Kaktovik, or provide meaningful analysis of how each alternative will impact specific communities.

a. The agencies must expand the scope and depth of their analysis.

The agencies must expand the scope of their analysis in the final SEIS. The draft SEIS improperly limits the scope of the sociocultural systems analysis to post-lease activities.[1157] But, as addressed in prior comments, preleasing activities will cause direct harm to the Gwich'in people by damaging the Coastal Plain. Additionally, the discussion indicates that pre-leasing seismic exploration could occur in areas not open to leasing, even if it may be unlikely.[1158] In other places in the draft SEIS, it appears that seismic exploration is prohibited in those areas.[1159] This must be clarified in the final SEIS and the agencies must consider the full range of potential impacts to subsistence and sociocultural systems that could occur from all stages of the oil and gas program. The agencies must also consider all impacted communities, resources, and factors that are relevant to sociocultural systems. The draft SEIS currently focuses heavily on impacts to

[1155] *See supra* Section IV.E.
[1156] DSEIS at 3-351.
[1157] *Id*. at 3-351 to 3-352.
[1158] *Id*. at 3-352.
[1159] *See supra* Section IV.B.7.

caribou and limits analysis to the communities of Kaktovik, Nuiqsut, Arctic Village, and Venetie. Other Gwich'in communities and additional subsistence resources such as birds, waterfowl, moose, grizzly bear, polar bear, marine mammals, and muskoxen are either not addressed or addressed only generally. For several resources that were addressed, the agencies failed to provide meaningful analysis. For example, the draft SEIS fails to adequately analyze impacts to bowhead whales which are a staple to the diet, culture, and traditions of the Iñupiat people. The agencies also failed to sufficiently analyze impacts to the Dall sheep, which may currently be experiencing population declines within the Arctic Refuge.[1160] These are significant oversights because the agencies' cumulative subsistence analysis concludes that the availability of subsistence resources including caribou, sheep, moose, small land mammals, fish, and waterfowl "would likely be reduced" as a result of the oil and gas program.[1161] Groups encourage the agencies to broaden the resources considered and the communities analyzed in the final SEIS.

The agencies also limited their analysis to considering changes in employment, technology, disrupted subsistence, and an influx of outsiders either working in or living in subsistence communities.[1162] This scope of analysis does not adequately incorporate the values of the affected communities. Adequate analysis will require consideration of additional factors including increased industrial activity's correlation with missing and murdered Indigenous women as well as impacts to the judicial system, cultural and archeological resources, values, and spiritual beliefs. Considering factors such as spiritual beliefs is necessary to fully address the gravity of sociocultural impacts facing numerous communities including the Gwich'in who are inextricably linked to the Porcupine Caribou Herd, and thus the Coastal Plain's calving grounds.

With respect to missing and murdered Indigenous women, the draft SEIS briefly acknowledges the high risk of violence to Indigenous women and girls and the potential associated sociocultural and public health impacts of oil and gas development.[1163] This discussion is inadequate to address the specific increases in impacts associated with industrial activity, including the increasing rates of missing and murdered Indigenous women and the subsequent strain on judicial systems.[1164] The introduction of extractive industries, most prominently oil and gas fields, often creates 'man camps,' temporary housing communities meant to host a mainly transient male workforce influx.[1165] These transient extractive industry worker populations can cause significant societal disturbance in surrounding communities, with

[1160] *See, e.g.*, U.S. Department of the Interior, Federal Subsistence Management Program, Changes in Federal Sheep Hunting Regulations in Units 24A and 26B (July 29, 2022), available at: https://www.doi.gov/subsistence/news/hunting/changes-federal-sheep-hunting-regulations-units-24a-and-26b.

[1161] DSEIS at 3-330.

[1162] *Id*. at 3-352.

[1163] *Id*. at 3-359, 3-440.

[1164] National Inquiry into Missing and Murdered Indigenous Women and Girls, "Reclaiming Power and Place: The Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls," 2019.

[1165] Sarah Deer, "Relocation Revisited: Sex Trafficking of Native Women in the United States, William Mitchell Law Review, vol. 36, no. 2, 2010.

the most vulnerable groups — Indigenous women and children — often suffering the most.[1166] The draft SEIS inadequately investigates the well-documented relationship between extractive industries and a rise in violent crime, sexual harassment, and exploitation; a connection that has led to a human rights crisis requiring immediate attention.[1167]

To truly understand the comprehensive impact of extractive industries on Indigenous communities, it is crucial to consider the history of colonization, extractive industries, and the historical injustices inflicted upon Alaska Native Women and Children. These complexities include jurisdictional issues when crimes occur on rural lands, especially between federal, state, and Tribal lands. These complications and overwhelming backlogs often result in unsolved crimes and victims being left without justice, indicating a vital need for administrative, legislative, and financial support to allow local court systems to operate effectively and fairly. The SEIS should thoroughly consider these factors to address extractive industries' comprehensive impact on Indigenous communities.

b. The agencies' impact analysis still mischaracterizes impacts to the Gwich'in and lacks specificity.

The agencies' analysis significantly mischaracterizes the potential for sociocultural impacts to the Gwich'in. The draft SEIS states that residents of Kaktovik are "most likely to experience direct sociocultural impacts" from oil and gas leasing on the coastal plain because they "have strong cultural and subsistence ties and consider themselves the stewards of the program area."[1168] By contrast, the agencies explain that Gwich'in communities "may" experience sociocultural impacts and that there is a "potential" for indirect and cumulative impacts to subsistence in Gwich'in communities.[1169] This severely misstates what is at stake for the Gwich'in people. The Gwich'in are "Caribou People" for whom the Coastal Plain is sacred ground.[1170] Their culture and way of life is heavily dependent on the Porcupine Caribou Herd. Any reduction in the herd's size or migration will impact the abundance and availability of this important subsistence resource for all Gwich'in communities throughout the herd's range.[1171] Groups strongly encourage the agencies to include a more robust and accurate analysis of the impacts of the oil and gas program on the Gwich'in in the final SEIS.

Overall, the discussion of direct and indirect impacts for the action alternatives lacks meaningful analysis. As a preliminary matter, the agencies refer to NSO, CSUs and TLs to describe impacts under each alternative and rely on these provisions to protect sociocultural

[1166] Amnesty International, "Out of Sight, Out of Mind: Gender, Indigenous Rights, and Energy Development in Northeast British Columbia, Canada," 2016.

[1167] Sanjay Sharma (2010) The impact of mining on women: lessons from the coal mining Bowen Basin of Queensland, Australia, Impact Assessment and Project Appraisal, 28:3, 201-215, DOI: 10.3152/146155110X12772982841041.

[1168] *Id*. at 3-332.

[1169] *Id*. at 3-332.

[1170] *Id*. App. E at E-21.

[1171] *Id*.

systems.[1172] But as addressed above, reliance on such measures to reduce impacts is questionable given their significant limitations including but not limited to the potential for exceptions and waivers. The draft SEIS also fails to provide meaningful comparisons between alternatives. Regarding Alternative B, the agencies note sociocultural system impacts are "the same as those described under Impacts Common to All Action Alternatives."[1173] The agencies further note that subsistence impacts would be most intense in Kaktovik but could extend outside the program area to communities that rely on either the Porcupine Caribou Herd or the Central Arctic Caribou Herd.[1174] But, stating that impacts will occur, without attempting to address the likely degree of those impacts, is not meaningful analysis. This approach also renders the agencies' method of assessment for each successive alternative — measuring the degree of impacts for each alternative against those expected under alternative B — meaningless.[1175] The agencies' failure to describe the expected degree of impacts is particularly troubling given that an impact common to all action alternatives is the possibility of reaching "a tipping point" where residents can no longer adjust to reductions in subsistence resource availability.[1176] While the agencies state it is not possible to predict exactly when this tipping point might occur, the agencies must at a minimum address whether any of the action alternatives are likely to constitute such a tipping point.

In addition, the analysis of road impacts should be clarified. While the agencies note industrial roads in the program area "are not expected to be publicly accessible" they also indicate such roads "could open up access for local hunters."[1177] These statements are at odds and do not indicate whether and how hunting might be allowed in the program area. In addition, the assertion that industrial roads will not be opened to the public is questionable given the history of opening roads previously closed to the public such as the Dalton Highway. The agencies should clarify whether and how hunting will be allowed along roads in the program area and avoid assertions that roads will remain private when assessing potential sociocultural impacts.

3. The agencies must revise their cumulative impact analysis.

In discussing cumulative impacts, the agencies do not identify impacted communities. The agencies note that "development" may "increase tensions between different community institutions from disagreements about land jurisdiction and management and differing priorities and agendas, resulting in additional strains on social cohesion."[1178] It is not possible to take a hard look at such impacts and identify useful mitigation measures without identifying which

[1172] *See, e.g., id*. at 3-360 ("A majority of the remaining areas available for lease sale would be subject to NSO, CSU or TLs. As a result, direct impacts on subsistence, and associated sociocultural impacts for the community of Kaktovik, would be reduced under Alternative D.").
[1173] *Id*. at 3-359.
[1174] *Id*. at 3-359 to 60.
[1175] *See, e.g*., *id*.at 3-360.
[1176] *Id*. at 3-354.
[1177] *Id*. at 3-355.
[1178] *Id*. at 3-364.

reasonably foreseeable future actions (RFFAs) are likely to touch off such tension and supplying information about which communities are likely to be impacted.

The draft SEIS also fails to include relevant RFFAs. First, the agencies do not address RFFAs further from the program area that are likely to impact important subsistence resources such as caribou.[1179] Adequate analysis will require accounting for RFFAs impacting the Porcupine Caribou Herd and Central Arctic Herd throughout their migratory ranges. The draft SEIS also states that "other" RFFAS including "new permanent and seasonal roads" may impact sociocultural systems.[1180] This is too general to support meaningful analysis. Roads present significant sociocultural impacts including shifting traditional hunting areas, altering and destroying vegetation, and deflecting and injuring wildlife. Industrial roads that are eventually made public also pose significant risk to subsistence hunters through increased competition.[1181] These impacts are entirely dependent on the location of a proposed road and cannot be sufficiently addressed with reference to a generalized category. For example, BLM and FWS fail to specifically identify the annual snow road proposed by Kaktovik Inupiat Corporation as an RFFA that is relevant to the agencies' cumulative impact analysis. The proposed road would span from the western Coastal Plain boundary to the community of Kaktovik impacting subsistence resources such as polar bears, birds, fish, and caribou.[1182] In addition, as the application for the road indicates, Kaktovik Inupiat Corporation may seek to build a permanent gravel road; a potential permanent road is not analyzed. To the extent the draft SEIS relies on the analysis of cumulative impacts in the agencies' subsistence section, [1183] that analysis contains many of the same deficiencies.[1184] We therefore urge the agencies to revise their cumulative analysis of sociocultural systems in the final SEIS to include greater specificity and all relevant RFFAs.

P. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ARCHEOLOGICAL AND CULTURAL RESOURCES.

Section 106 of the National Historic Preservation Act (NHPA) requires the BLM to identify historic properties and "take into account the effect" oil and gas leasing on the Coastal Plain will have on such areas.[1185] Any archaeological resources identified must be protected consistent with the Archaeological Resources Protection Act (ARPA) to ensure there is no

[1179] *Id*. at 3-363 to 3-364 (failing to address RFFAs south of the Brooks Range such as the Ambler Road or projects in Canada).

[1180] *Id*.

[1181] *Id*. at 3-354 ("Roads associated with development of the program area are not expected to be publicly accessible; however, if they are eventually opened to the public or if they substantially increase access to visiting hunters, the project could have greater impacts on sociocultural systems for local communities, particularly Kaktovik.").

[1182] *Id*. App. F at F-10.

[1183] *Id*. at 3-365.

[1184] *See supra* Section VI.M.

[1185] 54 U.S.C. § 306108; 36 C.F.R. pt. 800.

"[u]nauthorized excavation, removal, damage, alteration, or defacement of archaeological resources."[1186]

Extractive resource activities, such as mining and drilling, can impact cultural sites causing significant landscape alterations, which can directly affect the physical integrity of archeological sites. This is particularly concerning for Indigenous communities for whom these sites are culturally and spiritually significant. For example, the Gwich'in of Alaska and Canada "would experience cultural and spiritual impacts resulting from any development of the program area".[1187] Along with impacting sacred landscapes, extractive activities can lead to the destruction of sacred sites and artifacts, effectively erasing tangible records of cultural heritage. This loss erodes cultural diversity and hampers our understanding of human history and evolution. In addition to the direct physical impacts, extractive industries can induce indirect effects on cultural sites through environmental changes. For instance, the pollution from these activities can contaminate local ecosystems, affecting the flora and fauna integral to the Indigenous peoples' ways of life and cultural practices. Similarly, the noise and light pollution associated with these industries can disrupt traditional ways of life, further contributing to cultural erosion

Preserving archeological and cultural resources in the Arctic, particularly among the Iñupiat people, is paramount. These resources are invaluable links to the rich cultural heritage and traditions of the Iñupiat community, offering profound insights into their historical journey, spiritual beliefs, and ancestral knowledge. They are integral to their cultural identity and must be safeguarded for present and future generations.

It is also important to recognize that archeological and cultural preservation in the Arctic extends beyond just safeguarding artifacts or sites. It is an essential commitment to honoring Indigenous Peoples' past, respecting their diverse cultural heritage, and ensuring the enduring presence of their traditions and knowledge despite the challenges posed by resource extraction and climate change. By prioritizing the protection of archeological and cultural resources, we can contribute to the resilience and cultural sustainability of the Iñupiat, Inuvialuit, and Gwich'in people and foster a deeper understanding and appreciation of their unique cultural identities for generations to come.

We recognize that BLM and FWS included more information on the cultural use of the Coastal Plain for the Iñupiat, Gwich'in, and Inuvialuit and are glad to see the agencies including this knowledge and information in describing the existing cultural resources.[1188] However, Groups previously raised the lack of baseline information necessary to comply with these mandates.[1189] Groups remain concerned that the draft SEIS still does not provide the information necessary to accurately describe and analyze the impacts to cultural and archaeological resources in a meaningful way. Currently the draft SEIS explains that "vast inland areas of the program area have received little to no systematic investigation for cultural resources"[1190] and that the

[1186] 16 U.S.C. § 470ee(a).
[1187] DSEIS at 3-358.
[1188] *Id.* at 3-279 to 3-283, 3-289.
[1189] 2019 DEIS Comment Letter at 330–32; 2021 Scoping Comment Letter at 184–86.
[1190] DSEIS at 3-276.

absence of Iñupiat and Gwich'in cultural resources "can be attributed to lack of research and documentation rather than that they do not exist."[1191] As the agencies cannot protect unknown sites or analyze the impacts to those sites based on the projected oil and gas activities for each alternative, we incorporate our previous comments here and urge the agencies to complete a full, comprehensive study of the Coastal Plain's cultural archeological and historic resources. This is especially important given that lease stipulations designed to protect areas where cultural resource sites are most likely to occur, contain exceptions allowing for development on a case-by-case basis.[1192] In pursuing comprehensive surveys, the agencies should seek NHPA consultation with all Gwich'in communities along the historic migration path of the Porcupine Caribou Herd and all impacted Iñupiat and Inuvialuit communities as well.[1193]

The NHPA also requires agencies to ensure that properties listed or eligible to be listed on the National Historic Register are preserved to maintain their historic, archaeological, architectural, and cultural values.[1194] The Sacred Place Where Life Begins is a traditional cultural landscape eligible for the National Register of Historic Places that must be considered in the Section 106 process.

Q. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ENVIRONMENTAL JUSTICE COMMUNITIES.

Executive Order No. 12898, issued in 1994, requires that all federal agencies "make achieving environmental justice part of [their] mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of [agency] programs, policies, and activities on minority populations and low-income populations."[1195] President Biden's Executive Order 14008 reaffirmed and strengthened this commitment.[1196] The draft SEIS goes further toward fulfilling this mandate than BLM's previous analysis. We urge the agencies to more accurately describe the tremendous detrimental impacts to communities across the Arctic and Interior — in both Alaska as well as Canada — in the final SEIS by accounting for all phases of oil and gas activities and all relevant impacts with meaningful specificity.

Environmental justice impacts from oil and gas activities on the Coastal Plain would reverberate across the Arctic and the Interior and fall disproportionately on low-income and/or minority populations. BLM substantially failed to acknowledge this reality in its prior EIS by limiting the scope of its analysis to just four communities based on their proximity to the Coastal Plain.[1197] In recognition of the interconnected nature of the region and the migratory nature of

[1191] *Id*. at 3-286.
[1192] *Id*. at 3-287; *Id*. at 2-7–13.
[1193] 36 C.F.R. § 800.8(c)(3).
[1194] 54 U.S.C. § 306102(b)(2).
[1195] E.O. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
[1196] E.O. 14008, Tackling the Climate Crisis at Home and Abroad, §§ 219–23 (Jan. 27, 2021).
[1197] 2019 DEIS Comment Letter at 333–34.

important subsistence species, the draft SEIS takes a broader view. We appreciate that the agencies considered the environmental justice impacts to Kaktovik, Nuiqsut, Arctic Village, and Venetie as well as eighteen other communities beyond the immediate program area that depend upon the Central Arctic and Porcupine Caribou Herds.[1198] It is, however, unclear what the agencies intent is in identifying four primary communities and then 18 additional communities. The basis for the distinction is that the four communities are closest to the program area and have subsistence uses in or near the program area or rely heavily on resources that use the program area. A number of the 18 other identified communities fit that same definition. This is particularly so given that the agencies correctly acknowledge that environmental justice impacts associated with a leasing program for the Coastal Plain must "encompass the social and cultural value of subsistence resources" because caribou calving and bird nesting grounds are sacred to the Gwich'in.[1199] We encourage BLM and FWS to revisit this distinction and question whether it is meaningful to the analysis.

Additionally, while the draft SEIS takes the first step toward considering a broader range of communities (albeit imperfectly), the analysis itself fails to specifically mention the eighteen communities purportedly included in the agencies' analysis. As a result, the analysis is functionally limited to the four communities considered in the previous EIS. In addition, the agencies repeat analytical shortcomings from BLM's prior analysis. First, like BLM's faulty analysis in the prior EIS, the draft SEIS arbitrarily limits the agencies' environmental justice analysis to impacts from post-lease activities.[1200] In so doing, the agencies dramatically underestimated the potential impacts to minority and low-income populations that could result from oil and gas activities on the Coastal Plain including pre-leasing seismic exploration or the impact of leasing itself.[1201] Second, the agencies limited their analysis of social justice impacts to economic, subsistence, sociocultural, and public health impacts.[1202] But adequate analysis requires consideration of other factors that impact affected communities. Relevant impacts that should be included in the final SEIS include impacts to archeological resources, visual resources, acoustics, air quality, fish, birds, and caribou. This analysis should include impacts from all stages of oil and gas activities, including pre-lease and off-lease seismic if the agencies intend to allow for such activities. As these issues have been addressed in prior comments, we fully incorporate those comments here.[1203]

Concerningly, the draft SEIS reduces the level of specificity found in BLM's prior analysis. For example, in the final EIS, BLM concluded:

> [c]ommunities that are most likely to experience negative sociocultural impacts would be those that experience impacts on subsistence, while not having increased income or employment opportunities, such as Arctic Village and Venetie; therefore,

[1198] DSEIS at 3-367.
[1199] *Id*. 1 at 3-368.
[1200] *Id*. at 3-369.
[1201] *Id*. at 3-358 (explaining The Gwich'in "would experience cultural and spiritual impacts resulting from any development of the program area").
[1202] *Id*. at 3-370.
[1203] 2019 DEIS Comment Letter at 332–36; 2021 Scoping Comment Letter at 186–88.

the action alternatives would constitute a disproportionate, adverse impact on the environmental justice communities of Arctic Village and Venetie.[1204]

A similar passage in the draft SEIS draws the same conclusion but fails to identify the communities likely to experience disproportionate adverse impacts.[1205] This is problematic. Taking a hard look at social justice impacts requires the agencies to actually draw conclusions about which communities are expected to be impacted. If the intent is to be more inclusive, that is not readily apparent given the lack of analysis specific to other communities. In addition, this approach conflicts with CEQ guidance advising agencies to "elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or environmental effect" and "carefully consider community views in developing and implementing mitigation strategies."[1206] Without actually identifying impacted communities, the agencies cannot fulfill these obligations.

The analysis of impacts between action alternatives relies on the acreage leases, stipulations, and ROPs as a measure of the impacts.[1207] The basic analysis is that Alternative B will have the most impacts, followed by Alternative C, and then Alternative D. Such generalized statements are not an analysis. Additionally, the discussion relies on various stipulations and ROPs as the basis for the assertion that there will be fewer impacts under Alternatives C and D without any analysis. Nor is there an analysis of the likelihood of those stipulations and ROPs to be waived, excepted, or modified. BLM and FWS should undertake a more robust analysis of the environmental justice impacts in the final SEIS.

There is a similar lack of specificity in the agencies' cumulative analysis which lays out a summary of impacts relevant to economic, subsistence, sociocultural, and public health resources. The summaries provided do not include a list of the reasonably foreseeable future actions (RFFAs) considered for each relevant resource. There is also no indication which of the RFFAs listed in Appendix F might be relevant to environmental justice. In addition, the analysis does not indicate which communities are likely to experience negative environmental justice impacts. For example, in the section on cumulative analysis of public health resources, the agencies address impacts to Kaktovik specifically and indicate that the community is likely to experience increased revenues to support helpful infrastructure.[1208] However, this section does not indicate that other communities are not expected to realize this positive impact. In fact, no other community is specifically addressed in this section. This is significant because, while Kaktovik may benefit from oil and gas revenues, many other communities — including all of the

[1204] FSEIS at 3-287.

[1205] DSEIS at 3-376 ("Communities that are most likely to experience adverse sociocultural impacts would be those that experience disruptions to subsistence activities, including subsistence activities supporting mixed cash/subsistence economies, while not having increased income or employment opportunities.").

[1206] CEQ, Environmental Justice Guidance Under the National Environmental Policy Act, 1997.

[1207] DSEIS at 3-373 to 3-375.

[1208] *Id*. at 3-377.

YKCA, Arctic Village, and Venetie — will not.[1209] The agencies take a similar approach in the cumulative analysis of economic impacts. That section appears to assert that government revenues would increase in general across impacted communities due to an increase in various tax bases. This is not accurate. Many communities which can and should be specifically identified in this analysis are not expected to realize such benefits because they do not levy taxes.[1210]

In the final SEIS the agencies should revise their analysis of direct, indirect, and cumulative environmental justice impacts to address all stages of oil and gas leasing and meaningfully incorporate analysis of communities that are not in the immediate project area. The analysis should also make information regarding relevant RFFAs more easily accessible and provide adequate specificity regarding the positive and negative environmental justice impacts expected to flow from oil and gas leasing on the Coastal Plain.

R. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON RECREATIONAL USES.

Preservation of wilderness and recreation values are among the original purposes of the Arctic Refuge.[1211] The world-class recreational opportunities on the Coastal Plain are dependent on maintaining the area's primitive settings. A 2009 report based on surveys of Arctic Refuge visitors found that the primary reasons people visit the Refuge are to experience its wilderness character, see wildlife, and experience solitude.[1212] As the CCP recognizes:

> [the] Arctic Refuge provides a superlative setting for a variety of compatible recreational activities, and, consistent with maintaining the wilderness resource values upon which their special character depends, the Service will continue to provide opportunities for visitor access.[1213]

Because these world-class recreational opportunities depend on maintaining the area's primitive recreational settings, the CCP requires minimal management to "emphasize natural,

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[1209] *Id*. at 3-427 ("In contrast to the NSB, the residents of the YKCA as a whole are not expected to experience beneficial economic impacts from the leasing program because areas within Alaska's unorganized borough lack authority to levy taxes. Moreover, Arctic Village and Venetie are not enrolled in a regional Native corporation and do not have ANSCA village corporations. As such, those communities do not receive any increased economic activity associated with resource development or shares therein by ANCSA corporations.")

[1210] *Id*.

[1211] PLO 2214 at 1; *see supra* Section II.A.

[1212] Neal Christensen & Lynette Christensen, Arctic National Wildlife Refuge Visitor Study, p. 16 (2009), available at https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Arctic/PDF/visitorstudy.pdf.

[1213] CCP EIS at 2-16.

unaltered landscapes and natural processes."[1214] Oil and gas development is incompatible with the unique wilderness-dependent recreational values that currently exist throughout the Refuge.

The prior EIS failed to include a thorough analysis of the reasonably foreseeable direct, indirect, and cumulative impacts of all phases of an oil and gas program on recreational uses and the Leasing Program did not protect this Coastal Plain purpose. Groups are concerned that the draft SEIS still lacks a thorough analysis of the impacts of an oil and gas program on recreation.

Groups are glad to see BLM and FWS using more recent data on recreation use of the Coastal Plain, which shows an increase in visitor use over time (with the exception of 2020 due to COVID-19).[1215] We encourage the agencies to include additional data from the past two years in the final SEIS. Groups are disappointed that the draft SEIS still does not include information about the direct and indirect economic benefits associated with wilderness-dependent recreation.[1216] Groups encourage the agencies to include this information in the final SEIS to ensure that the analysis fully sets out the impacts to all users from an oil and gas program, as it is likely that recreation and the economy it supports, will decrease significantly if oil and gas development proceeds.

Groups encourage BLM and FWS to include a map of the priority recreation areas within the Coastal Plain.[1217] The location of high-use recreation areas and the oil and gas activities that may be allowed under the various alternatives on or near those areas are a critical piece of information to understand the impacts of the oil and gas program on recreation. Indeed, the agencies recognize that "impacts on recreation is directly related to the proximity and overlap of priority recreation areas within areas available for leasing . . . ."[1218] A map showing the high-use recreation areas with the alternatives proposed will help the public and agencies better understand the impacts to recreation.

Groups are deeply concerned that the impacts analysis suggests that protective measures, such as NSO, CSU, and TL, will minimize impacts.[1219] As explained elsewhere, NSO, CSU, and TL do not prohibit all activities or development, and the stipulations and ROPs that impose the standards can be waived, excepted, or modified. The agencies cannot, therefore, rely on these measures to reduce impacts to recreation. This is particularly so given that the recreation experience depends directly on the ability to experience the setting free from any industrial development or activities. BLM and FWS should revise the impacts analysis to remove assumptions that these measures will reduce recreation impacts.

[1214] CCP ROD at 4 (explaining that minimal management and wilderness recommendation of the Coastal Plain "strives for a more permanent commitment to perpetuating the Refuge's natural conditions and processes and wilderness-associated recreational opportunities").

[1215] DSEIS at 3-379.

[1216] *See also infra* Section VI.V.

[1217] DSEIS at 3-378 to 3-379.

[1218] DSEIS at 3-380.

[1219] *See, e.g.*, DSEIS at 3-384, 3-386 to 3-387.

The cumulative impacts analysis still includes the assumption that "[u]nder all alternatives, there would be an increased demand for recreation use in the program area driven by desirability of recreation in the program area and populations growth."[1220] It is unclear what this assumption is based on, especially where significant degradation of recreational settings can be expected under all action alternatives, which in turn would be expected to lead to decreases in wilderness recreation use and associated economic benefits. There is also still insufficient analysis of the impact of visitor displacement from the program area to other areas within the Arctic Refuge, including the Kongakut River, which is already experiencing visitor pressures and management challenges.[1221] To the extent that BLM and FWS are assuming visitors would tend to not visit or recreate on the Coastal Plain as a result of oil and gas development, but would instead concentrate in other areas of the Arctic Refuge, the agency must analyze the impacts that could occur.

The impacts analysis, including the cumulative impacts analysis, also rely on abandonment and reclamation to decrease or eliminate recreation impacts over time.[1222] This is unsupported, as reclamation of gravel infrastructure is unproven in the Arctic and other oil and gas activities, such as seismic exploration, have had permanent impacts. The final SEIS should remove references to abandonment and reclamation as limiting the duration of impacts.

Overall, a more robust analysis of recreational impacts is necessary to evaluate whether an oil and gas program is consistent with the Coastal Plain's purpose of protecting recreational values. This will necessarily require inclusion of stronger protections based on a visibility analysis and careful examination of recreational use data; non-waivable stipulations for extensive NSO setbacks around river corridors, height restrictions on infrastructure, and mandatory photo simulations of proposed facilities to inform future visual resource assessments. However, we believe that oil and gas development is strictly incompatible with the Coastal Plain's recreation values.

S. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON ARCTIC REFUGE WILDERNESS RESOURCES AND DESIGNATED WILDERNESS.

The Arctic Refuge is distinctive among refuges — it was established specifically to preserve wilderness values. The Coastal Plain has exceptional wilderness values.[1223] The Coastal Plain is a key part of the broader ecosystem and is adjacent and connected to existing Wilderness by means of watersheds, rivers, and migration corridors. The Coastal Plain also provides key habitat for migratory birds and the Porcupine and Central Arctic Caribou Herds and is the most important land denning habitat in the U.S. Arctic for the threatened polar bear — all species which benefit from the undeveloped and undisturbed wilderness character of the area. The Coastal Plain also supports world-class primitive recreational opportunities, which are inextricably intertwined with and dependent on its wilderness character. Wilderness is defined as

[1220] DSEIS at 3-388.
[1221] DSEIS at 3-388.
[1222] *See, e.g.*, DSEIS at 3-383, 3-389.
[1223] *See supra* Section II.A.

untrammeled, undeveloped, natural, having outstanding opportunities for solitude or a primitive and unconfined recreation, over 5,000 acres or sufficient in size to preserve wilderness characters, and containing ecological, geological, or other features of scientific, educational, scenic, or historical value.[1224] In the CCP, FWS explained that wilderness is marked by four main qualities: undeveloped, untrammeled, natural, and providing opportunities for solitude or primitive and unconfined recreation.[1225] The Coastal Plain possesses each of these characteristics in spades.

FWS stated that Wilderness designation for the Coastal Plain:

> [B]est meets the Service's purpose and need to manage the Arctic Refuge to achieve the mission of the National Wildlife Refuge System and to meet the purposes for which the Refuge was established. This alternative conserves the fish, wildlife and habitats of the Arctic Refuge and facilitates subsistence and recreation in settings that emphasize natural, unaltered landscapes and natural processes.[1226]

The agency also stated that:

> [The] Arctic Refuge is nationally recognized for its unique and wide range of arctic and subarctic ecosystems that retain a high degree of biological integrity and natural diversity. The Refuge exemplifies the idea of wilderness embodying tangible and intangible values including natural conditions, natural quiet, wild character, and exceptional opportunities for solitude, adventure, and immersion in the natural world. The Refuge represents deep-rooted American cultural values about frontiers, open spaces, and wilderness. It is one of the finest representations of the wilderness that helped shape our national character and identity.[1227]

To guide its management of the Arctic Refuge, the FWS adopted a goal of "preserv[ing] its wilderness values and characteristics, [and] maintain[ing] its natural state in unaltered condition."[1228] FWS then adopted various objectives to achieve this goal for both the designated Wilderness and wilderness characteristics more broadly.[1229] These goals and objectives are relevant to any oil and gas program that BLM and FWS may adopt and should be expressly considered in the final SEIS.

In selecting Alternative E in the CCP ROD, FWS stated that "[s]election of this Alternative recognizes that [the] Arctic Refuge exemplifies the characteristics of wilderness. Embodying tangible and intangible values, the Refuge's wilderness characteristics include natural conditions, natural quiet, wild character, and exception opportunities for solitude,

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[1224] 16 U.S.C. § 1131(c).
[1225] CCP EIS at 4-14 to 4-15.
[1226] CCP ROD at 3–4, *see also id.* at 12.
[1227] CCP ROD at 11–12.
[1228] CCP EIS at 1 at 2-6.
[1229] CCP EIS at 2-6 to 2-9.

adventure, and immersion."[1230] In advancing the Wilderness recommendation to Congress, the President stated that the Arctic Refuge "is one of the most beautiful, undisturbed places in the world. It is a national treasure and should be permanently protected through legislation for future generations."[1231]

1. The SEIS should accurately describe the exceptional wilderness characteristics of the Coastal Plain.

The 2020 Leasing Program did very little to attempt to protect the Coastal Plain's wilderness characteristic or the designated Wilderness within the Arctic Refuge. The draft SEIS, unfortunately, does not remedy those shortfalls.

To begin, BLM and FWS still fail to account for the wilderness purpose of the Coastal Plain.[1232] As explained above, the three purposes from PLO 2214 apply equally to the Coastal Plain, and PLO 2214 specifically includes preserving wilderness values as a purpose. The agencies must acknowledge this purpose, and also acknowledge that it is a priority purpose for the Coastal Plain. Doing so is an important piece in describing the impacts and magnitude of impacts of an oil and gas program on the wilderness characteristics of the Arctic Refuge and Coastal Plain and considering whether protective measures are sufficient.

The draft SEIS provides a scant three paragraphs on the wilderness characteristics, qualities, and values of the Coastal Plain, the longest of which is a discussion on the law. This does a massive disservice to the public, who will not be informed of the exceptional wilderness characteristics of the area. BLM and FWS should fully and accurately describe the wilderness characteristics in the SEIS. While it is true that the draft SEIS cites to the CCP for its description of wilderness characteristics,[1233] there is no summary or discussion of that document, and no independent description of the wilderness characteristics of the Coastal Plain and Arctic Refuge. This must be revised, and the final SEIS should include a discussion of the findings of all relevant parts of the CCP and the CCP ROD about the wilderness characteristics of the Coastal Plain. BLM and FWS still do not appear to cite to the prior studies that were done on the wilderness values of the Coastal Plain, including the baseline studies in the early 1980s. This information must be included, as it provides support for the enduring wilderness values of the Coastal Plain.

Additionally, the area of the Arctic Refuge to the immediate east and south of the Coastal Plain is designated Wilderness: the Mollie Beattie Wilderness Area.[1234] The Mollie Beattie Wilderness is "the largest, wildest, and most diverse Wilderness in the National Wildlife Refuge System."[1235] It supports a number of uses, such as recreation, subsistence hunting and fishing,

[1230] CCP ROD at 4.

[1231] Ltr. From the President to the Speaker of the House of Representatives and the President of the Senate.

[1232] *See supra* Section II.A

[1233] DSEIS at 3-391 to 3-392.

[1234] ANILCA § 702(3).

[1235] CCP EIS at 4-15.

and scientific research.[1236] BLM and FWS still fail to describe this area and its values. Accurately describing this area is necessary because the agencies must ensure that no oil and gas activities will harm its wilderness characteristics or otherwise run afoul of its management as Wilderness.

Finally, it is entirely unclear what the purpose is of the discussion on ANCSA conveyances in the wilderness characteristics section.[1237] This should be removed in the final SEIS.

2. The final SEIS must accurately analyze the impacts of oil and gas on the wilderness characteristics of the Coastal Plain and the Mollie Beattie Wilderness.

BLM and FWS continue to assert that analysis of potential impacts on wilderness characteristics are qualitative. As Groups explained previously, there are ways to quantify and represent impacts to wilderness.[1238] Groups encourage BLM and FWS to apply such techniques and use them in concert with a visual resources analysis to fully analyze the impacts of the proposed oil and gas program alternatives on wilderness character.

BLM and FWS continue to summarily state that under all alternatives, oil and gas and related activities "would potentially affect an area's naturalness and opportunities for solitude in the program area."[1239] This understates the significant impacts that an oil and gas program would have under any alternative selected, as industrial development is wholly incompatible with wilderness character. The agencies must not downplay these impacts. The 1987 Report found that full or even limited leasing would have major impacts on recreation, wilderness, and esthetics.[1240]

The agencies now recognize that there will be impacts to the Mollie Beattie Wilderness Area but include only the simple statement that "[v]iewing oil and gas development in the Coastal Plain from the wilderness would affect the wilderness experience associated with visiting an area where the imprint of human's work is unnoticeable."[1241] This is far too simplistic of a statement to capture the impact of an oil and gas program to designated Wilderness. Oil and gas activities will have impacts on the Mollie Beattie Wilderness, including sound, light, visual, and natural systems (including but not limited to hydrology, migration, and permafrost). BLM and FWS must analyze the impacts of the proposed oil and gas program on designated Wilderness and be sure that any program that they propose does not degrade the qualities of the Molly Beattie Wilderness Area and its management under ANILCA and the Wilderness Act.

The agencies continue to assert that the impacts to wilderness characteristics will be site-specific. This is incorrect. As the National Research Council (NRC) explained, "[t]he effects of

[1236] CCP EIS at 4-16.
[1237] DSEIS at 3-391 to 3-392.
[1238] 2019 Draft EIS Commet Letter at 341–42.
[1239] DSEIS at 3-399.
[1240] LEIS at 166.
[1241] DSEIS at 3-399.

industrial activities are not limited to the footprint of a structure or to its immediate vicinity; a variety of influences can extend some distance from the actual footprint."[1242] The NRC also stated:

> [t]he common practice of describing the effects of particular projects in terms of the area directly disturbed by roads, pads, pipelines, and other facilities ignores the spreading character of oil development on the North Slope and the consequences of this to wildland values. All of these effects result in the erosion of wildland values over an area far exceeding the area directly affected.[1243]

It the final SEIS, the agencies should recognize that the impacts to wilderness characteristics will occur far beyond specific areas where activities may occur.

It is incredibly problematic that the agencies continue to rely on NSO, CSU, or TLs to reduce impacts to wilderness characteristics, and as a way to describe the impacts as different between the alternatives. This is a faulty premise. As described above, the NSO limitation is questionable in terms of its ability to protect areas given the potential waivers, exceptions, and modifications that may be allowed, whether the ROW provision would mandate access in all NSO areas, and the fact that activities like seismic exploration and exploratory drilling may still be allowed in NSO areas. BLM and FWS simply cannot rely on NSO stipulations to protect wilderness characteristics. Reliance on CSUs is problematic because those do not prevent all infrastructure or activities.[1244] Reliance on timing limitations to protect wilderness characteristics is even more off base. Timing limitations do not prevent the development of an area nor on use during a specific time of year; at most they limit use of infrastructure at certain times while still allowing the areas to be fully developed. BLM and FWS must accurately describe the impacts to wilderness characteristics given the likely development that will occur under each alternative and cannot simply point to NSO, CSU, or TLs as reducing impacts.

Regarding BLM and FWS's analysis of the alternatives, the agencies generally state that there will be the most impacts for Alternative B, fewer impacts for Alternative C, and the fewest impacts for Alternative D.[1245] The agencies' basic recognition that there will be greater impacts from one alternative versus another, and that all will have greater impacts than the no action alternative is not an analysis. The agencies must meaningfully engage in an analysis based on the RFD scenario for that alternative and the ability to grant waivers, exceptions, and modifications to stipulations and ROPs. BLM and FWS cannot punt the analysis of the degree and intensity of

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[1242] NRS Report 9–11 ("The effects of North Slope industrial development on the physical and biotic environments and on the human societies that live there have accumulated, despite considerable efforts by the petroleum industry and regulatory agencies to minimize them… Continued expansion is certain to exacerbate some existing effects and to generate new ones.").

[1243] *Id*. at 148.

[1244] *See, e.g.*, DSEIS at 2-16 (not allowing CPFs but allowing well pads, roads, airstrips, and pipelines in CSU areas).

[1245] DSEIS at 3-399 to 3-400.

impacts to wilderness characteristics to the APD phase of development; the agencies must do that analysis now.[1246]

BLM and FWS's cumulative impacts analysis is also lacking. It makes no mention of the proposed snow road from the western boundary of the Arctic Refuge to the community of Kaktovik, but that project in conjunction with the oil and gas program would have major impacts to wilderness characteristics. This must be thoroughly analyzed in the final SEIS.

Finally, the agencies propose one stipulation to protect the Mollie Beattie Wilderness, which requires an NSO buffer of three miles from the Wilderness boundary and flights to remain above 2,000 feet within 3 miles of the boundary for Alternative C, and additionally no leasing within 3 miles of the Wilderness boundary under Alternative D.[1247] As Groups previously explained, a 3-mile buffer is insufficient to protect wilderness values in the Mollie Beattie Wilderness under any alternatives and regardless of where development is located.[1248] For instance, a simple viewshed analysis demonstrates that infrastructure of any height (or seismic exploration grid lines on the tundra) located across a significant majority of the Coastal Plain would be visible from highpoints within the Mollie Beattie Wilderness.[1249] More stringent protections must be put in place to ensure that the oil and gas program does not degrade the qualities of the Wilderness and or run afoul of management under ANILCA and the Wilderness Act.

T. COMPLIANCE WITH WILD AND SCENIC RIVERS ACT REQUIREMENTS AND PROTECTION OF THE COASTAL PLAIN'S RIVERS.

BLM and FWS's draft SEIS fails to adequately consider the impacts of oil and gas activities on available for addition to the National Wild and Scenic Rivers System or to protect these rivers. Congress passed the Wild and Scenic Rivers Act of 1968 to "protect[] for the benefit and enjoyment of present and future generations" selected Wild rivers that "possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values."[1250] To qualify for inclusion in the Wild and Scenic Rivers system, a river must first be a "free-flowing stream" and the adjacent land must possess at least one outstandingly remarkable value (ORV).[1251] BLM and FWS were required to consider for recommendation all suitable rivers located within the Arctic Refuge in the Wild and Scenic Rivers System in the leasing EIS and to ensure that the proposed project would protect their values. Groups raised BLM and FWS's insufficient protections of the Coastal Plain's eligible rivers ORVs during the prior EIS process.[1252] Unfortunately, the agencies' efforts do not meet

[1246] DSEIS at 3-399; *see supra* Section V.
[1247] DSEIS at 2-22.
[1248] 2019 DEIS Comment Letter at 344.
[1249] *See infra* Section VI.U & viewshed analysis submitted with 2019 DEIS Comment Letter.
[1250] 16 U.S.C. § 1271.
[1251] 16 U.S.C. §§ 1273(b), 1271.
[1252] 2019 DEIS Comment Letter at 344–47.

Wild and Scenic Rivers Act requirements and fail to adequately protect the Coastal Plain rivers' ORVs.

The Wild and Scenic Rivers Act requires management of eligible rivers to protect and maintain their current values.[1253] The Wild and Scenic Rivers Act mandates that agencies protect the characteristics of rivers that were found to be eligible by utilizing existing management authorities.[1254] Such characteristics include a river's free-flowing condition, water quality, and ORVs.[1255] Agencies must ensure that their actions meet the non-degradation and enhancement standards as set forth in Section 10(a) of the Wild and Scenic Rivers Act.[1256]

There are four rivers that BLM and FWS were required to protect as eligible rivers, but failed to do so: the Canning River, the Hulahula River, the Jago River, and the Okpilak river. The Canning River has cultural, wildlife, fish, and recreational ORVs. The Canning's cultural ORV is based on both contemporary and historical use: many Indigenous peoples have used the river for thousands of years for harvest and trade, the river hosts an abundance of archaeological sites,[1257] and the Canning is used by modern Iñupiat intensively for subsistence purposes.[1258] The Canning River's wildlife values stem from the river's support of migratory birds (shorebirds, tundra swans, and the Arctic Refuge's only nesting sites of Sabrine's gulls), over fifty miles of critical polar bear denning habitat, muskoxen, grizzly bears, wolves, wolverines, and provides calving grounds for the Central Arctic Caribou Herd and use for the Porcupine Caribou Herd.[1259] Similarly, the river's fish ORV is based on the river's fish diversity, and high "densities and overwintering, spawning, and rearing populations of Arctic grayling, Arctic char, round whitefish, burbot, and a population of anadromous Dolly Varden that is genetically distinct compared to populations from other nearby drainages."[1260] In addition, the Canning's round whitefish and burbot are of particular importance to Kaktovik subsistence users.[1261] For recreation, the Canning is the longest north flowing river in the Arctic Refuge, and "offers a safe experience for less experienced boaters and opportunities for wildlife viewing, fishing, hunting, trapping, hiking, and photography."[1262]

The Hulahula River has recreational and cultural ORVs. Culturally, the Hulahula was used for trade and travel. The Hulahula is "identified as having important cultural values by both the Iñupiat and Gwich'in" and "the entire river corridor is intensively used by the Iñupiat people

[1253] 16 U.S.C. §§ 1273(b); CCP EIS App. I at 1.
[1254] CCP EIS App. I at 7.
[1255] *Id.* at 25.
[1256] *Id.* at 28–29; 16 U.S.C. § 1281(a) ("Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system.").
[1257] CCP EIS App. I at 49.
[1258] *Id*.
[1259] *Id*. at 49–50.
[1260] *Id*. at 50.
[1261] *Id*. at 51, 53.
[1262] *Id*. at 53.

for a variety of subsistence purposes."[1263] Recreationally, the Hulahula "offers an unparalleled northern arctic recreational experience. The river is fast and challenging . . . [r]afters, kayakers, hunters, and hikers from around the world pursue adventure trips on the Hulahula. The average group size is 4.6, and the average trip length is 8.6 days. . . . Some guide companies also offer winter trips that include winter camping and cross-country skiing."[1264] The CCP found the Hulahula suitable as one of the top Coastal Plain rivers threatened by oil and gas development[1265] and as the second most visited river.[1266]

The Jago River has outstandingly remarkable wildlife values, with "many string bogs and seepage areas laced with fens and floodplains . . . support[ing] heavy seasonal use by wildlife, including the Porcupine and Central Arctic caribou herds, wolves, muskoxen, and bears."[1267] The Jago River was "a high density calving area (50 percent of calving) in almost all (13) of the 17 years of a long-term research project . . . boasts the longest segment (61.8 miles) of polar bear denning habitat on the Refuge"[1268] and is also important to snow geese.[1269]

The Okpilak River has scenic and geologic values and is on the Arctic Refuge's most active glacial area "fed by hanging glaciers that appear precariously attached to stark, steep, rocky mountain sides . . . . [T]he river's headwaters are found in two different glaciers in two different valleys."[1270] The geologic values include a 4.4 mile, 40-foot deep postglacial canyon, massive lateral moraines, and colluvial cones reaching 490 feet.[1271] The scenic ORV is based on the river's high mountain views, including snow-capped Mt. Michelson, lateral moraines, expansive views of the Coastal Plain, and the Coastal Plain's only true "hot springs [that] allow soakers to watch Dall's sheep and caribou while looking over the floodplain."[1272]

The CCP points to oil and gas development on the Canning, Hulahula, Jago, and Okpilak rivers as likely to have negative impacts on their recreational ORVs.[1273] The CCP indicates "noise and sight pollution, increased air traffic, and visible human influence would negatively affect the remoteness and solitude" of these areas.[1274] As a result, FWS found the Hulahula eligible for listing and the Canning, Jago, and Okpilak protected through other mechanisms, primarily through current Arctic Refuge protections and FWS regulations.[1275]

[1263] *Id*. at 74.
[1264] *Id*. at 74, 77.
[1265] *Id*. at 78.
[1266] *Id*. at 81.
[1267] *Id*.
[1268] *Id*.
[1269] *Id*. at 82, 85 (internal citations omitted).
[1270] *Id*. at 96.
[1271] *Id*.
[1272] *Id*.
[1273] *Id.* at 53, 79, 85, 99.
[1274] *Id.* at 79, 86, 100.
[1275] *Id.* at 57, 81, 88, 102.

BLM does not explain or confront the CCP's findings that there would be negative impacts to ORVs from allowing infrastructure near rivers. If allowing oil and gas development on the Coastal Plain, BLM and FWS must consider impacts to ORVs in light of FWS's management of these rivers and values as set out in the CCP.

All four of the rivers discussed above are eligible for "Wild" river classification, denoting minimal access and development and "represent[ing] vestiges of primitive America."[1276] The draft SEIS only lists the above ORV categories, providing no substantive or individual consideration for how to properly sustain the Canning, Hulahula, Jago, and Okpilak rivers' important ORVs.[1277] The substance of the agencies' analysis of an oil and gas program on the rivers is encapsulated in these two sentences:

> General impacts resulting from oil and gas development in the program area could include potential soil erosion and habitat fragmentation, which could affect cultural, fish, geologic, recreation, scenic, and wildlife ORVs. The degree of impacts on eligible and suitable WSRs would depend on the proximity of development to the river.[1278]

The draft SEIS fails to protect the Coastal Plain's eligible rivers ORVs. The agencies' cursory analysis provides different suggested buffer zones around the high-water marks of each river but does not explain how those buffers protect the specific ORVs for the relevant rivers.[1279] For example, without a visual resources analysis for the eligible rivers, it is unclear how buffers can protect scenery- and recreation-dependent ORVs.[1280] BLM and FWS merely asserted compliance with state water quality standards and "[m]anagement actions that prohibit surface-disturbing activities, including [no surface occupancy], [controlled surface use], and [timing limitations] near the WSRs would provide varying protections for ORVs."[1281]

Contrary to maintaining the Wild classification, the draft SEIS acknowledges infrastructure could degrade values.[1282] The draft SEIS states "[i]nfrastructure that is installed within 0.5 mile of any eligible or suitable river, such as bridges, has the potential to downgrade a river's wild classification to that of a recreational classification, which allows some development."[1283] Degrading a river's classification, as BLM and FWS recognize could occur from nearby infrastructure, is not consistent with maintaining ORVs.[1284] While each alternative contains setbacks, there is no further analysis of the level of protections provided by each. The final SEIS should more thoroughly analyze the impacts of an oil and gas program on the

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[1276] *Id.* § 1273(b)(1); CCP EIS App. I at 2.
[1277] *Id.* at 3-391.
[1278] DSEIS at 3-395.
[1279] *Id.* at 3-396 to -397.
[1280] *See* infra Section V.U.
[1281] *Id.* (internal citation omitted).
[1282] *Id.*
[1283] *Id.*
[1284] 16 U.S.C. §§ 1273(b).

individual rivers and their ORVs, and whether stronger and additional protections need to be adopted to protect them.

While the draft SEIS tries to point to the lease stipulations and required operating procedures (ROPs) as means to protect the WSR designations of the rivers, Groups are concerned that the lease stipulations and ROPs fall short.

Lease Stipulation 1 in the draft SEIS, under all alternatives, allows for "[e]ssential pipelines and road crossings . . . through setback areas in accordance with Section 20001(c)(2) of PL 115-97." Gravel mines "could be permitted in setback areas," for the Hulahula, Canning, Okpilak, and Jago Rivers.[1285] Gravel mining cannot be legally allowed in the Refuge.[1286] Lease Stipulation 1 goes on to allow exceptions to the setback requirements, provided that the operator can demonstrate that "(1) there are no practicable alternatives to locating facilities in these areas; (2) the proposed actions would maintain or enhance resource functions; and (3) permanent facilities are designed to withstand a 100-year flood."[1287] Allowing development pipelines and roads across any of these rivers is inconsistent with protecting any ORV.[1288]

ROP 35 is meant to "[e]nsure ongoing and long-term reclamation of land to its previous condition and use" and describes leaseholder requirements for abandonment of "[o]il and gas infrastructure — including gravel pads, roads, airstrips, wells and production facilities."[1289] Reclamation is totally unproven in the Arctic, so relying on ROP 35 to protect these rivers is at best questionable and likely fallacious.[1290] ROP 35 also references restoring Wild and Scenic River eligibility upon abandonment.[1291] While that is important, it is also troubling since that eligibility should not have been compromised in the first place.

U. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON VISUAL AND AESTHETIC RESOURCES.

Many of the socio-economic benefits of the Coastal Plain — including those stemming from its unique, wilderness-dependent recreational values — are integrally connected to the scenic integrity of its natural and undisturbed visual resources. Indeed, two of the three original purposes for the Arctic National Wildlife Range were to preserve its unique wilderness and recreational values.[1292] People visit and value the Arctic Refuge and its Coastal Plain in large part because of its undeveloped character and aesthetics. Oil and gas development is simply incompatible with maintaining those visual resources — and the associated wilderness and recreational values of the Coastal Plain. The draft SEIS analysis of visual resource impacts includes some important improvements over the 2019 DEIS, including a qualitative effort at

[1285] *Id.* at 2-7.
[1286] *See supra* Section VI.E; 16 U.S.C. § 3142(i).
[1287] DSEIS at 2-7 to 2-8.
[1288] 16 U.S.C. § 1273(b)(1).
[1289] DSEIS at 2-67 to 2-68.
[1290] *See supra* Section IV.B.5.
[1291] DSEIS at 2-26 to 2-68.
[1292] PLO 2214 at 1.

visual resource inventory, acknowledgment of the lasting adverse impacts of 2D seismic decades after exploration activities, and the conclusion that "development of oil and gas in the program area would initiate an irreversible loss of visual resource quality."[1293] Nevertheless, the analysis remains severely hamstrung by the agencies' ongoing failure to conduct a simple viewshed analysis.

As Groups' pointed out in response to the previous EIS and at scoping, the SEIS must include a thorough analysis of visual resource impacts associated with oil and gas development through a visibility or viewshed analysis that forecasts the extent and severity of impacts on visual resources based on the topography of the program area, locations of visitor use (or, as the draft SEIS now identifies, areas of public concern for scenic quality, including "known travel routes (especially rivers), areas of human habitation, areas of traditional use, and areas near Native allotments"[1294]), and general characteristics of anticipated infrastructure.[1295] Such an analysis can readily be prepared using established and scientifically sound methodologies, even with limited information about the precise location of future infrastructure. Indeed, GIS specialist Stuart Smith of True North GIS, LLC prepared such an analysis for the Coastal Plain and submitted it as comments on the 2019 Leasing Program DEIS.[1296] As Mr. Smith's comments concluded: "BLM should fully consider the visibility analysis [he] prepared and ensure that the public and decision-makers are aware of the extensive and significant viewshed impacts associated with development." Without such analysis, the agencies cannot adequately analyze the extent and severity of anticipated visual impacts by alternative, and therefore cannot demonstrate compliance with Refuge recreation and wilderness purposes that are dependent on scenic integrity. Unfortunately, the agencies fail to conduct their own comparable visibility analysis or incorporate Mr. Smith's analysis in the draft SEIS, and then utilize that information to compare and formulate alternatives that avoid or minimize adverse impacts to visual resources — and therefore to the recreational settings and wilderness characteristics and purposes of the Arctic Refuge Coastal Plain.

Mr. Smith's analysis shows that visual resource impacts from surface disturbing oil and gas activities and infrastructure are likely to be extensive, regardless of where infrastructure is ultimately located. This is due to the area's topography and narrow geography between the Brooks Range and the Beaufort Sea, bisected by several major river corridors on which most recreational visitors depend. For instance, Mr. Smith's analysis shows that it would be virtually impossible to locate derricks and towers over 30 meters tall anywhere on the Coastal Plain without having them be visible from six major recreational river corridors.[1297] To avoid viewshed impacts from those six river corridors, infrastructure of 15 meters or less in height would need to be located within a small 12% of the Coastal Plain.[1298] When it comes to infrastructure visible from highpoints located within the Mollie Beattie Wilderness to the south,

[1293] DSEIS at 3-401 to 411.

[1294] *Id.* at 3-403.

[1295] 2019 DEIS Comment Letter at 354–58; 2021 Scoping Comment Letter at 196–97.

[1296] Our DEIS comments incorporated that analysis by reference. *See* 2019 DEIS Comment Letter, App. D (Smith viewshed analysis).

[1297] *See id.* (Smith viewshed analysis at Figure 11).

[1298] *See id*. (Smith viewshed analysis at Figure 11).

infrastructure of any height (or seismic gridlines and other ground-level disturbance of fragile tundra vegetation) would generally be visible no matter where it is located,[1299] thereby degrading wilderness character.[1300] The visibility analysis also shows that infrastructure of any height located across nearly one-third of the Coastal Plain would be visible from Kaktovik, thereby impacting the aesthetics and experience of residents and subsistence users, the growing number of tourists who visit Kaktovik to view polar bears, and others entering or exiting the Coastal Plain via that community and its airport.[1301]

By failing to conduct or incorporate such an analysis, the agencies remain unable to develop and consider alternatives and associated mitigation measures that would avoid or minimize viewshed impacts. At a minimum, the agencies' statement that they will conduct viewshed analyses and photo-simulations at the project level[1302] must be incorporated into a binding stipulation or required operating procedure that requires the lessee and agencies to prepare and then utilize the results of those analyses to prepare a visual resource management plan that avoids, to the maximum extent possible, and minimizes aesthetic impacts as conditions of approval.

V. ANALYSIS OF THE ECONOMIC IMPACTS OF AN OIL AND GAS PROGRAM.

As Groups pointed out at scoping, proponents of Arctic Refuge oil and gas development commonly make inaccurate and misleading claims around the economic benefits of development.[1303] Given the enormous risks to wildlife, ecosystems, and human welfare that development would impose, it is critical that the final SEIS closely, carefully, and critically examine those asserted benefits. The 2019 EIS entirely failed to do so, as explained in the detailed technical review prepared by Key-Log Economics.[1304] Unfortunately, the draft SEIS perpetuates many of these problems. The agencies' economic impact analysis is still incomplete, and the chosen methods and framing lead to misleading takeaways. Most significantly, the agencies should not include quantitative estimates in the economic impact analysis unless they include both the potential benefits and the costs to society of a given level of development. At a minimum, the final SEIS must explicitly acknowledge the issues detailed below and include clarifying language that reported economic benefits associated with the action alternatives represent high-end estimates and do not account for foreseeable economic costs to society.

1. Failure to include economic costs to society in quantitative estimates gives a false impression that maximizing development is cost-justified.

In the draft SEIS economic impact analysis, the agencies only quantify jobs, income, and government revenues that may be associated directly or indirectly from a hypothetical

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[1299] *See id.* (Smith viewshed analysis at Figure 12).
[1300] *See supra* Section VI.S
[1301] *See* 2019 DEIS Comment Letter, App. D (Smith viewshed analysis at Figure 13).
[1302] DSEIS at 3-404.
[1303] 2021 Scoping Comment Letter at 197–98.
[1304] 2019 DEIS Comment Letter, App. C.

unconstrained, high-development scenario. Because the analysis does not also quantify the corresponding environmental and social costs (e.g., harm to the physical environment, biological resources, cultural resources, subsistence, recreation, public health, climate, etc.) of that hypothetical level of development, the public may mistakenly conclude that the economic benefit of unconstrained development (closest to Alt. B) would make oil and gas leasing and development of the Coastal Plain cost-justified.

As Groups requested at scoping, the agencies should prepare a full quantitative analysis of the significant non-market ecosystem service values and other socio-economic benefits of the Coastal Plain to inform a true cost-benefit analysis. Absent such an analysis and at a minimum, the final SEIS must provide clear caveats to ensure its incomplete quantitative estimates of economic benefits are not misinterpreted. This should include a clarifying statement at the beginning of the economic impact analysis and next to any of the economic impact estimate summary tables[1305] such as:

> This SEIS fails to conduct a net benefits analysis and therefore should not be interpreted as demonstrating that the economic benefits of oil and gas development would necessarily exceed the costs to society.

The final SEIS should also, at a minimum, identify the types of environmental and social costs that the agencies fail to quantitatively include in the analysis.

2. The Draft SEIS framing and chosen methods provide misleading takeaways regarding the potential economic benefits of maximizing development.

In addition to omitting the economic costs associated with development, the draft SEIS uses misleading framing and problematic methodologies that further inflate the supposed economic benefits associated with development. First, the draft SEIS does not report estimated *net changes* in jobs, labor income, or government revenues from a hypothetical unconstrained development scenario; instead, it reports an estimated change in Coastal Plain oil and gas development activities' *contribution to* total U.S. jobs, labor income, and government revenues. This is a vitally important distinction. For example, the agencies state that "Future exploration, development, and production activities in the program area for the two anchor fields and their associated satellite fields are estimated **to generate** about 250 direct jobs per year during exploration activities, 2,260 direct jobs per year during the development phase, and 770 direct jobs per year during the production phase."[1306] In other words, the agencies frame the estimates as if such development activities would be creating *additional* jobs, income, and government revenue — not as an estimated net difference from the baseline of no development in the program area.

[1305] DSEIS Tables 3-56, 3-57, and 3-58; *id.* App. B, Tables B-6, B-7, and B-8.

[1306] DSEIS at 3-424 (emphasis added); *see also id.* App. B at B-27 ("Table B-6, below, estimates the number of direct and indirect **jobs that would be created because** of potential future exploration, development, and production in the Coastal Plain. Direct and indirect **income projected to be created by** potential future Coastal Plain development is shown in Table B-7… ." (emphasis added)).

This approach is highly misleading, as many of the jobs and subsequent labor income that the agencies report would still occur absent development in the program area; they would just come from different locations and/or different industries. Jobs, especially in the energy sector, are constantly shifting across regions and economic sectors — and between energy sub-sectors, particularly during energy transitions. The agencies' analysis does not appear to account for this reality. Most oil industry workers not working in new hypothetical development in the Arctic Refuge will be able to find jobs elsewhere, meaning a different sector would claim the same "contributions" to jobs and income. In addition to ongoing labor demand for workers within the oil and gas industry in the near term from existing oil fields in the United States, going forward there is also high workforce transferability to adjacent energy sectors including in renewables.[1307]

Second, the agencies use multipliers that exaggerate development impact on labor and income. To model both direct and indirect/induced employment and income effects, the draft SEIS uses an input-output model.[1308] Economists have found that using input-output models that rely on assumed economic multipliers significantly overestimate impacts because they fail to account for how markets work in reality by assuming fixed prices and no substitution between factor inputs, often resulting in misleading and biased claims. For example, economist Jeremy G. Weber found that input-output models overestimated the employment impacts of the shale gas boom in Pennsylvania by over 20 times the actual gain in employment.[1309] A 2015 review of research methods to estimate the socioeconomic impacts of the shale boom led by David Fleming reports that "although a very popular method employed by industry and governments to measure economic impacts, [input-output] models can easily provide misguided results, especially in the context of resource extraction activity."[1310]

[1307] A 2021 analysis of BLS data by the Center for Economic and Policy Research estimates that around 40% of those employed in the U.S. fossil fuel industry have skills that directly transfer to work in other industries without the need for additional training. Furthermore, of the workers with skills deemed "non-transferable," nearly half are in construction and extraction occupations with skills that can very likely be transferred to other industries with some training. Baker, D. & Lee, A., Center for Economic and Policy Research, "The Employment Impact of Curtailing Fossil Fuel Use" (May 26, 2021), *available at* https://cepr.net/report/the-employment-impact-of-curtailing-fossil-fuel-use/.

[1308] DSEIS at 3-423 ("The IMPLAN input-output model for Alaska was used to estimate the employment and income effects of the various exploration, development, and production activities (MIG, Inc. 2023).").

[1309] Weber, J.G., "The Effects of a Natural Gas Boom on Employment and Income in Colorado, Texas, and Wyoming," *Energy Economics*, 34(5), 1580–1588 at 1587 (2012), *available at* https://doi.org/10.1016/j.eneco.2011.11.01.

[1310] Fleming, D., Komarek, K., Partridge, M., Measham, T., "The Booming Socioeconomic Impacts of Shale: A Review of Findings and Methods in the Empirical Literature," MPRA Paper No. 68487, at 16 (Dec. 2015), *available at* https://mpra.ub.uni-muenchen.de/68487/; *see also* Aldy J., "The Labor Market Impacts of the 2010 Deepwater Horizon Oil Spill and Offshore Oil Drilling Moratorium," *Resources for the Future DP*, 14-27,

To address these issues, the final SEIS must clearly state that the estimates are for Coastal Plain oil and gas development activities' *contribution to* total U.S. jobs, labor income, and government revenues, and not net changes. The agencies must ensure that the final SEIS does not misleadingly imply generation of additional jobs and income that would not otherwise exist absent oil and gas development in the program area. The final SEIS must also include a disclaimer about the tendency for its chosen input-output model methodology to exaggerate job and labor income impacts of oil and gas extraction. The agencies should address how the use of different multipliers or methodologies (such as the use of historic econometrically-derived multipliers) may affect its estimates.

3. *To show the range of uncertainty of economic development potential in the Arctic Refuge, the final SEIS should include a low-development scenario that assumes necessary climate action.*

Given the huge uncertainties of potential oil and gas development in the Coastal Plain, particularly combined with the agencies' decision to only quantify potential economic benefits and not also costs, it is inappropriate to exclusively show results for an unconstrained high-development scenario for the economic impact calculations.[1311] Economic impact calculations in the final SEIS should include a low-development scenario as well. Presumably the agencies could easily utilize the low-development scenario reported for air quality emissions in Appendix Q that assumes "one CPF, four well pads, and associated infrastructure."[1312] However, a more appropriate low-development scenario would also assume necessary climate action to meet climate commitments and achieve climate goals and therefore show the range of uncertainty.

Instead, the agencies assume ongoing high-demand for petroleum products and conduct no sensitivity analysis that assumes lower demand due to existing climate pledges, much less the

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at 26 (Aug. 2014), *available at* https://bit.ly/3c0QXuQ (finding economic and employment projections made by industry, government, and academics during the 2010 production moratorium in the Gulf of Mexico that used regional employment multipliers overestimated the economic and employment impacts by many magnitudes).

[1311] *See* DSEIS at 1-3 ("There is tremendous uncertainty regarding potential exploration and development in the Coastal Plain. **Any development scenario at this point is highly speculative** given that it is unknown whether or where future leases will be issued, whether or where exploratory drilling may occur under leases, and whether or where economically developable oil and gas discoveries may be made. This uncertainty is due in part to the remoteness and lack of previous exploration and development of the Coastal Plain; its harsh environment and challenging engineering considerations; and the extended time it has taken to go from leasing to development in other regions of the North Slope of Alaska, including in the National Petroleum Reserve-Alaska (NPR-A)." (emphasis added)); *id.* at 3-2 ("In making these assumptions, the BLM and USFWS have striven to minimize the chance that the resultant impact analysis would understate potential impacts; therefore, **the hypothetical development scenarios (Appendix B) are intended to represent optimistic high-production, successful discovery, in a situation of favorable market prices.**" (emphasis added)).

[1312] DSEIS App. Q at Q-19 to Q-20.

amount of climate action necessary to be consistent with a chance of keeping global temperatures from rising more than 1.5°C and avoiding the worst impacts of a changing climate. Given the need to rapidly transition away from fossil fuels to meet this target, it is reasonable for the agencies to simulate the expected prospects for drilling in the Coastal Plain and the subsequent economic impacts of development under a scenario consistent with meeting climate targets.

As the U.S. and global economies transition to a low-emissions energy future, the demand for oil (especially from areas not yet leased that have a long lead time) are likely to decline considerably. Global demand for oil is currently around 100 million barrels/day (mb/d). Climate scenarios compatible with keeping temperatures from rising more than 1.5°C project that global oil demand will decline by between 50 to 70 mb/d by 2040 and decline between 75 to 90 mb/d by 2050.[1313] Even scenarios that assume policies and technologies develop according to recent trends that are inadequate to avoid a 1.5°C rise project that global oil demand will decline by between 10 to 40 mb/d by 2040 and by between 30 to 50 mb/d by 2050.[1314] To put things into perspective, the agencies' unconstrained scenario projects that at its peak, the Coastal Plain could produce between 0.1 to 0.2 mb/d.[1315] Global demand for oil will almost certainly be reduced by a lot more than even that high-end assumption of peak production from the Coastal Plain (0.2 mb/d), and there will not be a need for production that would come from areas not yet leased in the Arctic.

This is especially true if assuming a more realistic timeline of development. The agencies assume production begins around 6 years after exploration permits are issued.[1316] In contrast, the International Energy Agency reports in its *World Energy Outlook 2022* that conventional oil and gas development projects that started production since 2010 took 19 years on average between

[1313] Resources for the Future, *2023 Global Energy Outlook*, *available at* https://www.rff.org/publications/reports/global-energy-outlook-2023/ (Scenarios compatible with keeping global temperatures from rising below 2C by 2100 is BP Accel and from rising below 1.5C include: BNEF NZS, BP Net Zero, Equinor Bridges, and IEA NZE. The Reference scenarios include: Exxon-Mobil, IEEJ Reference, and OPEC Reference. Figure 8. World Oil Demand shows the reference scenarios ranging from 100 to 110 mb/d, scenarios compatible with 1C reach 50 to 40 mb/d in 2040 and 20 to 25 mb/d in 2050. (100-50=50 to 110-40=70 mb/d decline in 2040 and 100-25=75 to 110-20=90 mb/d decline in 2050)).

[1314] *Id.* (Figure 8 shows that for evolving policy scenarios (including Equinor Walls, BP New Momentum, BNEF ETS, IEEJ Advanced Technology, and IEA APS) oil demand falls to between 90 and 70 mb/d in 2040 (10 to 40 mb/d below the reference scenarios in 2040) and falls to between 80 and around 58 mb/d in 2050 (for 20 to 52 mb/d below the reference scenarios in 2050)).

[1315] DSEIS App. B at B-10 (To be very conservative, let's assume that both anchor fields that the agencies assume would begin production before 2050 could come online and reach peak production at the same time so that peak production for the entire program area could result in around 0.2 mb/d. The agencies state that they assume two fields would come online by 2050 in the DSEIS at 3-422: "The assumption is that the second anchor field would be discovered and developed several years after the first anchor field and would have four smaller satellite fields that would be developed by 2050 and tie into its CPF.").

[1316] DSEIS App. B at B-11.

receiving permission to explore and first production.[1317] In other words, a comparable increase in the hypothetical timeline of development could push first production from what is currently assumed to be 2032 in the RFD scenario to possibly something more like post 2040/2045 for first production. Moreover, the agencies should factor in the enhanced fiscal risks — including of stranded assets — and costs to industry of pursuing development in the Coastal Plain after 29 global financial institutions, including all major American and Canadian banks, and many insurers have pledged not to finance or insure oil and gas projects in the Arctic.

To appropriately demonstrate the large range of uncertainty, the agencies' economic impact estimates should include a low-development scenario that assumes global oil demand is consistent with meeting climate targets. At a minimum, the final SEIS must qualitatively address the economic feasibility of development in the Coastal Plain under a scenario that assumes global oil demand is consistent with meeting 1.5°C. In addition, the final SEIS should address a more realistic hypothetical timeline for development and address the likely risks of stranded assets if companies pursue leasing and development.

4. The final SEIS must address other deficiencies.

For the economic impact analysis, the draft SEIS states that it estimated by-year production volumes for the hypothetical unconstrained, high-development RFD scenario and that "this information was used to calculate potential royalty payments and other State and the federal government tax payments."[1318] Although any attempt to project potential development activity and production levels for the Coastal Plain is extremely speculative, the agencies must provide the by-year production amounts they assumed for each RFD scenario used in the SEIS in order for the public to evaluate and contextualize subsequent calculations that are directly tied to annual production volumes, such as royalty payments, greenhouse gas emissions, and the social cost of downstream emissions.

Finally, Table 3-57 and Table 3-58 state that the agencies are reporting in 2022 dollars, but the same tables shown in Appendix B (Vol. 3 Tables B-7 and B-8) report in 2017 dollars. This error should be corrected.

W. ANALYSIS OF THE IMPACTS OF AN OIL AND GAS PROGRAM ON PUBLIC HEALTH.

1. Health Impact Assessments.

BLM and FWS must ensure that any future development projects emerging from this analysis require a full health impact assessment (HIA). In at least two locations within the draft SEIS, the agencies state that health impact assessments are expected to be developed for future

[1317] International Energy Agency, *World Energy Outlook 2022* at 41 n.1, *available at* https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf.

[1318] DSEIS at 3-422.

development projects that would require additional NEPA analysis.[1319] HIAs are an internationally recognized way to rigorously assess the health impacts of a proposed impact or development.[1320] In Alaska, HIAs have been completed for ExxonMobil's Point Thomson project and for climate change. These analyses are particularly valuable in rural Alaska where communities have deep connections to the natural environment through socio-cultural systems and subsistence uses.

In the Reserve, specifically in the cases of GMT-1, GMT-2, and Willow, HIAs were requested as part of the environmental impact analysis. In each of these instances, however, HIAs were never completed and the health analysis instead tiered to documents that were over a decade old. The importance of the Coastal Plain to surrounding communities' health and wellbeing cannot be overstated and requires this comprehensive level of analysis.

If there are any future proposed developments, it is imperative that BLM ensures this condition is met for all communities with a connection to the Coastal Plain. The Record of Decision for this analysis should make HIAs a formal requirement of any future actions.

2. Sharing and Social Networks.

Within the "cultural continuity" section, as well as within the subsistence portions of the draft SEIS, the agencies correctly raise the importance of sharing subsistence resources.[1321] BLM and FWS write: "Sharing the harvest is an important objective in subsistence lifestyles; 42 percent of households shared half or more of their harvests with others in the community."[1322] From a public health perspective, however, BLM and FWS fail to describe how sharing fosters strong social networks, and how these social networks are a positive determinant of health for individuals and communities.

BLM and FWS should elaborate on how the social networks surrounding subsistence resources positively contribute to public health benefits in the final SEIS. There is a rich body of academic literature that speaks to the power of social networks as a determinant of health.[1323] In addition to food security, and the associated benefits to nutrition, these networks foster connections, support, and help contribute to cultural identity and mental health.

In addition to describing the positive health benefits of social networks, BLM and FWS must also disclose how social networks may be compromised through an oil and gas program on the Coastal Plain. In the final SEIS, the agencies must connect the potential decline of subsistence resource abundance and availability to how social networks and their health benefits may be diminished.

[1319] DSEIS at 3-431.

[1320] See: Lock, Karen. "Health impact assessment." *Bmj* 320.7246 (2000): 1395-1398.

[1321] DSEIS at 3-434.

[1322] DSEIS at 3-435.

[1323] See: Smith, Kirsten P., and Nicholas A. Christakis. "Social networks and health." *Annu. Rev. Sociol* 34 (2008): 405-429.

VII. ANILCA SECTION 810 ANALYSIS.

Title VIII of ANILCA recognizes that subsistence uses are a public interest and provides a framework to consider and protect subsistence uses in agency decision-making processes.[1324] Pursuant to ANILCA Section 810, actions which would significantly restrict subsistence uses may only be undertaken if they are necessary, involve the minimal amount of public lands necessary, and if the adverse effects to subsistence are minimized.[1325] ANILCA Section 810 consists of a two-tiered process for evaluating subsistence impacts. At the "tier-1" stage, agencies must decide whether to take a proposed action by evaluating "the effect of such use, occupancy, or disposition on subsistence uses and needs, the availability of other lands for the purposes sought to be achieved, and other alternatives which would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes."[1326] As part of this determination, agencies must consider cumulative impacts[1327] and analyze:

> 1) Reductions in the abundance of subsistence resources caused by a decline in the population or amount of harvestable resources;
> 2) Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations, migration, or distribution patterns; and;
> 3) Limitations on access to subsistence resources, including from increased competition for the resources.[1328]

If an activity will not "significantly restrict subsistence uses,"[1329] a Finding of No Significant Restriction is issued and the requirements of ANILCA Section 810 are satisfied. However, if the action would "significantly restrict subsistence uses," a "tier-2" analysis is required.[1330]

Under tier-2, agencies can only adopt a proposed action if the restriction on subsistence is: (a) necessary and consistent with sound public lands management principals; (b) involves the minimal amount of public lands necessary to accomplish the purpose of the use, occupancy or disposition of public lands; and (c) takes reasonable steps to minimize the adverse impacts to subsistence uses and resources from any use.[1331] ANILCA Section 810 imposes procedural requirements as well as substantive restrictions[1332] and agencies must provide notice to local and

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[1324] 16 U.S.C. §§ 3111–3126.

[1325] *Id*. § 3120(a).

[1326] ANILCA § 810(a), 16 U.S.C. § 3120(a); *Hanlon v. Barton*, 470 F. Supp. 1446, 1448 (D. Alaska 1988).

[1327] *Sierra Club v. Penfold*, 664 F. Supp 1299, 1310 (D. Alaska 1897), *aff'd*, *Sierra Club v. Penfold*, 857 F.2d 1307 (9th Cir. 1988).

[1328] State Director, Bureau of Land Mgmt., Instruction Memorandum No. AK-2011-008: Instructions and Policy for Compliance with Section 810 the Alaska National Interest Lands Conservation Act (ANILCA) (Jan. 14, 2010) [hereinafter Instruction Memorandum].

[1329] 16 U.S.C. § 3120(a).

[1330] *Kunaknana v. Clark*, 742 F.2d 1145, 1151 (9th Cit. 1984); *Hanlon*, 470 F. Supp. at 1448.

[1331] 16 U.S.C. § 3120(a)(1)–(3).

[1332] *Sierra Club v. Marsh*, 872 F.2d 497, 502–03 (9th Cir. 1989).

regional councils and hold hearings in potentially affected communities.[1333] Under BLM's guidance, if an action "may" restrict subsistence uses, it must take a precautionary approach and comply with notice and hearing procedures.[1334]

As described below, the agencies' ANILCA Section 810 analysis is still inadequate. It fails to reach a "may significantly restrict" finding for all communities likely to face significantly restricted subsistence uses, relies on an overly narrow analysis, fails to accurately analyze impacts related to caribou, and fails to meaningfully consider cumulative impacts. Many of these issues have been addressed in previous comments because the agencies largely adopted BLM's previous Section 810 analysis in the draft SEIS. As such, we fully incorporate our prior ANILCA Section 810 comments here.[1335]

A. THE AGENCIES MUST EXPAND THEIR "MAY SIGNIFICANTLY RESTRICT" ANILCA 810 FINDING TO INCLUDE ALL COMMUNITIES THAT RELY ON THE PORCUPINE CARIBOU HERD AND CENTRAL ARCTIC CARIBOU HERD.

As addressed at length in previous comments, the Gwich'in of Alaska and Canada are culturally and spiritually connected to the Porcupine Caribou Herd and would be substantially impacted by reduced abundance and availability of the herd as a result of oil and gas leasing.[1336] The stakes of approving an oil and gas leasing program on the Coastal Plain of the Arctic Refuge are high for the Gwich'in as the Porcupine Caribou Herd relies on the Coastal Plain for essential calving, post-calving, and insect relief habitat.[1337] Oil and gas leasing on the Coastal Plain will reduce the abundance of the Porcupine Caribou Herd through increased calf mortality, decreased pregnancy, and diversion from nutrient rich habitat. Industrial oil and gas activities will also disturb and alter traditional migratory paths — thereby reducing the herd's availability to subsistence hunters.

With these impacts in mind, the agencies erred significantly in limiting their "may significantly restrict" finding under ANILCA Section 810 to Kaktovik and only in the cumulative case.[1338] The agencies must explain how this limited finding comports with their findings elsewhere in the draft SEIS regarding the impacts to resources, subsistence, and sociocultural systems. Specifically, the agencies must address their contrary findings that model predicted population declines could have "substantial impacts on communities that rely on the Porcupine Caribou Herd"[1339] and that Kaktovik, Nuiqsut, Arctic Village, Venetie, and other Alaska communities that rely on the Porcupine Caribou Herd and Central Arctic Herd, "could

[1333] 16 U.S.C. § 3120(a).
[1334] Instruction Memorandum at 6-2.
[1335] 2019 DEIS Comment Letter at 396–412; 2021 Scoping Comment Letter at 204–16.
[1336] 2019 DEIS Comment Letter at 398-404.
[1337] *See supra* Section VI.I.
[1338] DSEIS App. E at E-24.
[1339] *Id*. at 3-329.

experience indirect adverse impacts associated with a decline in the abundance or availability of caribou."[1340]

The agencies must also address the significant confusion surrounding their public hearing process in several communities. While the draft SEIS expressly limits the agencies' ANILCA Section 810 "may significantly restrict" finding to Kaktovik, BLM's planning website and announcement of hearings indicates that there will be ANILCA Section 810 hearings in the communities of Arctic Village, Venetie, and Fort Yukon, in addition to Kaktovik. BLM recently explained that the agency has not made a "may significantly restrict" finding for the communities of Arctic Village, Venetie, and Fort Yukon but is holding ANILCA Section 810 hearings in those communities to gather information and avoid future hearings should the agencies find in the final SEIS that subsistence uses and resources may be significantly restricted for additional communities. This process is confusing and we strongly encourage the agencies to amend their preliminary findings to support and explain their decision to hold hearings in these communities.

B. THE AGENCIES MUST EXPAND THE SCOPE OF THEIR ANALYSIS TO INCLUDE ALL IMPACTED COMMUNITIES, RESOURCES, AND STAGES OF AN OIL AND GAS LEASING PROGRAM.

As addressed in detail in previous comments, oil and gas leasing on the Coastal Plain threatens numerous subsistence resources and users and will significantly impact human connections to the land.[1341] Yet, in assessing impacts to subsistence users and resources, BLM and FWS repeat a central shortcoming from BLM's previous analysis by limiting their analysis to just four communities —Kaktovik, Nuiqsut, Arctic Village, and Venetie.[1342] This approach is insufficient. Any change in caribou availability or abundance due to oil and gas activities on the Coastal Plain would impact subsistence uses for seven Canadian user groups and the 22 Alaska study communities.[1343] Each of the 22 study communities have documented customary and traditional uses for either the Porcupine Caribou Herd or Central Arctic Caribou Herd.[1344] Use of caribou among these communities is "with few exceptions. . . high"[1345] and, as addressed above, impacts to the Porcupine Caribou Herd would be particularly harmful to the Gwich'in.[1346] In order to adequately analyze these far reaching impacts, the agencies must expand the number of communities considered in their ANILCA Section 810 analysis.

The agencies also erred in disregarding impacts to important subsistence foods for many communities including birds, waterfowl, moose, grizzly bear, polar bear, and muskoxen.[1347] The agencies limited their analysis to fish, marine mammals (though not polar bears), and caribou because those resources form the majority of wild foods consumed in Kaktovik, Nuiqsut, Arctic

[1340] *Id.* at 3-370.
[1341] 2019 DEIS Comment Letter at 398-404.
[1342] DSEIS App. E at E-3.
[1343] *Id*. at 3-301.
[1344] *Id.* at 3-301.
[1345] *Id.* at 3-302.
[1346] *Id*. App. E at E-21.
[1347] *Id.* at E-3 (limiting ANILCA 810 analysis to fish, marine mammals, and caribou).

Village, and Venetie.[1348] But the agencies cite nothing to support limiting their analysis in this way. Section 810 of ANILCA requires BLM and FWS to consider subsistence impacts stemming from leasing and development in the Coastal Plain and places no geographic restriction on this duty.[1349] As the agencies recognize, such impacts will not be limited to fish, select marine mammals, and caribou. For example, waterfowl are one of the subsistence resources "most likely" to be impacted by oil and gas leasing on the Coastal Plain.[1350] Reduced availability and abundance of waterfowl would impact many communities beyond the program area in addition to residents of Nuiqsut, Arctic Village, and Venetie. [1351] There is no meaningful explanation given for excluding waterfowl from the Section 810 analysis. Impacts to such important subsistence foods must be addressed in the final SEIS because traditional knowledge establishes that the Coastal Plain is vital to their survival.[1352]

The agencies must also expand and clarify their analysis of oil and gas activities. Like the 2020 Leasing Program, the draft SEIS limits the ANILCA Section 810 analysis to post-lease activities[1353] and then, deeming post-lease activities speculative at this stage, defer meaningful impact analysis.[1354] This approach fails to account for significant subsistence impacts from preleasing activities such as seismic exploration if allowed, which could destroy or alter large swaths of vegetation and habitat. It is not possible to meaningfully address subsistence impacts without considering this damage. In addition, deferring analysis of post-leasing activities is inappropriate. The agencies must consider impacts to subsistence use that could occur from all stages of the program now and follow a precautionary approach regarding future impacts rather than circumventing analysis.[1355]

C. THE AGENCIES MUST REVISE THEIR ANALYSIS OF SUBSISTENCE IMPACTS RELATED TO CARIBOU.

The agencies' inclusion of alternative D in the draft SEIS introduces important protections for subsistence users of caribou such as precluding leasing within the Porcupine Caribou Herd's high-use calving area.[1356] This is an important improvement and we urge the agencies to go further in the final SEIS.[1357] However, the agencies have retained much of BLM's previous analysis that failed to account for the full extent of subsistence impacts likely to flow from an oil and gas program. As described below, the analysis fails to fully account for impacts to the Gwich'in and does not comport with Traditional Indigenous knowledge, science, or conclusions reached elsewhere in the draft SEIS.

[1348] *Id*.
[1349] 16 U.S.C.S. § 3120.
[1350] DSEIS at 3-356.
[1351] *Id*. at ES-7.
[1352] *Id*. at 3-316.
[1353] *Id*. App. E at E-2.
[1354] *Id*. (explaining post lease impacts are speculative until BLM receives an "exploration permit, permit to drill, or other authorization that includes site-specific information").
[1355] *See supra* Section IV.B.6
[1356] DSEIS App. E at E-18.
[1357] *See supra* Section IV.B.3.

1. The agencies reach unsupported findings regarding the Porcupine Caribou Herd that dismiss the best available science and Indigenous knowledge.

The conclusion that direct and indirect subsistence impacts to the Porcupine Caribou Herd would not be significant for any alternative is unfounded and must be revised. Traditional Indigenous knowledge indicates that any disturbance to the Porcupine Caribou Herd's calving and nursing grounds will increase calf mortality and seriously impact the herd.[1358] The agencies must explain how their conclusion regarding Alternatives B and C — both of which allow for development within the Porcupine Caribou Herd's high-use calving area[1359] — comports with Traditional Indigenous knowledge. This is particularly true for Alternative B which allows leasing of 22 percent of high-use calving habitat for the Porcupine Caribou Herd, and seismic exploration across the program area.[1360]

The agencies' findings also conflict with the best available science. In the ANILCA Section 810 analysis, BLM and FWS dismiss studies modeling impacts to the Porcupine Caribou Herd's size based on development scenarios in the project area.[1361] This approach is arbitrary. The agencies admit that the population declines predicted by such models could have "substantial impacts on communities that rely on the Porcupine Caribou Herd."[1362] They also recognize such studies as the best available science elsewhere in the draft SEIS.[1363] As such, their findings — that "any day a caribou spends in [the program area] would potentially cause it to be disturbed" and that oil and gas development would lead to a decrease in the PCH's population[1364] — must be incorporated into the final Section 810 analysis.

The agencies' treatment of studies modeling changes in calf survival and population growth under various development scenarios notably departs from their approach elsewhere in the draft SEIS. Section 3.3.4, regarding impacts to caribou, takes a nuanced approach to the various studies,[1365] pointing out some differences in the assumptions underlying prior modeling studies and assumptions in the draft SEIS regarding potential future development but correctly identifying these studies as "the best available quantification of the magnitude of potential

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[1358] DSEIS App. E at E-13 (explaining traditional Gwich'in knowledge indicates "any development in the [Coastal Plain] would have devastating effects on the population of the [Porcupine Caribou Herd]").

[1359] *Id*. at E-16, E-11.

[1360] *Id*. at E-11.

[1361] *Id*. at E-12 ("[T]he lack of support for specific model assumptions in the literature limit the utility of these models when determining whether impacts to subsistence will be significant.").

[1362] *Id*. at 3-329.

[1363] *Id*. at 3-222 (explaining estimates "are based on different assumptions and development scenarios but provide the best available quantification of the magnitude of potential demographic impacts on the Porcupine Caribou Herd that could occur as a result of development.").

[1364] *Id*. App. E at E-12.

[1365] Griffith et al. 2002; Russell and Gunn 2019; Russell et al. 2021.

demographic impacts on the Porcupine Caribou Herd that could occur as a result of development."[1366] But, in the ANILCA Section 810 analysis the agencies concludes "the lack of support for specific model assumptions in the literature limit the utility of these models when determining whether impacts to subsistence will be significant."[1367] While it is always preferable to have every aspect of a model independently validated in the scientific literature, this standard is rarely met and studies often must proceed with reliance on the best available science, as is done in the cited studies. Furthermore, it is striking that no attempts are made by BLM and FWS to conduct their own analysis or estimates. Sufficient time has passed since the FEIS to complete modeling studies using approaches updated from Russell and Gunn or other development impact analyses, [1368] however this was not done. It is not reasonable or scientifically justifiable to simply ignore the modeled estimates of multiple independent studies reporting estimated declines in population size and to conclude without support that population impacts would be negligible.

As a result of dismissing relevant scientific literature, the agencies reach numerous unsupported conclusions. The ANILCA Section 810 analysis concludes that impacts to the Porcupine Caribou Herd's size would not be impacted as a result of maternal displacement, behavior, feeding, and body condition.[1369] Similarly, the agencies conclude "large-scale displacement" leading to decreased abundance of the Porcupine Caribou Herd is unlikely.[1370] These conclusions conflict with scientific literature, Traditional Indigenous knowledge,[1371] and the results of the best-available scientific modeling of population implications of development.[1372] Confusingly, the agencies conclusions also conflict with other statements in the draft SEIS. The agencies conclude elsewhere that "changes in caribou behavior will likely occur as a consequence of disturbance and could result in energetic costs that could have demographic impacts,"[1373] that calving displacement by roads is likely to persist despite repeated exposure,[1374] and that, in the cumulative case, "climate change is expected to change the survival rates and distribution of terrestrial mammals (including caribou)."[1375]

The conclusion in the Section 810 analysis that large-scale shifts in displacement are unlikely also ignores the documented shift in calving distribution of the Central Arctic Herd away from industrial areas.[1376] There are several reasons why the Porcupine Caribou Herd is

[1366] DSEIS at 3-222.
[1367] *Id*. App. E at E-12.
[1368] E.g., Tews et al. 2007; Wilson et al. 2013; Fullman et al. 2021b.
[1369] DSEIS App. E at E-13.
[1370] *Id*. at E-14.
[1371] *Id*. at E-13 ("According to the Gwich'in's knowledge, any development in the program area would have devastating effects on the population of the Porcupine Caribou Herd and other resources, such as migratory birds, that have key habitat in the Arctic Coastal Plain. In addition, there are those among the Iñupiat who report similar knowledge regarding the effects of Arctic Coastal Plain development.").
[1372] *Id*. at E-12.
[1373] *Id*. at 3-221.
[1374] *Id*. at 3-221.
[1375] *Id*. at 3-307.
[1376] Cameron et al. 2002; Wolfe 2000.

expected to react more strongly to development than the Central Arctic Herd. Many of these were also pointed out previously by the USGS.[1377] One major factor, which does not appear to be discussed in the draft SEIS, is that the coastal plain is narrower within the Arctic Refuge compared to the main Central Arctic Herd range,[1378] leaving less room for shifts in space use away from development such as were observed with the Central Arctic Herd.[1379] Another is the different demographic drivers of the Porcupine Caribou Herd and Central Arctic Herd.[1380] The draft SEIS also indicates that the Porcupine Caribou Herd could be subject to hunting from industrial roads in the program area and may be displaced by roads to a greater degree than the Central Arctic Herd as a result.[1381] However, it is not at all clear when or how such hunting may occur.[1382] The degree of increased displacement likely to be observed for the Porcupine Caribou Herd is also not addressed beyond noting it may be larger than the two to three miles typically observe within North Slope oil fields.[1383] These points should be clarified in the final SEIS. Studies have shown that hunting may increase avoidance responses of ungulates to infrastructure.[1384] Indeed, one study found road effects on caribou extended up to 15 km from roads some years during hunting season.[1385] The presence of hunting in the Coastal Plain will create different conditions for the Porcupine Caribou Herd compared to those experienced by the Central Arctic Herd, potentially increasing the effect of displacement from roads and facilities. These, and other differences, make it likely that the Porcupine Caribou Herd will exhibit even stronger reactions to development than the Central Arctic Herd. Since the Central Arctic Herd showed shifts in overall distribution away from development, in addition to persistent patterns of finer scale avoidance of infrastructure and human activity cited above, it is incumbent on BLM and FWS to analyze similar effects for the Porcupine Caribou Herd or to clearly explain why similar patterns are not expected on the Coastal Plain.

Repeatedly in the ANILCA Section 810 analysis the acreage of high-use calving area made available for leasing and surface occupancy is compared to the total acreage of high-use

[1377] Griffith et al. 2002.

[1378] 2019 DEIS Comment Letter App. B at Map 50.

[1379] Cameron et al. 2002; Wolfe 2000.

[1380] Russell and Gunn. 2019.

[1381] DSEIS App. E at E-9 (noting "hunting along roads in the program area could increase the probability of delays or deflections" of the Porcupine Caribou Herd as compared to the Central Arctic Herd).

[1382] *See e.g. Id*. at 3-209 (explaining without further detail that "[s]ome hunting by local residents is likely to occur from roads in the program area"); *see also id*. App. E at E-8 (addressing the possibility of increased caribou displacement "if subsistence hunting occurs from industry roads").

[1383] *Id*. App. E at E-8 ("displacement of approximately 2.49-3.11 miles would be expected in the program area [] with additional displacement if subsistence hunting occurs from industry roads"); *id*. at 3-315 (noting caribou are observed to be displaced around transportation corridors by about 3.11 miles in North Slope oil fields but that "the potential for hunting along road corridors may result in greater displacement distances" in the program area).

[1384] Paton et al. 2017.; Plante et al. 2018.

[1385] Plante et al. 2018.

calving both within and outside of the program area.[1386] This can be misleading, yielding relatively low percentages of occupancy since the leased acres are constrained within the program area but the high-use area is not. If the agencies want to retain the comparison against the total high-use calving area, they should also provide percentages depicting comparison with the area just within the Coastal Plain program area. This would present a more complete picture of what the agencies are doing within the lands that are part of the leasing program as well as in total view across the herd range. The ANILCA Section 810 analysis would also be strengthened by reporting information not just about current usage but predicted usage under climate change scenarios. While there is acknowledgement that "the calving distribution may move farther west in years with warmer springs"[1387] this should be complemented with predictions of a 429% increase in projected suitable habitat in the Coastal Plain program area during calving[1388] and the implications of these shifts.

The agencies' conclusions regarding foraging and movement patterns are also problematic. First, the agencies conclude that none of the action alternatives would reduce forage enough to affect caribou abundance or availability.[1389] But this ignores the science behind why the Porcupine Caribou Herd calves on the Coastal Plain.[1390] Second, the draft SEIS concludes that caribou movement would remain "relatively undisturbed" under development alternatives.[1391] This conclusion is baseless. It also results from incomplete analysis because the draft SEIS focuses on the impacts of direct habitat loss under each alternative but ignores the likely more harmful indirect effects of oil and gas development.[1392] In addition, and as mentioned above, the draft SEIS does not consider impacts from preleasing activities such as seismic exploration which could alter herd movements by destroying or altering vegetation within important habitats for the herd. These impacts must be included in the draft SEIS because changes in the foraging and migration patterns of the Porcupine Caribou Herd will have a significant impact on subsistence activities. The agencies should also revise their assertion that mitigation measures applied in the Reserve will reduce impacts to caribou movement

[1386] *E.g.*, DSEIS App. E at E-11.

[1387] *Id*. at E-11.

[1388] Severson et al. 2021

[1389] DSEIS App. E at E-8, E-15.

[1390] *Id*. at 3-195 (explaining the Porcupine Caribou Herd's Coastal Plain calving grounds have "higher digestible concentrations of nitrogen than in inland areas" and that "the highest forage nitrogen concentrations occur during the post-calving period when peak lactation occurs [] and nutritional demands of parturient caribou are greatest"); *see also id*. at 3-209 (explaining "alternative calving areas next to the Porcupine Caribou Herd's calving grounds contain less high-quality forage [and] higher predator densities" and that calf survival rates are "lower in years when higher proportions of calves were born off the Coastal Plain and when less vegetative biomass [] occurred on the annual calving ground at the time of peak lactation").

[1391] *Id*. App. E at E-15.

[1392] *See e.g*. *Id*. at E-8. ("Caribou abundance or availability and the subsistence use thereof would not likely be affected as a result of direct habitat loss.")

patterns.[1393] Nuiqsut residents reports that caribou movements in their area have changed substantially as a result of development in the NPR-A.[1394]

2. The agencies must revise their analysis of subsistence impacts related to the Central Arctic Herd.

Regarding the Central Arctic Herd, the agencies conclude potential impacts are expected to be low for all action alternatives.[1395] This statement is not justified, nor is it clearly derived from the agencies' caribou analysis in Section 3.3.4. It also ignores recognition elsewhere in the draft SEIS that the Central Arctic Herd uses the western part of the Coastal Plain, in large numbers in some years.[1396] That area has the highest resource potential and is the first place where development is expected under the Reasonably Foreseeable Development Scenario.[1397] While we do not know with certainty the population consequences of the Central Arctic Herd losing access to, or reducing use in, "the only portion of the primary Central Arctic Herd mosquito-relief habitat that does not currently contain some development,"[1398] such an outcome could have severe consequences for the herd and thus needs more thorough consideration. Insect harassment has been shown to have a negative effect on caribou populations,[1399] leading to reduced survival[1400] and lower birth rates in years following high insect activity.[1401] It can also threaten the ability of caribou to replenish depleted body stores, as prolonged exposure to insects can shift lactating female caribou from positive to negative energy balance.[1402] This makes it very important that caribou be able to access insect relief habitat and move between insect relief areas and quality forage habitat as conditions change. Thus, the consequences of potentially losing this access must be given serious consideration.

3. The agencies must revise their analysis of disturbances and mitigation measures aimed at minimizing caribou disturbance.

The ANILCA Section 810 analysis repeats several statements that do not align with the best available science that are addressed more fully above.[1403] These issues include focusing only on vehicle effects at a rate of 15 vehicles per hour, assumptions of habituation, and claims that the motivation to seek insect relief habitat means caribou will be less likely to experience road

[1393] *Id*. at E-11.
[1394] *Id*. at 3-329 (explaining Nuiqsut hunters "report that the caribou herd is remaining farther west due to development activities" and industrial roads are "viewed as causing deflection of caribou").
[1395] *Id*. App. E at E-4.
[1396] *Id*. at 3-217.
[1397] *Id*. App. B at B-14.
[1398] *Id*. at 3-205.
[1399] Dau. 1986.
[1400] Johnson et al. 2022.
[1401] Johnson et al. 2022; National Research Council. 2003.
[1402] Fancy. 1986.
[1403] *See supra* Section VI.I.4.

and traffic effects,[1404] which ignores findings of recent studies that document decreased use of areas near roads by caribou even during the mosquito harassment season[1405] and behavioral responses to traffic in all seasons.[1406] Responses may decrease during insect harassment, but that does not imply a lack of effect. As described above with reference to the relevant literature, all these topics need to be updated to align with the best available scientific information.

The ANILCA Section 810 analysis also asserts that the mitigation measures provided by ROPs 34, 36, and 40 would minimize the effects of aircraft on caribou and caribou hunting, pointing to similar procedures being used in the Reserve as being "generally successful in reducing impacts."[1407] This is unsupported. Indigenous knowledge by residents living in the Reserve continues to report conflict of aircraft with subsistence hunting and caribou behavior.[1408] Furthermore, as noted above the guidelines for aircraft altitudes do not align with FAA guidance for Wildlife Refuges,[1409] increasing concerns about impacts in the sensitive Coastal Plain. These various discrepancies raise questions about the lack of effects assumed by the ANILCA Section 810 analysis and must be addressed in the final SEIS and revised Section 810 analysis.

Another assumption that is not supported is the statement that "lower activity levels resulting from TLs result in lower levels of disturbance to caribou."[1410] While stated as an assertion, this is not clearly demonstrated in the scientific literature and Section 3.3.4, regarding caribou, provides no justification for the effectiveness of timing limitations. Instead, Section 3.3.4 states, "the potential impacts of this alternative [Alternative B] on caribou would depend, in large part, on how well these TLs avoid displacement of calving caribou and impediments to caribou movements during other times of year when caribou are present."[1411] The Section 810 analysis needs to be consistent with the analysis in the draft SEIS regarding the impacts of development on caribou and to clearly cite its sources when making claims, especially if those claims are used to indicate a lack of impact on caribou and subsistence users. This is especially the case given that a report by well-published caribou experts recently stated, "[w]e simply do not know whether… continuing drilling while shutting down construction [Time Limited stipulation] is effective mitigation."[1412] Until effectiveness of mitigation measures to reduce impacts to caribou below a biologically significant level has been clearly demonstrated in the scientific literature, the DSEIS cannot assume they will be effective. The agencies need to update their statements to conform with the best-available science.

D. THE AGENCIES MUST REVISE THEIR ANILCA SECTION 810 CUMULATIVE ANALYSIS.

[1404] DSEIS App. E at E-9.
[1405] Johnson et al. 2020; Prichard et al. 2020; Severson et al. in press.
[1406] Severson et al. in press.
[1407] DSEIS App. E at E-11.
[1408] *See e.g.*, *Id*. at 3-310.
[1409] FAA. 1984.
[1410] DSEIS App. at E-11.
[1411] *Id*. at 3-215.
[1412] Russell and Gunn. 2019 at 92.

Under ANILCA Section 810, "the purpose of the cumulative effects analysis is to determine the effects of the proposed action and alternatives together with other past, present, and reasonably foreseeable future actions."[1413] A "may significantly restrict" finding in the cumulative case triggers the notice, hearing, and determination requirements of ANILCA Section 810(a)."[1414] BLM and FWS's conclusion that Kaktovik is the only community that will experience impacts to subsistence in the cumulative case is contrary to the evidence before the agencies. This finding disregards the broad range of cumulative impacts facing subsistence users and should be revised in the final SEIS. As the issues raised below repeat concerns addressed in prior comments regarding BLM's previous ANILCA Section 810 cumulative analysis, we fully incorporate those comments here.[1415]

Repeating the structure of their direct and indirect ANILCA Section 810 analysis, the agencies cumulative analysis considers just four communities.[1416] As discussed above and in prior comments, this approach overlooks cumulative impacts that will occur in numerous Indigenous communities. Most notably, the agencies substantially misstate and fail to account for impacts to the Gwich'in. The draft SEIS indicates that a decline in abundance of the Porcupine Caribou Herd in the cumulative case would decrease harvest success and amounts for residents of Kaktovik, Arctic Village, and Venetie.[1417] However, the agencies go on to state that "other Gwich'in communities who receive Porcupine Caribou Herd caribou through sharing networks could also experience indirect impacts through a decline in sharing."[1418] This conclusion makes the inaccurate suggestion that Gwich'in communities, beyond those closest to the program area, only utilize the Porcupine Caribou Herd through sharing networks. But, as the agencies recognize, subsistence hunters in many Gwich'in communities rely directly on the Porcupine Caribou Herd.[1419] The agencies must revise their cumulative analysis to account for the reality that oil and gas leasing on the Coastal Plain risks significant subsistence restrictions for all Gwich'in communities.[1420]

The draft SEIS also fails to address relevant reasonably foreseeable future actions (RFFAs). Adequate analysis of impacts to the Gwich'in and other subsistence communities will require accounting for all RFFAs impacting the Porcupine Caribou Herd and Central Arctic Herd throughout their migratory ranges. But the agencies do not address RFFAs beyond the program

[1413] Instruction Memorandum at 7.
[1414] Instruction Memorandum at 7.
[1415] 2019 DEIS Comment Letter at 409–412; 2021 Scoping Comment Letter at 215–16.
[1416] DSEIS App. E at E-19.
[1417] *Id*. at E-21.
[1418] *Id*.
[1419] *Id*. at 3-351 (stating generally that the Gwich'in "rely heavily on the Porcupine Caribou Herd"); *id*. at 3-302 (explaining use of caribou is "high" in the Gwich'in communities of Circle and Eagle as well as Venetie); *id*. at 3-357 (explaining changes in caribou migration and distribution could cause hunters in Fort Yukon, and Gwich'in communities in Canada to "spend[] more time and effort hunting for caribou").
[1420] *Id*. App. E at E-21.

area.[1421] In addition, the agencies fail to identify the annual snow road proposed by Kaktovik Inupiat Corporation as an RFFA that is relevant to the agencies' cumulative impact analysis. The proposed road would span from the western Coastal Plain boundary to the community of Kaktovik impacting subsistence resources such as polar bears, birds, fish, and caribou.[1422] In addition, as the application for the road indicates, Kaktovik Inupiat Corporation may seek to build a permanent gravel road; a potential permanent road is not analyzed. We also note that the agencies have not included analysis of the Point Thomson and Liberty developments in their analysis as addressed in our prior comments.[1423]

The agencies also draw an unclear and questionable conclusion regarding impacts to Nuiqsut. While the agencies purport to limit their ANILCA 810 "may significantly restrict" finding in the cumulative case to Kaktovik, some sections of the cumulative analysis appear to support a similar finding for Nuiqsut.[1424] The failure to formally make such a finding for Nuiqsut must be corrected in the final SEIS. As the agencies recognize, subsistence impacts "due to development in the vicinity of Nuiqsut have already been found to be potentially significant."[1425] It is therefore unclear how the agencies reached the conclusion that further impacts to caribou including increased vehicle, shipping, and air traffic under all action alternatives "would not contribute to cumulative effects on Nuiqsut's resource availability."[1426]

Many of the agencies' conclusions in the cumulative case must also be revised. For example, the conclusion that future development will not impact caribou abundance conflicts with the agencies' findings elsewhere in the draft SEIS.[1427] In the cumulative analysis for subsistence resources the agencies indicate "availability of certain subsistence resources, such as caribou, sheep, moose, small land mammals, fish, waterfowl, or vegetation, would likely be reduced."[1428] This is not carried into the ANILCA Section 810 analysis for some reason. The agencies' conclusion is also in direct conflict with best available science.[1429] These authorities conclude that a future shift in calving to the east would lead to declines in calf survival and that "[i]f calving shifts west in the future, as predicted, the impact of displacement from infrastructure in the calving range could be even larger."[1430] In addition, the conclusion that subsistence resource abundance would not be impacted because "there is a low likelihood of industrial roads in the program area becoming open to public use"[1431] is directly contrary to the history of

[1421] *Id*. at E-19 (failing to address RFFAs south of the Brooks Range such as the Ambler Road or projects in Canada).

[1422] *Id*. App. F at F-10.

[1423] 2019 DEIS Comment Letter at 314.

[1424] DSEIS App. E at E-20 ("Impacts to Nuiqsut's ability to access subsistence resources, according to previous EISs, would be significant.").

[1425] *Id*. at E-22.

[1426] *Id*.

[1427] *Id*. at E-21 to E-22.

[1428] *Id*. at 3-330.

[1429] *Id*. at 3-222 (discussing findings of Griffith et al. (2002) and Russell and Gunn (2019)).

[1430] *Id*. at 3-222.

[1431] *Id*. App. E at E-22.

industrial access roads in Alaska such as the Dalton Highway. As the agencies recognize elsewhere in the draft SEIS, subsistence hunters are likely to face significant competition from outside hunters in the event roads initially restricted to industrial access are opened to the public.[1432] The suggestion that impacts to subsistence resources and users in the cumulative case will be reduced by mitigation measures contained in the draft SEIS must also be revised. [1433] As addressed elsewhere in these comments, many of the mitigation measures relied upon lack the effectiveness and enforceability necessary to adequately protect Coastal Plain resources including subsistence resources.[1434]

In addition, the agencies analysis overall, but particularly the cumulative impact analysis, fails to adequately address the fact that Kaktovik residents will have to travel further in order to hunt because they will be prohibited from hunting near oil and gas development sites (including oil wells, pipelines, etc.). While the agencies note legal access to subsistence "may be altered" under Alternative B, they conclude "large scale" subsistence access would likely be maintained.[1435] The agencies do not explain how they reached this conclusion as part of their alternatives analysis. Even more problematic, the agencies do not address legal restrictions on subsistence access in their cumulative analysis. If development is allowed in the Coastal Plain, subsistence hunting areas near Kaktovik will likely become "no-hunting zones" where firearms and subsistence activities will be prohibited. This is a troubling possibility given that future development may occur "to the west, south, and east of [Kaktovik's] traditional hunting areas"[1436] and cause the people of Kaktovik to travel further away to hunt caribou and other subsistence resources. This impact should be more thoroughly addressed and analyzed in the final SEIS as part of the agencies' alternatives and cumulative analysis.

The agencies' discussion of the cumulative effects of climate change must also be revised to account for the serious impacts facing Indigenous communities. Industrial development is a "major impact to subsistence activities" across the North Slope[1437] and climate change is and will continue to compound these impacts by affecting "the habitat, behavior, distribution, and populations of fish and wildlife."[1438] Yet, BLM and FWS's ANILCA Section 810 cumulative analysis section on 'climate change' focuses almost exclusively on reduced access due to climate change. While access is an important issue, this section does not adequately address the overarching issue of decreased subsistence resource abundance due to climate change addressed elsewhere in the draft SEIS. This is a significant oversight. Assessing cumulative impacts to subsistence resources and users requires consideration of the combined impact oil and gas leasing on the Coastal Plain and other RFFAs will have on resource abundance in light of climate change.[1439] This analysis must recognize that decreased abundance of subsistence resources is a current reality facing communities; subsistence hunters are already experiencing reduced

[1432] *Id*. at 3-354.
[1433] *Id*. App. E at E-20 to E-21.
[1434] *See supra* Section IV.B.5.
[1435] DSEIS App. E at E-14.
[1436] *Id*. at E-20.
[1437] *Id*. at E-23.
[1438] *Id*. at E-23.
[1439] *Id*. at E-23.

resource abundance due to climate change. Where decreased abundance due to climate change is addressed elsewhere in the draft SEIS, FWS and BLM suggest the issue is one that could face subsistence hunters in the future.[1440] As one Venetie resident explained:

> Back when I was about five, six, seven years old, you can even hear people talking, so much noise with geese there. Now I go there, I got tears in my eyes. Barely see geese. We are losing. We are losing ducks, caribou, and less and less. Moose is getting less. Fish is pretty scary."[1441]

The analysis must be revised to accurately reflect that climate change is already impacting subsistence.

VIII. PRINCIPLES OF INDIGENOUS-LED CONSERVATION AND CO-MANAGEMENT SHOULD BE CONSIDERED.

A. CONSISTENCY OF OIL AND GAS PROGRAM WITH IMAGO INITIATIVE.

The Imago Initiative is a transformative movement launched by The Wilderness Society (TWS) in 2019.[1442] Recognizing the integral relationship between the indomitable Arctic landscape and its Indigenous communities, the initiative seeks to envision pathways for Indigenous-led protection and management of these ancient ancestral Indigenous homelands. The initiative brings together the Iñupiat and Gwich'in peoples, sparking dialogues and fostering trust. Through this ground-breaking endeavor, the Imago Initiative aims to protect the Arctic Refuge and heal historical wounds inflicted by the dispossession of land and culture and the rapid implementation of termination laws and policies.

Imago is vital in leading a paradigm shift and symbolizes a new approach to land protection and management designations that is grounded in Indigenous leadership and engagement. It strives to decouple local economies from the dependence on fossil fuels, fostering sustainable rural economies that harmoniously coexist with one of the Earth's last sizable intact landscapes. The Imago Initiative is constructed by a group of people who collaboratively understand the Arctic landscape's complexities, its vibrant Indigenous cultures, its role in climate regulation, and the deep-seated interconnectedness of its land, waters, and jet streams.

The Imago Initiative is a movement for change, providing a platform for Indigenous Peoples to express their voices, promote their ideas, and take action to protect the landscapes they depend upon. In conceptualizing and implementing Imago, TWS has remained committed to advancing the sovereignty of Indigenous Peoples in Alaska, while defending existing conservation successes. The initiative is not just about protection, but about fostering a just

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[1440] *Id*. at 3-307 (explaining climate change is "expected to change the survival rates and distribution" of numerous subsistence species including caribou, muskoxen, bowhead whales, seals, beluga whales, polar bears, white-fronted geese, brants, eiders, and fish).

[1441] *Id*. App. C at C-18 (quoting Macarthur Tritt, DEIS Public Meeting, February 9, 2019, Venetie, Alaska).

[1442] *See* Imago Initiative, Reimagining conservation through an indigenous lens, available at: https://www.wilderness.org/key-issues/wildlands-everyone/imago-initiative.

transition from a fossil-fuel-based economy to sustainable rural development. This transformative shift hopes to culminate in new Indigenous-led strategies that support Indigenous management, access, guardianship/stewardship, and ownership of the land in perpetuity.

The Imago Initiative, in practice, takes on a transformative and holistic Indigenous approach to community healing, individual growth, and reconnection to the Nuna (land). Central to the initiative are four key components: a task force, on-the-land place-based dialogues, movement building, and informing law and policy.

The Imago Task Force represents a collaborative team of diverse community members, ranging from elders to youth, from the local Indigenous groups living in or adjacent to the Arctic Refuge, conservationists, and law and policymakers that come together to engage in problem-solving and decision-making at both the grassroots level and up to the policy enactment level. The task force's role is to identify local issues, develop tailored solutions, and implement these actions effectively.

The place-based dialogues are immersive experiences designed to reconnect individuals with the Nuna and create new connections with the cohort they are attending with to foster a profound sense of belonging. Conducted in the Arctic Refuge, these dialogues are framed using Indigenous facilitation methodologies to hold ceremony and a safe-space for open conversations and stimulate the sharing of wisdom, cultural practices, and personal narratives, promoting collective healing and the beginning of trust bond relationships.

Movement building focuses on creating a sustainable wave of positive change that resonates beyond the individual and permeates the entire nation. This involves empowering individuals to become change agents, facilitating community workshops to share knowledge and tools, and mobilizing collective efforts to build a healthier, stronger community. Through these combined efforts, the Imago Initiative cultivates an environment of understanding, acceptance, and growth, guiding the path toward a sustainable, healthy future.

Recently, the Arctic Refuge Defense Campaign, a coalition of Indigenous people, Alaskans, conservationists, scientists, and others committed to protecting the Arctic Refuge, recognized the Imago Initiative as a central pillar of its work. Groups recognize the spiritual, physical, cultural, and historical connection of Alaska Native peoples to the land, wildlife, and waters that have sustained their ways of life since time immemorial. Imago is a critical vehicle for honoring and realizing that connection through meaningful and mutually beneficial co-stewardship of the land, waters, and wildlife. The SEIS must consider and leave space for Imago and its goals.

Integrating Imago into the SEIS process is challenging, however, because it brings two different worldviews into the same space, using words that may be the same, but have substantively different meanings. For instance, to have this discourse it is imperative to understand that for Indigenous Peoples, all matter in the physical reality is animate and deserves honor and respect as sentient nations. However, in the Western context, resources are shifted to items that are monetized in value and measured for control. In the context of the SEIS, the term "resources" can be broadly categorized into two distinct types. The first is the "mineral

resources" that would be extracted through oil and gas development, which are considered ancient ancestral relatives. Mineral resources refer to naturally occurring substances that can be extracted and utilized for economic benefit. These include petroleum, natural gas, coal, and various types of metal ores. The extraction of these resources often involves destructive practices like mining and drilling, which can lead to environmental degradation and impact the livelihoods of local communities.

The second is the actively living relatives, or "natural resources," which Indigenous communities traditionally and in modernity regard as close relatives. These relatives are not just utilized, but also revered, and encompass all elements of the natural environment, including land, water, plants, and animals. These resources are living entities that hold intrinsic spiritual and cultural value to Indigenous communities. They are deeply intertwined with their identity, way of life, and survival. Therefore, any disruption or degradation of these resources, due to external activities such as mineral extraction, can have profound sociocultural impacts. It is crucial to recognize and respect these differing perspectives on resources to ensure equitable and sustainable development that honors both economic needs and cultural values. Overall, the Imago Initiative embodies this holistic approach to resource management, recognizing and valuing all resources as vital components of a healthy and thriving community.

To consider and leave space for Imago, the SEIS should include an Indigenous-centered alternative that recognizes and accounts for past Indigenous land ownership, past and current Indigenous land stewardship, and historical and present injustices towards Indigenous peoples. Such an alternative should fully incorporate and create space for traditional Indigenous knowledge, Indigenous worldviews, and future shared stewardship by Indigenous Peoples. It must minimize the acreage available for leasing; limit seismic and other exploration activities to leased areas; and include stringent, non-waivable stipulations for resource protection, developed through government-to-government consultation and incorporating traditional Indigenous knowledge.[1443] It also must defer leasing, lease implementation, and/or any permitting of exploration or other development activities, until certain conditions are met, such as co-creation of a plan for meaningful co-stewardship of the Arctic National Wildlife Refuge that centers the Indigenous worldview and the interconnected and sentient rights of the lands, waters, wildlife, and Indigenous peoples and fully restores Indigenous hunting and fishing subsistence rights.[1444] For instance, the Imago Task Force supported the development of a proposed Indigenous-

[1443] The draft SEIS fails to include a minimum 400,000-acre alternative, an alternative that would limit seismic to areas that are actually leased (as opposed to available for leasing), and an alternative with non-waivable stipulations for resource protection. While we appreciate that Alternative D was developed in part through government-to-government consultation and incorporation of traditional Indigenous knowledge, it still fails to adequately protect Coastal Plain resources or the lifeways of Alaska Native communities, as described throughout these comments.

[1444] As discussed at *supra* Section IV. B.3, the agencies misinterpreted proposed delayed leasing or permitting alternatives in the draft SEIS. BLM has ample discretion under the Tax Act and other authorities to delay issuance of any leases sold in a second lease sale, suspend leases, or otherwise delay lease implementation and permitting to protect resources.

centered alternative that was submitted at scoping by task force member Sovereign Iñupiat for a Living Arctic.[1445]

Unfortunately, the draft SEIS alternatives fail to include key elements of an Indigenous-centered-alternative, and therefore fail to fully honor the traditional knowledge, practices, and ways of life of the Alaska Native communities who have lived in relationship with the lands and waters that now comprise the Arctic National Wildlife Refuge for millennia, or adequately preserve space for future Indigenous-led conservation and co-stewardship of the Arctic Refuge Coastal Plain. The final SEIS should include key elements of an Indigenous-centered alternative and address how the agencies intend to preserve space for the Imago Initiative and meaningful future Indigenous co-stewardship of the Coastal Plain.

Overall critique of Draft SEIS inconsistencies with Imago

In addition to its failure to incorporate key elements of an Indigenous-centered alternative, the draft SEIS alternatives and analysis fall short of fully addressing and minimizing the suite of adverse cultural, historical, ecological, spiritual, and other impacts from oil and gas development on Indigenous Peoples. Many of these deficiencies are identified throughout these comments, including in the sections on subsistence uses and resources, sociocultural systems, archeological and cultural resources, environmental justice, and public health, as well as in resource-specific content. Overall, the final SEIS must fully acknowledge and address historical and ongoing injustices and articulate meaningful support for Indigenous land stewardship.

For instance, neither the original designation of the Arctic National Wildlife Range nor ANILCA's designation of today's Arctic National Wildlife Refuge benefited from consultation with or free, prior, and informed consent by the Indigenous Peoples living in and near the area — many of whom still suffer historical trauma directly related to the involuntary taking of their traditional and ancestral homelands. While significant strides have been made in tribal consultation since that time, as discussed below, we urge the agencies to conduct more meaningful and robust consultation that includes consideration of new forms of land protection and co-management through an Indigenous lens and that would benefit Indigenous communities and values, as well as the Federal government's conservation and land management obligations.

B. TRIBAL CONSULTATION AND ENGAGEMENT IS CRITICAL.

It is critical that federal agencies prioritize the traditional knowledge, practices, and ways of life of the Alaska Native communities who have lived in relationship with the lands and waters that now comprise the Arctic National Wildlife Refuge for millennia. Indigenous people have been living in Arctic Alaska for over ten thousand years and have ongoing historical, cultural, and traditional relationships with the land, animals, and each other. As the original caretakers of the land, the Iñupiat and Gwich'in people have been living in and around what is now the Arctic Refuge since time immemorial. To Indigenous people, the land does not belong to us, but rather the people belong to the land. Co-stewardship represents a paradigm shift in land

[1445] See Sovereign Iñupiat for a Living Arctic, Proposed Indigenous-Centered Alternative for Supplemental Environmental Impact Statement for the Coastal Plain Oil and Gas Leasing Program (Oct. 4, 2021).

and wildlife management that emphasizes equal partnership, respect for people and land, shared values, and mutual exchange, in the context of acknowledging past and present power dynamics.

The agencies must ensure that the SEIS process provides meaningful consultation opportunities for all impacted Tribes and that the process is consistent with DOI's policy in support of co-stewardship. BLM and FWS have long been required to coordinate with affected Indian Tribes under Federal regulations and agency policies. The Council on Environmental Quality (CEQ), in interpreting NEPA, instructed federal agencies to involve tribes early in planning processes that are likely to affect tribal interests.[1446] This duty is further described in FWS's Tribal Consultation Handbook,[1447] BLM's NEPA Manual,[1448] and BLM's Land Use Planning Handbook.[1449] Both agencies have also adopted guidance on involving Tribes in planning processes. FWS's guidance commits the agency to soliciting and considering "traditional knowledge, and expertise of affected tribal governments in policies, agency actions, and determinations that have tribal implications."[1450] BLM's guidance is intended to "assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed BLM action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration."[1451]

The requirement to consult with Tribes has also been recognized and affirmed through executive actions. More than two decades ago, President Clinton issued Executive Order 13175, Consultation and Coordination with Indian Tribal Governments.[1452] That order was reaffirmed in President Biden's January 26, 2021 "Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships," which seeks to prioritize regular, meaningful, and robust federal consultation with Tribal Nations.[1453] DOI also released a plan it developed to improve

[1446] 40 C.F.R. § 1501.7(a)(1).

[1447] U.S. Fish and Wildlife Service, Tribal Consultation Handbook (2018), available at: https://www.fws.gov/sites/default/files/documents/Tribal%20Consultation%20Handbook.PDF.

[1448] Bureau of Land Management, BLM Land Use Planning Manual (1601) (2000).

[1449] Bureau of Land Management, BLM Land Use Planning Handbook (H-1601-1) (2005).

[1450] Fish and Wildlife Service, Native American Policy (510 FW 1) (2016).

[1451] Bureau of Land Management, General Procedural Guidance for Native American Consultation (H-8120-1) (2004) at I-1.

[1452] Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (Jan. 20, 2000), available at: https://www.federalregister.gov/documents/2000/11/09/00-29003/consultation-and-coordination-with-indian-tribal-governments.

[1453] The White House, Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships (Jan. 26, 2021), available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/26/memorandum-on-tribal-consultation-and-strengthening-nation-to-nation-relationships/.

Tribal consultations consistent with Executive Order 13175.[1454] In addition, on November 30, 2022, President Biden issued guidance directing federal agencies and departments to recognize and apply Indigenous Knowledge in their decision making, research, and policies.[1455] This guidance indicates that Indigenous Knowledge is specifically relevant to and should be incorporated into decision making pursuant to NEPA, the ESA, the MMPA, and the NHPA.

Building on these and other Executive actions regarding the protection of Tribal interests, Secretary of Interior Haaland and Secretary of Agriculture Vilsack issued a joint order on November 15, 2021.[1456] Joint Secretarial Order 3403, Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters (Joint S.O.), broadens existing obligations to consult and collaborate with Indian Tribes by creating a distinct duty to pursue tribal co-stewardship of Federal lands, waters, and wildlife. Specifically, the Joint S.O. requires agencies and bureaus to:

a. Ensure that all decisions relating to Federal stewardship of Federal lands, waters, and wildlife under their jurisdiction include consideration of how to safeguard the interests of any Indian Tribes such decisions may affect;
b. Make agreements with Indian Tribes to collaborate in the co-stewardship of Federal lands and waters under the Departments' jurisdiction, including for wildlife and its habitat;
c. Identify and support Tribal opportunities to consolidate Tribal homelands and empower Tribal stewardship of those resources;
d. Complete a preliminary legal review of current land, water, and wildlife treaty responsibilities and authorities that can support co-stewardship and Tribal stewardship within 180 days and finalize the legal review within one year of the date of this Order; and
e. Issue a report within one year of this Order, and each year thereafter, on actions taken to fulfill the purpose of this Order.[1457]

Regarding the establishment of co-stewardship agreements, the Joint S.O. calls on Federal land managers to "promote" and "endeavor to engage in co-stewardship" wherever

[1454] *See* Department of Interior, A Detailed Plan for Improving Interior's Implementation of E.O. 13175, available at: https://www.doi.gov/sites/doi.gov/files/detailed-plan-for-improving-interiors-implementation-of-e.o.-13175-omb-submission.pdf.

[1455] The White House, Guidance for Federal Departments and Agencies on Indigenous Knowledge (Nov. 30, 2022), available at: https://www.whitehouse.gov/wp-content/uploads/2022/12/OSTP-CEQ-IK-Guidance.pdf.

[1456] Secretary of the Interior and Secretary of Agriculture Joint Order No. 3403, Fulfilling the Trust Responsibility to Indian Tribes in the Stewardship of Federal Lands and Waters (Nov. 15, 2021), available at: https://www.doi.gov/sites/doi.gov/files/elips/documents/so-3403-joint-secretarial-order-on-fulfilling-the-trust-responsibility-to-indian-tribes-in-the-stewardship-of-federal-lands-and-waters.pdf [hereinafter Joint S.O.]. The Joint S.O. also relies upon Executive Order 13007, Indian Sacred Sites (May 24, 1996), available at: https://www.doi.gov/pmb/cadr/programs/native/Executive-Order-13007.

[1457] Joint S.O. at § 1.

possible.[1458] This requirement applies "where Federal lands or waters, including wildlife and its habitat, are located within or adjacent to a federally recognized Indian Tribe's reservation, where federally recognized Indian Tribes have subsistence or other rights or interests in non-adjacent Federal lands or waters, or where requested by a federally recognized Indian Tribe."[1459] In the pursuit of such agreements, agencies are required to "[c]oordinate and cooperate on co-stewardship efforts and initiatives between the Departments."[1460] The Joint S.O. also requires agencies to facilitate tribal requests to protect lands by placing them in trusts "including for conservation, protection of sacred sites, cultural or religious use, or exercise of subsistence or treaty reserved rights."[1461] In instances where the law prohibits co-stewardship, agencies must "give consideration and deference to Tribal proposals, recommendations, and knowledge."[1462]

Importantly, the Joint S.O. sets out several implementing principles that apply to any decision-making process impacting Federal lands and waters, wildlife and wildlife habitat, or the rights of Indian Tribes.[1463] Those principles include but are not limited to:

- directly engaging with Tribal governments at the earliest phases of planning and decision-making;
- ensuring Tribal governments have an integral role in decision making;
- considering Tribal expertise and Indigenous knowledge when making decisions related to Federal lands — particularly when those decisions relate to Tribal treaty rights and subsistence uses;
- working with Tribes to educating affected communities regarding the role of Tribal governments in co-stewardship; and
- developing institutional structures to implement co-stewardship agreements.[1464]

In recognition of DOI's policy in support of co-stewardship, FWS and BLM recently adopted directives implementing the Joint S.O's mandates. On September 8, 2022, the Director of FWS issued Order 227, stating the agency "must…[e]ngage in co-stewardship, consistent with applicable laws."[1465] The Order recognizes that Tribes "may need additional resources to succeed in co-steward[ship]" and that FWS will need to "address the co-stewardship of species and their habitats that often extend beyond reserved and trust lands."[1466] The Order also reaffirms FWS's obligation to consult with Tribes and safeguard Tribal resources. Specifically, the Order clarifies

[1458] *Id*. at § 5.
[1459] *Id*.
[1460] *Id*.
[1461] *Id*. at § 6.
[1462] *Id*. at § 5.
[1463] *Id*. at § 3–4.
[1464] *Id*. at § 3.
[1465] Director of Fish and Wildlife Service, Order No. 227, Fulfilling the Trust Responsibility to Tribes and the Native Hawaiian Community, and Other Obligations to Alaska Native Corporations and Alaska Native Organizations, in the Stewardship of Federal Lands and Waters, § 1, 5 (Sept. 8, 2022), available at: https://www.fws.gov/media/directors-order-no-227 [hereinafter FWS Co-stewardship Order].
[1466] *Id*. at § 4.

that "[t]he Tribal consultation process goes beyond the requirements of a public comment period."[1467] When taking action that may affect Tribal interests, the Order requires FWS to engage directly with Tribes, Native Corporations, and Native organizations "at the earliest phases of planning" and to take all necessary steps to allow full engagement of such entities including inviting them to join related planning teams.[1468]

On September 13, 2022, BLM adopted a similar policy implementing the Joint S.O., Permanent Instruction Memorandum 2022-011.[1469] BLM's Memorandum commits the agency to consulting with Tribes regarding co-stewardship upon request and to "identify[ing] opportunities for co-stewardship as part of Tribal consultation and engagement during land use planning and implementation decisions."[1470] The Memorandum recognizes that, where lawful, "BLM has substantial leeway to design co-stewardship arrangements"[1471] and notes that such arrangements "can include co-management, collaborative and cooperative management, and Tribally-led stewardship, and can be implemented through cooperative agreements, memoranda of understanding, self-governance agreements (including annual funding agreements), and other mechanisms." [1472] The Memorandum further explains that "BLM can incorporate Tribal priorities into the designation and management of resource management areas," prioritize actions and make decisions through co-stewardship arrangements, and make project approvals "contingent on Tribal consent as long as there is a reasonable connection between the Tribe's jurisdiction and the BLM's decision."[1473] While the Memorandum reaffirms BLM's consultation obligations, it clarifies that "consultation does not by itself constitute co-stewardship."[1474] It also states that "[t]he requirement to consult with ANCSA Corporations is distinct from, and does not diminish, the nation-to-nation relationship and consultation obligations between BLM and Alaska Native Tribes."[1475]

The agencies must expand and clarify their ANILCA Section 810 findings in order to fulfill their trust responsibility to consult with all impacted Indian Tribes. While the agencies have articulated their plan to hold a subsistence hearing in Kaktovik,[1476] there is significant confusion surrounding the agencies' plans to hold hearings with additional communities. The draft SEIS expressly limits the agencies' "may significantly restrict" finding under ANILCA Section 810, and hearings, to Kaktovik. However, BLM's EPlanning website and announcement

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[1467] *Id*. at § 6.

[1468] *Id*.

[1469] Director of Bureau of Land Management, Permanent Instruction Memorandum No. 2022-011, Co-Stewardship with Federally Recognized Indian and Alaska Native Tribes Pursuant to Secretary's Order 3403 (Sept. 13, 2022), available at: https://www.blm.gov/sites/default/files/docs/2022-09/PIM2022-011%20+%20attachment.pdf [hereinafter BLM Co-stewardship Memo].

[1470] *Id*. at 1–3.

[1471] *Id*. at 1–2.

[1472] *Id*. at 5.

[1473] *Id*. at 3.

[1474] *Id*. at 5.

[1475] *Id*.

[1476] *See Id*. at ES-7.

of hearings indicates that there will also be ANILCA Section 810 hearings in the communities of Arctic Village, Venetie, and Fort Yukon. BLM recently explained that the agencies have not made a "may significantly restrict" finding for the communities of Arctic Village, Venetie, and Fort Yukon but are holding ANILCA Section 810 hearings in those communities to gather information and avoid future hearings should the agencies expand their findings in the final SEIS. This process is confusing and fails to acknowledge the significant information already available to the agencies that demonstrate that there will be significant impacts to subsistence for the Gwich'in. As addressed in greater detail above, the agencies failed to make a "may significantly restrict" findings for all Gwich'in communities despite acknowledging that reduced population numbers predicted for the Porcupine Caribou Herd could have "substantial impacts" on communities that rely on the herd.[1477] Failing to make such a finding conflicts with BLM's guidance requiring the agency to take a precautionary approach in reaching ANILCA Section 810 findings.[1478] As all Gwich'in communities stand to be impacted by leasing of the Coastal Plain, they must be consulted before this process moves forward. It is critically important that the agencies consult with and provide opportunities for robust engagement with all Tribes that will be impacted by the Coastal Plain Leasing Program. Honoring the government-to-government relationship with all Tribal entities that may be affected by leasing on the Coastal Plain requires engaging with all Tribes that rely upon the Coastal Plain's resources for subsistence, even if the Tribe or Tribal members are geographically distant from the Coastal Plain. This is because in Alaska, subsistence use regions span large geographic areas and subsistence resources include many migratory species like caribou and waterfowl.

Further, it is unclear what if anything the agencies have done to meet their respective obligations to "empower Tribal stewardship" and pursue co-stewardship opportunities with Tribes as part of the SEIS process.[1479] In the draft SEIS, BLM failed to address the Joint S.O. or BLM's and FWS's policies regarding co-stewardship. The agencies merely state: "The BLM does not have authority to enter into cooperative agreements for co-management of surface resources in the Arctic Refuge; surface lands are not BLM managed lands under the Federal Land Policy and Management Act (FLPMA) Section 307(b)."[1480] While the Refuge is not BLM-managed land, this does not mean that BLM and FWS cannot explore co-management issues under their policies. BLM and FWS acknowledge in Appendix C that the public "requested that the BLM discuss the role of the Gwich'in in the active management of the herd, in either a traditional or a contemporary, co-management context."[1481] But the agencies then simply summarizes testimony capturing traditional knowledge of the Porcupine Caribou Herd and its migratory patterns, without discussing any potential co-management role for the Gwich'in.[1482] In addition, despite FWS's role as the sole administrator of the Arctic Refuge,[1483] nothing in the draft SEIS recognizes FWS's policy stating the agency "must" [1484] engage in co-stewardship

[1477] *Supra* Section VII.C
[1478] Instruction Memorandum at 6-2.
[1479] Joint S.O. at 3.
[1480] DSEIS at ES-3, 1-5.
[1481] *Id.* at C-9.
[1482] *Id*. at C-9–11.
[1483] *Id*. at 1-4 ("The USFWS is the predominant land manager in the program area.").
[1484] FWS Co-stewardship Order at § 5.

where lawful and DOI's directive to "[m]ake agreements with Indian Tribes to collaborate in the co-stewardship" of Federal lands, waters and wildlife.[1485] To the extent the agencies have not sought opportunities for consultation and co-stewardship, Groups encourage the agencies to undertake those conversations.

IX. CONCLUSION

In conclusion, we remain steadfast in our opposition to oil and gas activities on the Coastal Plain and stand with the Indigenous people to support their efforts to protect their human rights and food security by protecting the Coastal Plain. Our organizations have dedicated decades to defending the Coastal Plain from oil and gas exploration and development, and we will continue to do so. We recognize the considerable work that went into the draft SEIS and we are glad for the agencies' efforts to date. The goal of our comments on various legal, policy, and resource issues is to ensure that the analysis of the impacts in the final SEIS is robust, scientifically accurate, and fully considers all of the adverse impacts of an oil and gas program and meets all legal mandates. We believe that a robust, scientific review will show that oil and gas activities on the Coastal Plain will have unavoidable and unmitigatable destructive impacts on Arctic Refuge wildlife and habitat and on the climate, threatening the food security of the Gwich'in and Iñupiat. Simply put, the Coastal Plain is no place for oil and gas activities. We remain dedicated to ensuring that none ever occur.

[1485] Joint S.O. at 2.

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