

CHAPTER II: ALTERNATIVES

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CHAPTER II: ALTERNATIVES

2.1 INTRODUCTION

This chapter presents the four alternative approaches to achieving the purpose and need of the Northeast NPR-A IAP/EIS described in **section 1.2**. These alternatives present a range of actions in terms of the amount of additional lands in the planning area that would be opened to oil and gas leasing, and the types of protective measures that would be taken to protect surface resources within the planning area from the impacts of oil and gas development. The four alternatives in this Supplement are largely unchanged from those presented in the Amended IAP/EIS. The limited substantive changes that have been made to the alternatives are noted below in this chapter.

2.2 FORMULATION OF THE ALTERNATIVES AND MITIGATION MEASURES

2.2.1 Overview

The alternatives presented in this Supplement derive primarily from the previous two plans conducted by BLM for the planning area. Alternative A is the decision contained in the 1998 ROD for the Northeast NPR-A IAP/EIS and was also presented as Alternative A in the Amended IAP/EIS (Map 2-1). Alternatives B, C and D are, with modifications, the same as Alternatives B, C and D, respectively, in the Amended IAP/EIS (Maps 2-2, 2-3 and 2-4).

The range of alternatives presented in the Amended IAP/EIS was developed by an interdisciplinary team consisting of BLM staff from the agency's Alaska State Office and Northern Field Office (now termed the Fairbanks District Office). The Amended IAP/EIS process greatly benefited from ideas offered by other Federal agencies; tribal, state, and local governments; and the public through 1) initial scoping of ideas, issues, and concerns; 2) comments on the Draft Amended IAP/EIS, with meetings held in key communities within and adjacent to the planning area, as well as in Anchorage, Fairbanks, and Bethel, Alaska, and in Washington D.C.; and 3) from public comments received during ANILCA 810 hearings held in key communities within and adjacent to the planning area concerning the potential impacts of the various alternatives on subsistence resources and activities. In addition, we received comments from the public on the Final Amended IAP/EIS.

The BLM initiated the process to supplement the Amended IAP/EIS by publishing a notice of intent to do so in the *Federal Register* on December 4, 2006. The notice of intent indicated that a formal scoping process would not be undertaken, but did request comments and suggestions from the public regarding concerns on issues of interest, particularly recommended mitigation measures. Based upon comments received on the Final Amended IAP/EIS, BLM modified Alternative D as presented in the Draft Supplemental IAP/EIS by modifying some protective stipulations and ROPs to increase protections of sensitive wildlife and subsistence resources and to clarify their intent, and deleted confusing language. These modifications are reflected in Appendix A of the 2006 Northeast NPR-A ROD. Additionally, in response to the notice of intent for the Supplement and upon internal BLM review, BLM and the North Slope Borough (NSB), which is participating in the supplemental planning process as a cooperating agency, made minor

modifications and clarifications to the language of Alternatives B through D in the Draft Supplemental IAP/EIS. The process resulted in clarifying the language in several stipulations and required operating procedures (ROPs), removing the redundant exception clause from Alternatives B through D, addressing summer overland travel in a ROP rather than in a statement of policy in Sec. 2.4 (“Management Actions Common to All Alternatives”); a ROP adopted in a ROD has the force and effect of law, while statements of policy do not), and making a number of other editorial and clarification modifications elsewhere in this chapter and other sections of the IAP/EIS.

As a result of public comment on the Draft Supplemental IAP/EIS, the BLM has made additional changes to the alternatives, particularly to Alternative D, which the agency has designated as the Preferred Alternative. One change to Alternative D is of special interest. Although the lands that this alternative would make available for oil and gas leasing would be largely the same as those described in the Draft Supplemental IAP/EIS, those lands that the 1998 ROD determined would not be made available for leasing would be deferred under the Supplemental IAP/EIS from leasing for 10 years. In addition, in the Final Supplemental IAP/EIS, an indefinite deferral of leasing in Teshekpuk Lake in Alternative D has been changed to make the lake unavailable for leasing and the Southern Caribou Calving Area near Teshekpuk Lake in T. 13 N., R. 6 W., U.M. has been enlarged by about 7,000 acres. The following stipulations or ROPs applicable to Alternative D (and in some cases to Alternatives B and/or C) have also been edited to respond to comments and to clarify the intent: A-1 through A-7, B-2, C-3, D-2, E-1 through E-6, E-8, E-11, F-1, H-1, J, K-1, K-3 through K-5, K-10 and K-11.

With the above exceptions, the alternatives in this Supplement remain the same as those previously analyzed in the Amended IAP/EIS and the Draft Supplemental IAP/EIS. As required by 43 CFR § 2361.1, each of the four alternatives analyzed in this Supplemental IAP/EIS process contains measures to mitigate or avoid unnecessary surface damage and minimize ecological disturbance throughout the planning area to the extent consistent with the purposes of the NPRPA for the exploration of the planning area. Also, as described in section 2.2.2 below, each alternative presents a different approach to providing maximum protection to surface resources within the two designated Special Areas in the planning area—the Teshekpuk Lake Special Area and the Colville River Special Area (Map 1-3).

“Mitigation measures,” as the term is used in BLM’s NEPA Handbook (p. V-20), are introduced in the environmental consequences analysis in Chapter 4. Such mitigation measures are not part of the alternatives, unlike lease stipulations and ROPs (for a discussion of stipulations and ROPs, see **section 2.3.5**). Rather they are suggestions of additional means to lessen impacts that are identified in the impact analysis in Chapter 4, specifically in **sections 4.3.1, 4.4.1, 4.5.1, and 4.6.1 on Air Quality, 4.3.7, 4.4.7, 4.5.7, and 4.6.7 on Fish, 4.3.8, 4.4.8, 4.5.8, and 4.6.8 on Birds, and 4.3.19, 4.4.19, 4.5.19, and 4.6.19 on Public Health**, given that in this case the “mitigation measures” all pertain to air quality, fish, birds, and public health issues. Some may not be within BLM’s authority to implement, and thus would require the involvement of other agencies to effectuate them. These mitigation measures, along with a description of their effectiveness to mitigate impacts as well as any impacts these measures would themselves create, are included to allow for public consideration and comment. The ROD will identify which mitigation measures identified in Chapter 4 BLM will adopt.

The NSB is participating in the supplemental planning process as a cooperating agency in order to maximize use of available resources and special expertise and minimize duplication in those areas of overlapping responsibilities. In this role as a cooperating agency, the NSB is assisting

BLM in drafting an IAP/EIS that is in compliance with NEPA. Cooperating agency status does not, however, indicate the NSB's implicit or explicit support for any particular alternative.

2.2.2 Special Areas and Other Areas with Additional Protections

The planning area includes portions of two designated Special Areas (see **section 3.3.1** and Map 1-3). The Teshekpuk Lake Special Area was designated primarily to protect important nesting, staging, and molting habitat for a large number of waterfowl. The area also provides important habitat for caribou and serves as an important area for subsistence resources and uses. The Colville River Special Area within the planning area lies along that river and two of its larger tributaries, the Kogosukruk and Kikiakrorak rivers. It was designated to protect the Arctic peregrine falcon, which inhabits bluffs within the Special Area and was listed as an endangered species at the time the Colville River Special Area was designated.

Each alternative also identifies other areas with exceptionally important surface resources, many of which overlap the two designated Special Areas. These other areas are not in themselves administrative or legislative designations, and they carry with them no formal regulatory special status. They simply are areas that BLM has identified, through the planning process, where resource concerns exist that may require consideration of special protections. Some of these spatially defined "protection areas" were first identified in the 1998 Northeast NPR-A IAP/EIS and were referred to as Land Use Emphasis Areas, or LUEAs (Maps of LUEAs can be found in the 1998 Northeast NPR-A Final IAP/EIS. See Figures II.B.1 to II.B.14, pages II-4 to II-17 therein). In developing the Amended IAP/EIS and this Supplement, the concept of identifying key resource or "protection areas" remains, but the term LUEA is no longer used. They are referenced in stipulations and ROPs and their geographic extent is reflected in maps depicting one or more of the alternatives. The "protection areas" used in the Amended IAP/EIS and carried forward in this Supplement were also modified to some degree from those presented in the 1998 Northeast NPR-A IAP/EIS if a more logical organization was identified. For example, in the 1998 Northeast IAP/EIS, the Fish Habitat LUEA included deepwater lakes and some rivers within certain geographic bounds. Under the Amendment's and Supplement's Alternatives B, C, and D, Rivers Area and Deep Water Lakes are identified separately. The "protection areas" defined for Alternatives B, C, D in the Amendment and this supplement are the Rivers Area, Deep Water Lakes, Teshekpuk Lake, Goose Molting Area, Teshekpuk Lake Caribou Habitat Area, Coastal Area, Colville River Raptor, Passerine, and Moose Area, and Pik Dunes. In addition, three additional "protection areas" were developed exclusively for Alternative D in the Final Amended IAP/EIS. These are the Caribou Movement Corridor, Southern Caribou Calving Area, and Lease Tracts areas. These area-specific protections, in conjunction with the general Planning Area-wide lease stipulations and ROPs, enhance BLM's management of the planning area and particularly ensure that BLM meets the requirements of the NPRPA to provide maximum protection of surface values in the Teshekpuk Lake Special Area and the Colville River Special Area consistent with the purpose of the NPRPA.

The following provides additional information about the protection areas:

2.2.2.1 Rivers Area

The Rivers Area includes areas on the east side of the Ikpikpuk River; both sides and the bed of the Miguakiak River; the west side of the Colville River; both sides of the Tingmiaksiqvik River (also identified as the Ublutuoch River on USGS quadrangle maps; this river would receive special protections only under Alternative B and Alternative D); from the top of the bluff (or bank

if there is no bluff) on both sides of the Kikiakrorak and Kogosukruk rivers and several of the Kogosukruk River tributaries; and both sides of portions of Fish and Judy creeks.

These rivers and creeks provide important spawning, migration, rearing, and over-wintering habitat for both anadromous and resident species of fish. Fishing use includes a substantial subsistence harvest by the residents of Barrow and Nuiqsut and a commercial take at the mouth of the Colville River.

2.2.2.2 Deep Water Lakes

Deep Water Lakes includes numerous waterbodies with a depth greater than 13 feet [4 meters] (Mellor 1985). Generally these lakes provide important spawning, migration, rearing, and over-wintering habitat for both anadromous and resident species of fish. Some of these lakes also provide important habitat for molting waterfowl and loafing and foraging habitat for shorebirds, and are important subsistence, cultural, and traditional use areas for NSB residents. The Deep Water Lakes protection area extends ¼ mile around the perimeter of any deepwater lake within the planning area.

2.2.2.3 Teshekpuk Lake

Teshekpuk Lake is a dominant geographic feature of the region. Teshekpuk Lake's range of habitat types includes a 20- to 40-foot deep basin and a complex shoreline that features bays, spits, lagoons, islands, beaches, and extensive shoal areas. Teshekpuk Lake provides over-wintering habitat for fish and breeding habitat for waterfowl and shorebirds and is an important resource for subsistence-based cultures in the region.

2.2.2.4 Goose Molting Area

The Goose Molting Area includes suitable habitats in and around (including the lakes north and northeast of) Teshekpuk Lake. This area is the most important molting habitat for black brant, Canada geese, and greater white-fronted geese in the Arctic (see **section 3.3.6.3; Waterfowl**). Up to 30% of the Pacific flyway population of brant molt in this area (36,817 were counted in 2001). Up to 34,930 molting greater white-fronted geese, and 3,914 snow geese were counted in recent years with an increasing trend through time. Approximately 26,680 Canada geese were observed in 1984, but numbers have declined since that point, with a more recent high of approximately 18,000 in 2001 (Mallek 2006). Molting geese, which are highly sensitive to human disturbance, are present in the area from late June to mid- to late August. This area also provides important breeding habitat for several species of shorebirds.

2.2.2.5 Teshekpuk Lake Caribou Habitat Area

The Teshekpuk Lake Caribou Habitat Area includes suitable habitats in the Teshekpuk Lake region that are essential for all season use by caribou, including calving and rearing, insect-relief, and migration. Caribou of the Teshekpuk Lake Herd calve from late May to mid-June. Studies show that the main areas for calving can shift somewhat within the broad area, with concentrations occurring in several different locations around the lake from year to year (see **section 3.3.7.1, Terrestrial Mammals**). For the remainder of the summer, areas of shorelines, barren dunes, and ridges can provide relief from intense insect harassment, which can affect caribou energy budgets and productivity of cows. The land between Teshekpuk Lake and the Beaufort Sea from the Ikipuk River to the Kogru River is particularly valuable for this purpose.

2.2.2.6 Coastal Area

The Coastal Area includes those areas within $\frac{3}{4}$ miles of the Beaufort Sea, extending from the western portion of the planning area just east of Smith Bay, to the Colville River Delta, including the Kogru River. The Coastal Area is important for caribou movement within coastal insect-relief areas, and for preventing contamination of marine waters, loss of important bird habitat, alteration or disturbance of shoreline marshes, and impacts to subsistence resources activities. The Coastal Area is not established as of the date of the ROD, but moves with changes in the coastline. The $\frac{3}{4}$ -mile area will be identified at the permitting stage and consideration would be given to potential future changes in the coastline.

2.2.2.7 Colville River Raptor, Passerine, and Moose Area

The Colville River Raptor, Passerine, and Moose Area extends one mile west or northwest of the bluffs of the Colville River, from approximately Ocean Point to the southern end of the Planning Area and 2 miles on either side of the Kogosukruk and Kikiakrorak rivers and tributaries of the Kogosukruk River. The lower two-thirds of the Colville River support the highest concentrations of raptors, passerines, and moose on Alaska's North Slope. More than half of the known peregrine, gyrfalcon, and rough-legged hawk territories along this reach are in the planning area. Overall, the population of peregrine falcons has increased since its low in 1973, when it was listed as endangered under the ESA. The species has since been de-listed, and population levels should be maintained if the peregrine is to remain off the list. The raptors nest on bluffs adjacent to the river and are sensitive to disturbance. The area is also an important subsistence, cultural, and traditional use area for NSB residents, particularly for those of Nuiqsut.

2.2.2.8 Pik Dunes

The Pik Dunes are located in the extreme southcentral part of the Teshekpuk Lake Special Area. This area was added to the Teshekpuk Lake Special Area in 1999 as a result of the 1998 Northeast IAP/EIS ROD. The dunes complex occupies roughly 15 square miles, with a maximum north/south extent of $5\frac{1}{2}$ miles, and a maximum east/west extent of 5 miles. The Pik Dunes, which form a basin containing five lakes, are part of a larger dune area that has been stabilized and or vegetated for at least several thousand years. The Pik Dunes are unique, because they are still exposed and active. Beyond their geologic and scenic uniqueness, the dunes provide: 1) insect-relief habitat for caribou, 2) habitat for several uncommon plant species, and 3) data critical to understanding major climatic fluctuations over the last 12,000 years.

2.2.2.9 Caribou Movement Corridor Area

The Caribou Movement Corridors consists of two locations within the Teshekpuk Lake Special Area. One is located east of Teshekpuk Lake and encompasses 45,000 acres. The other is located between the northwest shore of Teshekpuk Lake and Smith Bay and encompasses approximately 9,700 acres. Lakes and other natural surface features in these areas result in relatively narrow passages that restrict caribou movement during both the calving and insect-relief seasons.

2.2.2.10 Southern Caribou Calving Area

The Southern Caribou Calving Area is found southeast and southwest of Teshekpuk Lake and is entirely within the Teshekpuk Lake Special Area. This area of approximately 240,000 acres provides important caribou calving, post-calving, and insect-relief habitat.

2.2.2.11 Lease Tracts Area

The Lease Tracts Area is found north of Teshekpuk Lake. This area would be delineated into seven large lease tracts that would range in size from approximately 46,100 to 57,100 acres. This area provides important caribou calving, post-calving, insect-relief habitat, and sensitive goose molting habitat.

2.3 DESCRIPTION OF THE ALTERNATIVES

The alternatives presented in the Supplemental IAP/EIS are largely unchanged from those presented in the Northeast NPR-A Final Amended IAP/EIS. The same land would be made available for oil and gas leasing under each of the alternatives as provided for in the Amended IAP/EIS. Alternative A is the same as Alternative A in the Amended IAP/EIS. There have been some changes to Alternative D between the Final Amended IAP/EIS and this Supplement thereto, most of which were reflected in the ROD for the Amended IAP/EIS or described above in 2.2.1. There have been some very minor changes in the text for clarification of several stipulations and ROPs in Alternatives B, C, and D from that which was presented in the Amended IAP/EIS, but only one substantive ROP added to these alternatives. The Supplement adds ROP L-1 to clarify how BLM would regulate summer vehicle tundra access, an aspect of oil and gas operations that the 1998 IAP/EIS and the Amended IAP/EIS had not addressed.

The alternatives presented below differ among themselves in two important areas: 1) the amount of land that would be made available for oil and gas leasing, and 2) the types of lease stipulations and/or ROPs that would be used to protect surface resources (Table 2-1). It should be understood that BLM has discretion to offer for a lease sale all or only a portion of the lands determined in a Record of Decision to be made available, thus making possible phased leasing and development over multiple lease sales. The following sections discuss these elements in more detail for each alternative. In addition, two tables (Table 2-2 and 2-3) found at the end of this chapter are used to compare the protective measures and their effectiveness across alternatives and to describe the likely effects of actions taken under each alternative.

2.3.1 Alternative A – No Action Alternative

Alternative A is the No Action Alternative and is comprised of decisions established in the ROD for the 1998 Northeast IAP/EIS. The decisions described in this alternative constitute the existing management practices of the Northeast NPR-A.

Under this alternative, approximately 87% (4 million acres) of the planning area's approximately 4.6 million acres would continue to be available for oil and gas leasing (Map 2-1) and approximately 825,000 acres available for leasing would continue to prohibit all permanent oil and gas facilities, with in some cases exceptions for essential pipeline and road crossings. In an area of approximately 264,000 acres within the Teshekpuk Lake Surface Protection Area in which oil and gas leasing could occur but no surface activities would be permitted, leases would not

include subsurface resources in the uppermost 500 feet. Management practices would emphasize prescriptive-based stipulations on surface activities, consultation with local residents, and coordinated scientific studies to protect wildlife habitat, subsistence use areas, and other resources. Table 2-2, found after subsection 2.10, compares and evaluates the effectiveness of the prescriptive-based stipulations developed for this alternative with the performance-based stipulations and ROPs developed for alternatives B, C, and D. All the stipulations under Alternative A are subject to an exception clause (see Appendix D). (Note: In the 1998 ROD BLM committed to develop a management plan for the Colville River Special Area in cooperation with adjacent landowners and other affected parties. Other parties critical to a cooperative planning process were approached about the possibility of basing the management plan on the larger Colville River watershed, but chose not to participate. Thus, the BLM is currently developing the plan on its own, in consultation with various stakeholders, to cover the entire Special Area. The 1998 ROD also established the Subsistence Advisory Panel. It continues to provide valuable advice to BLM and industry and none of the alternatives in this Supplemental IAP/EIS affects it. The 1998 ROD also established a Research and Monitoring Team. It was established, but after the establishment of the North Slope Science Initiative, the RMT was disbanded. For more discussion on the Research and Monitoring Team, see Section 4.2.3).

2.3.2 Alternative B

Alternative B would make available approximately 95% (4,387,000 acres) of the planning area's approximately 4.6 million acres for oil and gas leasing (Map 2-2), including approximately 387,000 acres that were unavailable in the 1998 ROD. The additional lands made available by Alternative B are within areas of high oil and gas potential in the Northeast Planning Area, and are within the Teshekpuk Lake Special Area. On approximately 977,000 acres available for leasing the alternative would prohibit permanent oil and gas facilities, except pipelines and, in some cases, roads. Management practices would emphasize performance-based stipulations and ROPs on surface activities, consultation with local residents, and coordinated scientific studies to protect wildlife habitat, subsistence use areas, and other resources. In addition, approximately 213,000 acres northeast of Teshekpuk Lake that are currently unavailable for oil and gas leasing would remain unavailable for leasing, to provide for protection of wildlife and subsistence resources.

Performance-based stipulations and ROPs (patterned after those developed for the northwest portion of the National Petroleum Reserve – Alaska) would be used to mitigate the impacts of BLM-authorized activities, provide flexibility to BLM to adapt management decisions to uncertain or changing environmental conditions, and provide more consistent management by BLM across the entire northern portion of NPR-A. The stipulations and ROPs for this alternative are presented in Table 2-2, as are summaries of their relative effectiveness compared to the stipulations and ROPs in the other alternatives.

Additional seasonal and spatial restrictions are applied to provide protection of specific environmentally sensitive areas. These areas are described in **section 2.2.2, Areas with Additional Protections**, and the restrictions are described in Table 2-2. These stipulations would also apply to the approximately 387,000 acres that are unavailable for leasing under Alternative A, but would be made available under Alternative B. Environmentally sensitive areas and their applicable stipulations are listed below.

- Rivers Area (see Lease Stipulation K-1)
- Deep Water Lakes (see Lease Stipulation K-2)
- Teshekpuk Lake Shoreline (see Stipulation K-3)

- Goose Molting Area (see Lease Stipulation K-4)
- Teshekpuk Lake Caribou Habitat Area (see Lease Stipulation K-5)
- Coastal Area (see Stipulation K-6)
- Colville River Special Area (see Lease Stipulation K-7)
- Pik Dunes (see Lease Stipulation K-8)

2.3.3 Alternative C

Alternative C would make 100% of the planning area's 4.6 million acres available for oil and gas leasing (Map 2-3). On approximately 1,113,000 acres available for leasing the alternative would prohibit permanent oil and gas facilities, except pipelines and, in some cases, roads. It would utilize the same performance-based stipulations and ROPs developed for Alternative B (except for a setback on the Tingmiaksiqvik River; see Stipulation K-1g, which only applies to Alternative B) to mitigate the impacts of energy development and other land uses on resources in the planning area. These protective measures would mitigate the impacts of energy development and other land uses, provide flexibility to BLM to adapt management decisions to uncertain or changing environmental conditions, and provide more consistent management by BLM across the entire northern portion of NPR-A. These restrictions are presented in Table 2-2 and pertain to the same activities and include the same seasonal and spatial restrictions as Alternative B.

2.3.4 Alternative D—Preferred Alternative

Alternative D, the Preferred Alternative, would make approximately 86% (approximately 3.94 million acres) of the planning area's 4.6 million acres available for oil and gas leasing immediately. An additional approximately 9% (approximately 430,000 acres) would be deferred from leasing for ten years after signing of the Record of Decision (Map 2-4). Leasing could occur after that time if the existing NEPA analysis is adequate. On approximately 1,450,000 acres, including more than half of the 430,000 acres that could be leased after ten years, the alternative would prohibit permanent oil and gas facilities, except pipelines and, in some cases, roads. Management practices would emphasize performance-based stipulations and ROPs on surface activities, consultation with local residents, and coordinated scientific studies to protect wildlife habitat, subsistence use areas, and other resources.

The lands made available for immediate leasing would include all lands made available under Alternative A, except approximately 60,000 acres within the exterior shore of Teshekpuk Lake (i.e., the exclusion from leasing includes islands within the lake). The lands that would be available for leasing ten years after the signing of the ROD would include all additional lands in the planning area not within the exterior shore of Teshekpuk Lake. Under Alternative D, Teshekpuk Lake and its islands (approximately 219,000 acres) would not be made available for oil and gas leasing. Exploratory drilling and pipeline construction would be precluded in the deferred area for the length of the deferral and in Teshekpuk Lake, except that current leases encompassing parts of Teshekpuk Lake and its islands would not be affected as long as the leases are renewed. Upon relinquishment or expiration of existing leases for lands in Teshekpuk Lake and its islands, the lands would be unavailable for leasing.

Alternative D would make available after ten years approximately 430,000 acres that were unavailable in the 1998 ROD. The additional lands made available by Alternative D are within the area of highest oil and gas potential in the Northeast NPR-A Planning Area, and include a part of the Teshekpuk Lake Special Area (TLSA). Several major protective measures have been developed as requirements/standards to protect important resources and subsistence activities in these lands that would be newly made available for leasing in the TLSA:

- Areas in and around identified lakes north of Teshekpuk Lake within the GMA, that are important for molting brant and other sensitive waterfowl would be protected with a restricted surface occupancy lease stipulation (approximately 240,000 acres) (Map 2-4). (Note: The Amended IAP/EIS referred to this and similar restrictions that would prohibit all permanent oil and gas facilities *with the exception of pipelines and in some cases roads* as No Surface Occupancy, or NSO, restrictions. The Supplemental IAP/EIS uses the phrase restricted surface occupancy, or RSO, to refer to the same level of restriction. Readers should examine the wording of specific stipulations or ROPs to clarify what facilities would be prohibited). Lakes and adjacent lands identified as important habitat for molting geese and other waterfowl are included in the RSO area. Because many of these lakes are in very close proximity, the buffer areas around the lakes often overlap resulting in the RSO area depicted on Map 2-4. In addition to providing protection to molting geese and other waterfowl, this restriction would also provide protection for caribou calving and insect-relief habitats. While providing important protections to key resources, this lease stipulation would allow for exploration of the region. Within the RSO area(s), permanent oil and gas facilities would be prohibited, but a pipeline(s) would be allowed on conditions determined during a workshop to be convened to identify the best area for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources and users. Exploration activities would be allowed within the RSO, including seismic acquisition and exploratory drilling. Exploratory drilling would not be allowed within the GMA between June 15 and August 20. Within the GMA, BLM, after conferring with appropriate Federal, state, and NSB agencies, would develop a research study of the effects of disturbance on molting brant and other geese that utilize the lakes north of Teshekpuk Lake. The study would be completed prior to any authorization of construction of permanent facilities within the GMA. The study would include at least 3 years of data collection and would focus on 1.) providing baseline data for detection and/or measurement of disturbance, 2.) identifying significant development-related disturbance factors, 3.) evaluating consequences to geese from disturbance with the GMA considering relevant stipulations and ROPs, and 4.) identifying additional mitigation measures to protect molting geese that may be considered necessary as a result of the study, including recommendations for appropriate placement of permanent facilities based on the study's identification of development-related disturbance factors. In addition, the study results would be used to identify specific location of facility(s) within the approximately 5,000 acre parcel of land (as depicted on Map 2-5) available within the GMA Lease Tracts F and G. See Lease Stipulations K-4, K-5, and K-11.
- Two Caribou Movement Corridors would receive additional protection. The area extending from the eastern shore of Teshekpuk Lake eastward towards the Kogru Inlet would be protected with a RSO stipulation (approximately 45,000 acres). This area is currently identified as important for caribou movement during the calving and insect-relief seasons. The area encompasses a relatively narrow passage between Teshekpuk Lake and Kogru Inlet that is inundated with many smaller lakes, and is currently identified as a "bottleneck" to caribou north/south movement. The area adjacent to the northwest corner of Teshekpuk Lake would be protected with a RSO lease stipulation

(approximately 9,700 acres). This area is currently identified as important for caribou movement during the calving and insect-relief seasons. Within the RSO areas, permanent oil and gas facilities other than pipelines would be prohibited. Pipelines would be allowed on conditions determined during a workshop to be convened to identify the best area for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources. Exploration activities, such as seismic acquisition and exploratory drilling, would be allowed within these RSO areas during the winter season only. See Lease Stipulation K-9 and Map 2-4.

- The Southern Caribou Calving Area southwest and southeast of Teshekpuk Lake would be protected with a RSO stipulation (approximately 240,000 acres). This area has been identified as important for caribou calving and post-calving, and providing insect relief. Within this RSO area, permanent oil and gas facilities would be prohibited, except pipelines would be allowed on conditions determined during a workshop convened to identify the best area for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources and users. Exploration activities would be allowed within each RSO, such as seismic acquisition and exploratory drilling during the winter season only. See Lease Stipulation K-10 and Map 2-4.
- The area north of Teshekpuk Lake is delineated into seven large lease tracts. These tracts range from 46,100 to 57,100 acres. A maximum limit of 300 acres of permanent surface disturbance resulting from new oil and gas activities is established for each tract. This further reduces the potential impacts of oil and gas development by limiting impacts to a defined amount of surface disturbance. See Lease Stipulation K-11 and Map 2-4. (Note: These large tracts are all within the area that would be deferred from leasing for ten years).

As with Alternatives B and C, performance-based stipulations and ROPs (patterned after those developed for the northwest portion of the National Petroleum Reserve – Alaska) would be used to mitigate the impacts of BLM-authorized activities, provide flexibility to BLM to adapt management decisions to uncertain or changing environmental conditions, and provide more consistent management by BLM across the entire northern portion of NPR-A. The stipulations and ROPs for this alternative are presented in Table 2-2, as are summaries of their relative effectiveness compared to the stipulations and ROPs in the other alternatives.

Table 2-1. Alternative Summary Comparison Table

Alternative	Lands Available for Use	Protective Measure	Leasing and Occupancy Restrictions
No Action Alternative (Alternative A; 1998 Northeast IAP/EIS ROD)	Approximately 4,000,000 acres (87%) available for leasing	79 prescriptive stipulations as described in the 1998 Northeast NPR-A IAP/EIS ROD and listed in Table 2-2 and Appendix D	Areas north and east of Teshekpuk Lake unavailable for leasing (approximately 600,000 acres) No Surface Activity Restriction (approximately 250,000 acres southwest, south, and southeast of Teshekpuk Lake) Restricted Surface Occupancy near streams and lakes (approximately 825,000 acres)
Alternative B	Approximately 4,387,000 acres (95%) available for leasing	Performance-based stipulations and ROPs as listed in Table 2-2 and Appendix E	Goose molting/caribou habitat use area north of Teshekpuk Lake unavailable for leasing (approximately 213,000 acres) Restricted Surface Occupancy near streams, lakes, and coast (approximately 977,000 acres)
Alternative C	4,600,000 acres (100%) available for leasing (entire Planning Area)	Performance-based stipulations and ROPs (same as Alternative B, except Stipulation K-1g)	All areas available for leasing Restricted Surface Occupancy near streams, lakes, and coast (approximately 1,113,000 acres)
Alternative D	Approximately 4,370,000 acres (95%) available for leasing	Performance-based stipulations and ROPs, similar to those identified for Alternatives B and C, but including 3 additional site specific stipulations (K-9 through K-11). These stipulations and ROPs are listed in Table 2-2 and Appendix F	Teshekpuk Lake (219,000 acres) would not be available for leasing and the area not made available by Alternative A would be deferred from leasing for 10 years Restricted Surface Occupancy total 1,450,000 acres <ul style="list-style-type: none"> • 240,000 acres north of Teshekpuk Lake within the Goose Molting Area restricted to no permanent oil and gas development other than pipelines. (No alternative procedures will be approved.) • 250,000 acres within Caribou Movement Corridors and Southern Caribou Calving Areas restricted to no permanent oil and gas development other than pipelines • 7 Lease Tracts north of Teshekpuk Lake; permanent surface disturbance resulting from oil and gas activities other than pipelines is limited to 300 acres within each lease tract • No permanent oil and gas facilities within a ¼ mile of the ordinary high water mark of Teshekpuk Lake

Additional seasonal and spatial restrictions are applied to provide protection of specific environmentally sensitive areas. These areas are described in **section 2.2.2, Areas with Additional Protections**, and the restrictions are described in Table 2-2. Some of these stipulations would apply in part or in whole to the approximately 430,000 acres that are unavailable for leasing under Alternative A, but would be made available under Alternative D.

Environmentally sensitive areas and their applicable stipulations are listed below. The last three areas listed are unique to Alternative D.

- Rivers Area (see Lease Stipulation K-1)
- Deep Water Lakes (see Lease Stipulation K-2)
- Teshekpuk Lake Shoreline (see Stipulation K-3)
- Goose Molting Area (see Lease Stipulation K-4)
- Teshekpuk Lake Caribou Habitat Area (see Lease Stipulation K-5)
- Coastal Area (see Stipulation K-6)
- Colville River Special Area (see Lease Stipulation K-7)
- Pik Dunes (see Lease Stipulation K-8)
- Caribou Movement Corridor Area (see Lease Stipulation K-9)
- Southern Caribou Calving Area (see Lease Stipulation K-10)
- Lease Tracts Area (see Lease Stipulation K-11)

2.3.5 Stipulations and Required Operating Procedures

In addition to the land allocation decisions regarding what portions of the planning area would be made available to oil and gas leasing, the alternatives differ in the protective measures that would be imposed on oil and gas activities and non-oil and gas activities. The protective measures in Alternative A are those adopted in the 1998 Northeast NPR-A ROD. Pursuant to the purpose of this IAP/EIS, BLM developed two types of performance-based protective measures analogous to those developed in the Northwest NPR-A IAP/EIS.

The performance-based protective measures are of two types—stipulations and required operating procedures. Most requirements identified here as stipulations represent a legal “taking” in that they could take from the value of an oil and gas lease. For example, a stipulation that does not allow permanent facilities within a large area could result in a well being located far enough from the lessee’s optimum site for a well that it would prevent an oil reservoir from being developed. To legally take such value from a lease, the requirement is attached to the lease. Thus, the lessee knows that the lease being purchased comes with this impediment to full development. As part of a lease contract, lease stipulations are specific to the lessee. All oil and gas activity permits issued to a lessee will comply with the lease stipulations appropriate to the activity under review.

Required Operating Procedures, or ROPs, are requirements to achieve specified objectives through best management practices (referred to in this Supplemental IAP/EIS as requirements/standards) that BLM will impose as necessary through the permitting process. As used in this Supplemental IAP/EIS, they refer both to oil and gas activities and non-oil and gas activities. An oil and gas lease does not in itself authorize any on-the-ground activity. Seismic operations, drilling, pipeline and gravel road and pad construction, etc. require additional land use authorizations. Any applicant requesting such authorization will have to address the required operating procedures either before submitting the application (e.g., subsistence consultation, surveys), as part of the application proposal (i.e., including in the proposal statements that the applicant will meet the objective of the ROP and describe how the applicant intends to achieve that objective), or as a term imposed by BLM in a permit. Requirements that

are met prior to submission of the application, as well as procedures, practices, and design features that are an integral part of a proposal, would not need to be required as a term of a permit. Note that at the permitting stage, BLM's Authorized Officer (AO) would not include those ROPs that, because their geographic or other inapplicability, are not relevant to a specific permit application. Note also that at the permit stage the AO may establish additional requirements that would be warranted to protect the land and resources pursuant to the BLM's responsibility under relevant laws and regulations.

The stipulations and ROPs of all the alternatives are presented in Table 2-2. The table provides the easiest means to compare the stipulations and ROPs among the alternatives. A stand-alone description of the stipulations for Alternative A is provided in Appendix D. Similar stand-alone descriptions of the stipulations and ROPs for Alternatives B and C are provided in Appendix E, and for Alternative D in Appendix F, respectively.

The performance-based stipulations and ROPs in Alternatives B through D differ from the prescriptive-based stipulations of Alternative A in three general ways:

- The stipulations and ROPs in Alternatives B through D include fewer actions that already exist in the form of law and regulation. A larger proportion of the stipulations in Alternative A replicate requirements in law and regulation.
- In developing the Amended IAP/EIS and this Supplement thereto, BLM has reexamined the utility and effectiveness of requirements of the 1998 stipulations and analyzed *substantive* changes in the types of protection to be provided in the action alternatives in the performance-based stipulations and ROPS in Alternatives B through D. Examples in some or all of the action alternatives include allowing refueling and permanent oil and gas facilities a minimum of 100 feet of non-fish-bearing lakes (instead of requiring that such activities be at least 500 feet away from such lakes as was done in the 1998 Northeast NPR-A ROD), allowing for water withdrawals from lakes less than 7 feet deep with non-sensitive fish (instead of forbidding water withdrawal from all fish-bearing lakes under 7 feet deep), and requiring that aboveground pipelines be elevated 7 feet above the ground at each vertical support member (instead of 5 feet above the ground along its entire length). The action alternatives also analyzed stipulations and ROPs that specifically addressed protections from oil and gas activities for lands that Alternative A would not make available for oil and gas leasing or would have restricted use with no surface activity restrictions.
- A fundamental difference between performance-based and prescriptive protective measures is their *approach* to, and *procedures* for, protecting resources and uses. The prescriptive stipulations require that certain actions be taken (or not taken) by a lessee/permittee to protect resources and uses of the planning area, while the performance stipulations and ROPs require that certain objectives for protecting resources and uses be achieved. For example, Stipulation K-5 is a performance-based stipulation designed to "Minimize disturbance and hindrance of caribou, or alteration of caribou movements through portions of the Teshekpuk Lake Caribou Habitat Area that are essential for all season use, including calving and rearing, insect-relief, and migration." One of its requirements/standards states that major construction would be suspended from May 20 to August 20 unless approved by the AO. To achieve the objective, on the one hand, it may be satisfactory to allow construction in a part of the Teshekpuk Lake Caribou Habitat Area during at least a part of the period if caribou are absent from that portion of the area during a portion of the three-month period. On the other hand, the AO may extend the

period for suspended construction if calving or insect relief activities extend beyond the dates provided in the requirement/standard. By focusing on the results or performance to achieve an objective for a stipulation or ROP, the performance-based protective measures provide BLM's land managers and industry with greater flexibility in how to achieve resource protection objectives and, BLM believes, efficacy in protecting surface resources. There is a high degree of natural variation and inherent complexity associated with the North Slope environment. Performance-based stipulations and ROPs provide BLM with the flexibility to adapt management by tightening or relaxing restrictions on development in order to meet surface protection goals as the agency benefits from emerging information from study and experience.

During scoping for the Amended IAP/EIS, several respondents expressed concern that the protective measures developed for the Northwest IAP/EIS (and, analogously, for Alternatives B, C, and D for the Amended IAP/EIS and this Supplemental thereto) would not be as effective, or provide similar levels of protection, as the stipulations developed for the 1998 Northeast IAP/EIS. It should not be assumed, however, that increased flexibility would result in no, inadequate, or even weakened protection of the resources and uses of the planning area. This is so for several reasons.

First, BLM is required by law to protect surface resources. The BLM cannot abrogate its regulatory responsibility to take such action as deemed necessary to mitigate or avoid unnecessary surface damage and to minimize ecological disturbance throughout the NPR-A, consistent with the requirements of the Naval Petroleum Reserves Production Act, 42 USC § 6501, et seq., and its implementing regulations at 43 CFR 2360 and to take whatever action is required to prevent unnecessary or undue degradation of the public lands under the Federal Land Policy and Management Act, 43 USC § 1732.

Second, as demonstrated by Table 2-2, in some instances the prescriptive stipulations of Alternative A may provide more protection than the performance stipulations of the other alternatives, but in other instances greater protection is provided by the performance-based stipulations and ROPs. The evaluation in the table is not based upon the prescriptive rather than performance approach and procedures, but on the substantive level of protection incorporated into the requirements/standards versus the prescriptive stipulations. For example, the performance ROP E-7 in the performance-based alternatives is adjudged to provide greater protection to caribou movement than Stipulation 37 in Alternative A because it has a standard for pipeline height of 7 feet at VSMs, while Stipulation 37 only mandates a height of 5 feet, not because of the approach and procedures associated with performance-based protective measures. Similarly, while Alternatives A and C do not require any setback of permanent oil and gas facilities from the Tingmiaksiqvik River, Alternatives B and D's requirement/standard would prohibit permanent oil and gas surface facilities, except essential transportation crossings, within a ½ mile of the stream. Consequently, Alternatives B and D would be more effective than Alternatives A and C in protecting water quality and other resources associated with the Tingmiaksiqvik River if oil development were to occur in the general area of that stream.

Third, the performance-based stipulations and ROPs will provide the BLM enhanced ability to mitigate impacts when a lessee or would-be permittee applies to BLM for approval of on-the-ground activity. On-the-ground oil and gas activity, including, but not limited to, seismic surveys, exploratory drilling, ice or gravel road and pad construction, and facility construction and abandonment require BLM's approval, as does non-oil and gas activity. Prior to issuing such an approval, BLM would conduct appropriate additional NEPA. The prescriptive stipulations *require*

that certain actions be taken (or not taken) by a lessee/permittee to protect resources and uses of the planning area. These prescriptions remain unchanging in the leases, regardless of whether new science or updated technology suggests that better protection can be achieved through other means. In contrast, the performance stipulations and ROPs *require that certain protections of resources and uses be achieved*. Requirements and standards listed with the performance-based stipulations and ROPs (see Table 2-2) represent BLM's current understanding of how lessees/permittees would achieve the objectives of the stipulation or ROP. Performance-based stipulations and ROPs, however, allow BLM at the permitting stage to better utilize 1.) the latest and best understanding of the North Slope environment and possible impacts to it, 2.) the latest advances in technology and techniques relevant to North Slope oil and gas activities, and 3.) the more site- and project-specific information that is available at the permit stage. If BLM finds through monitoring or as a result of other studies that a prescribed action is not effective or if new technology or techniques have been shown to lessen impacts, the prescriptive stipulations of Alternative A do not give the agency the ability to require the lessee/permittee to undertake other measures instead of those required by the stipulations. Under Alternatives B through D if, after experience or additional study, BLM concludes that a requirement/standard is not achieving or is unlikely to achieve a protective objective when applied to a specific future on-the-ground action or would not do so as well as the use of recently proven technology or techniques, BLM could, under the terms of the performance-based stipulation or ROP, impose other restrictions to meet the objective. (Note: In addition, the BLM may require additional terms and conditions at the permitting stage independent of any stipulations or ROPs adopted in the Northeast NPR-A Supplemental ROD).

The procedures that would allow a deviation from the requirements of the stipulations of Alternative A differ from those that would allow a deviation from the requirements/standards associated with the resource/use objectives of the other alternatives. Under all alternatives, a deviation could occur if the Northeast NPR-A Supplemental IAP/EIS ROD was itself modified. If this were a significant change it would require that BLM conduct a public NEPA process in which such a modification would be subject to public review and comment. Under Alternative A, deviations from the stipulations could also be allowed through the exception process. Exceptions could be granted if 1.) the objectives of the stipulation could be fully satisfied by the alternative process proposed by the lessee/permittee *and* 2.) to comply with the stipulation would be either "technically not feasible," or "economically prohibitive," or if the alternative offered by the lessee/permittee is "environmentally preferable." Under the other alternatives, a lessee/permittee may propose a deviation from the requirements/standards of stipulations and ROPs and BLM could grant such a deviation if it determines that the *alternative procedure* proposed by the applicant would meet the objective. (Note: The Amended IAP/EIS included the exception clause for Alternatives B and D. It has been deleted in the Supplemental IAP/EIS for those alternatives because it would be redundant. Under the three action alternatives, an applicant for a BLM authorization could obtain a deviation from requirements/standards if the BLM determines that the alternative procedure will meet the objective(s) of the stipulation or ROP. If the applicant's proposed deviation does not meet the objective through this process, it is not going to meet the first prong of the exception clause listed above, i.e., that the "objectives of the stipulations . . . be fully satisfied by the alternative process.") For more information on the exception process in Alternative A, see Appendix D; for a similar discussion on how deviations from the requirements/standards can be achieved under the other alternatives, see Appendix E (for Alternatives B and C) and Appendix F (for Alternative D).

Fundamental to the concept of performance-based management is learning and adaptation to new information. The requirements/standards of the stipulations and ROPs currently represent BLM's best understanding of the protective measures necessary to achieve the desired outcome.

However, our knowledge is not perfect; individual stipulations and ROPs may be adequate, inadequate, or overly restrictive. Indeed, a single stipulation or ROP may be all of those things depending on where it is applied. By accepting this uncertainty, defining the stipulations and ROPs as desired outcomes (performance), and incorporating a mechanism to adapt to new information as exploration and development proceed and our understanding of the components of the arctic ecosystem and its response to exploration and development, BLM strives to provide the necessary protection to surface resources while minimizing restrictions to oil and gas development.

While not the “Adaptive Management” of Walters (Walters, 1986), this approach can be seen as a form of adaptive management as limited by the nature of oil and gas exploration and development on the North Slope. In most other types of land management where adaptive management is proposed, the amount, quality, quantity, and location of the resource to be managed is known. Management actions can be treated as experiments to further knowledge. Scale (temporal and spatial), magnitude, and variation can all be manipulated with relatively limited cost compared to conventional management actions. Oil and gas, however, are not visible, not randomly distributed, and difficult and expensive to extract. Manipulation of the basic components (e.g. pads, pad location, and the types of structures and activities) cannot be done easily and certainly not inexpensively; quite the opposite in fact. Construction of a pad in a location necessary to test a hypothesis where there is not oil or in a sub-optimal location is a financial impracticability. The adaptive management envisioned here incorporates learning through time and flexibility.

The BLM expects that development will occur on a linear trend. As noted above, BLM may choose a phased approach whereby only some of the lands designated as available are offered for lease in a given lease sale. Moreover, oil and gas are expected to be discovered over many years and not all development will be constructed at once. This could result in enhanced protection of surface resources by giving BLM the opportunity to learn from the previous exploratory drilling and development activities, to modify the standards and requirements of the stipulations and ROPs, and to adopt additional permit requirements. Further, this approach is an incentive to industry to develop and implement new technology and operating procedures, adapting their management practices to achieve the goals of the stipulations and ROPs while allowing them to optimize the placement of infrastructure and their operations.

The BLM will ultimately be responsible for determining how the objectives of the stipulations and ROPs will be achieved. In undertaking this responsibility, BLM may confer with other Federal, state, and local agencies with expertise and/or authority to manage certain resources or activities. Indeed, a number of stipulations and ROPs specifically state that BLM’s Authorized Officer (AO) will consult with other agencies. It should be emphasized, however, that any statement in a stipulation or ROP that BLM will discuss a specific matter with another agency does not in any way diminish BLM’s authority and responsibility to make a land management decision.

2.4 MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES

Before considering the various management strategies put forward for consideration in these alternatives, readers should be aware that some management actions will occur under all alternatives. These actions include fulfilling BLM’s responsibility to convey land to individual Alaskan Natives and to Native corporations under the Native Allotment Act and the Alaska Native Claims Settlement Act (ANCSA), respectively. In cooperation with other Federal, state, and NSB resource management agencies, BLM also will conduct studies, such as the inventory

and monitoring of resource populations and conditions under all alternatives. These studies will assess the health of biological resources, the location and significance of other resources, and the effectiveness of management practices in protecting these resources. The scope of these studies will reflect the level of impacting actions allowed and the protective measures imposed under the plan adopted through this Supplemental IAP/EIS.

The BLM is required to consult with the USFWS and NOAA Fisheries Service on any action that could impact threatened and endangered species in the planning area. The bowhead whale, spectacled eider, and Steller's eider may occur near areas that could be affected by oil and gas development in the planning area. The polar bear has been proposed to be listed as threatened. The BLM is required to conference on any activity that could jeopardize the continued existence of polar bear or adversely modify or destroy proposed critical habitat. The bowhead whale is listed as an endangered species under the ESA, while the two eider species are listed as threatened.

Appendix J contains a list of species that BLM has identified as species of special status in Alaska. Most of the species listed in Appendix J are not found in the NPR-A. Only those species likely to be found in or near the planning area are discussed in the Supplemental IAP/EIS. The BLM will manage all permitted activities, pursuant to BLM Manual Section 6840 (*Special Status Species Management*), to ensure that actions requiring authorization or approval by BLM are consistent with the conservation needs of special status species and do not contribute to the need to "list" any of them under the provisions of the ESA of 1973, as amended.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.5.1 Making Less Land Available for Leasing

Neither the Amendment nor this Supplement thereto considers alternatives that would make less land available for oil and gas leasing than the 1998 Northeast NPR-A IAP/EIS.

As described in **section 1.2**, the underlying purpose of the IAP/EIS is to evaluate additional lands to be made available for leasing in order to address the Nation's need for additional energy sources. In 2001, the President created the National Energy Policy Development Group (NEPDG), consisting of the Vice-President and other key cabinet members. The primary task of the group was to "develop a national energy policy designed to help the private sector, and, as necessary and appropriate, state and local governments, and promote dependable, affordable, and environmentally sound production and distribution of energy for the future" (NEPDG 2001). In May 2001, the NEPDG released the National Energy Policy report, a comprehensive list of findings and key recommendations that form the basis of the President's National Energy Policy. Specifically, the policy directs the Secretary of the Interior to "consider additional environmentally responsible oil and gas development, based on sound science and the best available technology, through further lease sales in the National Petroleum Reserve – Alaska," and states that "such consideration should include areas not currently leased within the northeast corner of the National Petroleum Reserve – Alaska." The Amended IAP/EIS and this Supplement thereto are part of the process by which the Secretary carries out that policy direction. Accordingly, considering an alternative that would likely yield less energy resources than made available in the 1998 Northeast NPR-A ROD would be contrary to the purpose and need of the IAP/EIS, and is therefore outside the scope of the IAP/EIS.

2.5.2 Analyzing a Different Mix of Prescriptive and Performance Measures and Land Allocation Decisions

Alternative A considers prescriptive stipulations and makes no new lands available for oil and gas leasing. Alternatives B, C, and D consider somewhat different versions of performance stipulations and ROPs and each would make a different set of additional lands available for oil and gas leasing. The BLM considered analyzing one or more other alternatives that would mix performance stipulations with making no more lands available for leasing or making more lands available for leasing, but with prescriptive stipulations. The BLM has rejected such additional alternatives.

These additional alternatives would be substantially the same as other alternatives already analyzed in this Supplemental IAP/EIS and would result in environmental impacts that are substantially the same as those presented in this document. An alternative that made the same amount of land available for leasing as Alternative A, but proposed use of performance-based stipulations and ROPs, and alternatives that made the same amount of land available for leasing as Alternatives B, C, and D, but proposed prescriptive stipulations, would still make the same amount of land available for leasing and the same amount of oil and gas susceptible to discovery and development, with generally the same resultant environmental consequences. Nor would such a mix of decisions on lands to lease and the type of stipulation and ROP package result in notably different impacts because neither package of protective measures would provide clearly superior environmental benefits. As demonstrated in the analysis in Chapter 4 and more specifically in Table 2-2, in a great many cases the prescriptive stipulations of Alternative A and the corresponding performance-based stipulations and ROPs in the other alternatives have been adjudged to offer the same or essentially the same protection for resources and uses. In some cases this is the result of using identical or similar wording in the stipulations of Alternative A and the requirements/standards to meet the objectives of the performance-based stipulations of Alternatives B, C, and D. For example, the requirement/standard for ROP A-1 for Alternatives B, C, and D and Stipulation 6 of Alternative A both read, “Areas of operation shall be left clean of all debris.” In other cases, while the wording of the prescriptive and performance-based measures is different, their effectiveness in protecting resources and uses is not. Also, as discussed in Section 2.3.5, while the substantive requirements of some prescriptive stipulations in Alternative A are more protective than those included in the requirements/standards of the performance-based stipulations and ROPs in the other alternatives, there also are some performance-based stipulations that offer more protection than the prescriptive stipulations. On the balance, the protective effectiveness of the substantive requirements of performance-based stipulations and ROPs is roughly the same as that of the prescriptive stipulations. Therefore, analyzing an alternative that would make the same lands available for oil and gas leasing as Alternative A, but propose performance-based protective measures, or analyzing an alternative that makes the same lands available of leasing as Alternative B, C, or D, but proposes prescriptive stipulations would not add substantively to the impact analysis.

2.5.3 Considering Wilderness Designation

Wilderness designation within the planning area is not being considered in any alternative for two reasons. First, the underlying purpose of the IAP/EIS relates to oil and gas leasing, exploration, and development, including making more lands available for leasing. (See **section 1.2**). Because creating new wilderness designations is inconsistent with this management objective, alternatives proposing such an action are outside the scope of the Amended IAP/EIS and this Supplement thereto. Second, wilderness designation is not being considered in

accordance with Secretarial direction and ANILCA. Alaska lands were exhaustively inventoried, reviewed, and studied for eight years during the 1970s to evaluate their wilderness values under the Wilderness Act criteria. In 1980 Congress passed ANILCA, which preserved more than 150 million acres in conservation units, including 57 million acres of designated wilderness. Alaska has a higher amount and proportion of land in wilderness designation than any other state. ANILCA also removed the requirements for additional wilderness review in Alaska under FLPMA and granted the Secretary of the Interior discretion to identify additional wilderness for Congressional consideration. In 1981 the Secretary exercised that discretion to cease wilderness reviews in Alaska. This decision was rescinded in 2001 by Secretary Bruce Babbitt. However, on April 11, 2003 Secretary Gale Norton instructed BLM to “consider specific wilderness study proposals in Alaska, as part of any new or revised resource management planning effort, if the proposals received have broad support among the State and Federal elected officials representing Alaska. Absent this broad support, wilderness should not be considered in these resource management plans.” The State of Alaska, in a January 8, 2007 communication responding to the Notice of Intent for the Supplement stated that it opposes designation of “new conservation system units,” a designation that includes wilderness areas, in the planning area. Therefore, based both on the purpose and need of this plan and a legislatively-supported Secretarial decision, BLM is not considering wilderness designations in this plan.

2.5.4 Consideration of Wild and Scenic River Designation

Detailed analysis of an alternative considering Wild and Scenic River recommendations is not included in this Supplemental IAP/EIS for two reasons. First, the underlying purpose of the IAP/EIS relates to additional oil and gas leasing, exploration, and development. (See **section 1.2**). Because creating new Wild and Scenic River designations is inconsistent with this management objective, alternatives proposing such an action are outside the scope of the IAP/EIS. Second, the BLM conducted a comprehensive review of Wild and Scenic River eligibility in the 1998 Northeast IAP/EIS, and no rivers were recommended by BLM for Wild and Scenic River designation by Congress as a result of that review. Moreover, the BLM has reviewed and considered all of the relevant information available since the 1998 analysis was completed and has found no changes in factors relevant to Wild and Scenic River designation. The BLM concludes that there is no new information which suggests that the prior conclusions in the 1998 Northeast IAP/EIS and ROD should be reconsidered or modified with respect to consideration of wild and scenic river designation.

2.5.5 Fish and Wildlife Service and ConocoPhillips Proposals

During the comment period on the Draft Amended IAP/EIS, the USFWS submitted a proposal that would leave approximately 296,000 acres northeast of Teshekpuk Lake unavailable to oil and gas leasing, compared to 213,000 acres that would have been made unavailable under Alternative B (the Preferred Alternative in the Draft Amended IAP/EIS) and 219,000 acres in Teshekpuk Lake that would be deferred indefinitely under Alternative D (the Preferred Alternative in the Final Amended IAP/EIS). The USFWS wrote that their proposal would provide additional protection for molting brant and other wildlife.

ConocoPhillips Alaska, Inc. presented another alternative that would allow for oil and gas leasing, exploration, and development within portions of the area closed to leasing under Alternative B. The ConocoPhillips approach to protecting molting geese north of Teshekpuk Lake was to apply a No Surface Occupancy buffer around those lakes with the highest use by molting geese.

ConocoPhillips wrote that their proposal would provide adequate protection for caribou and molting geese, while providing additional lands for oil and gas development.

The BLM took these proposals and other public comments into consideration when reviewing the alternatives developed for the Draft Amended IAP/EIS. Based on these comments, BLM developed a Preferred Alternative for the Final Amended IAP/EIS. This alternative (Alternative D in the Final Amended IAP/EIS) allowed for some oil and gas development in the 213,000-acre no-lease area identified under Alternative B (Map 2-4). However, this alternative also provided protection for geese, caribou, subsistence, and other resources found to the north and east of Teshekpuk Lake, by prohibiting permanent oil and gas facilities (excluding pipelines and roads in some areas) on approximately 295,000 acres (Alternative B protects 213,000 acres), and limiting the amount of permanent surface disturbance resulting from oil and gas activities (maximum of 300 new acres) that can occur within each of seven lease tracts to the north of the lake (Map 2-4). This alternative included both the USFWS and ConocoPhillips suggested alternatives, and is being carried forward, with modifications, as Alternative D in this Supplement (see **section 2.3**).

2.6 MONITORING

Monitoring “to determine the status of the various resources in the planning area, to ensure compliance with and enforcement of plan decisions and with stipulations attached to separate land use authorizations, and to measure the effectiveness of protective measures” is required under the 1998 Northeast IAP/EIS ROD for the No Action Alternative in this Supplement, and is included in the stipulations and ROPs identified in Table 2-2 for all of the alternatives. Monitoring activities include, but would not be limited to, the following:

- Monitoring the movements, distribution, and range use of caribou in areas proposed for development (Alternative A Stipulation 29; Alternatives B-D Stipulation K-5[a]);
- Monitoring fish-bearing waters when projects impact fish-bearing and non fish-bearing water bodies to ensure free passage of fish and water quality (Alternative A Stipulation 30; Alternatives B-D Stipulation E-3);
- Monitoring caribou movements in areas with permanent roads (Alternative A Stipulation 49; Alternatives B-D Stipulation K-5[e]);
- Monitoring oil and gas exploration, development, and production effects on subsistence (Alternative A Stipulation 59; Alternatives B-D ROP H-1);
- Conducting cultural and paleontological surveys in areas where ground-disturbing activities will take place (Alternative A Stipulation 74; Alternatives B-D ROP E-13);
- Monitoring bear activity near development and production sites (Alternative A Stipulation 76; Alternatives B-D ROP A-8);
- Conducting aerial surveys of Steller’s and spectacled eiders, and yellow-billed loons, in areas of facility construction (Alternatives B-D ROP E-11), and
- Monitoring impacts of aircraft and vehicle use and impacts of development within the Goose Molting Area (Alternative D only K-4).

In the authorizing/NEPA process for on-the-ground activity or development, BLM will develop appropriate requirements for project-specific monitoring. Consistent with the provisions of the above listed stipulations and ROPs, the AO is authorized to approve monitoring plans that

combine the efforts of multiple permittees and lessees to meet the obligations of each permittee or lessee.

2.7 EFFECTIVENESS OF STIPULATIONS AND REQUIRED OPERATING PROCEDURES

Table 2-2 lists all of the stipulations and ROPs of the four alternatives. The list is organized to aid comparison of similar protective measures across alternatives. In addition to listing the stipulations and ROPs for comparison of their provisions, the table also describes their probable effectiveness. As noted earlier in this chapter, the comparison of the effectiveness of the stipulations and ROPs provided in Table 2-2 is based upon the measurable substantive differences in the proposed protective measures, such as the size of setbacks and the elevation of pipelines.

The reader of this Supplemental IAP/EIS should keep in mind that stipulations and ROPs were often developed to address a specific, or narrow range of, resource concern(s). Thus, the effectiveness statement for each stipulation and ROP may only address one or a few resources.

2.8 COMPARISON OF THE CONSEQUENCES OF EACH ALTERNATIVE

Table 2-3 summarizes the likely effects of oil and gas activities on resources and uses in the planning area for each alternative. It also summarizes cumulative effects for these resources and uses. Information contained in these tables is derived from more detailed discussions in Chapter 4 (Environmental Consequences).

2.9 EFFECTS ON CURRENT AND FUTURE LEASE HOLDERS FROM REVISIONS TO 1998 NORTHEAST IAP/EIS ROD

The analysis contained in this Supplemental IAP/EIS provides NEPA analysis that may allow adoption of a new set of stipulations and ROPs for existing leases in the planning area. If BLM in its ROD for this Supplemental IAP/EIS determines to adopt a set of stipulations and ROPs other than the stipulations adopted in the 1998 Northeast NPR-A IAP/EIS, existing leases may be modified through negotiations with leaseholders to replace the existing lease stipulations with the new stipulations and ROPs. No changes to the stipulations attached to the existing leases would occur until after completion of such renegotiations with leaseholders and any additional NEPA that is determined at that time to be necessary. In accordance with 43 CFR 3135.1-6(c), upon renewal of any lease, the stipulations and ROPs approved in the Supplemental IAP/EIS ROD will replace the stipulations adopted in the 1998 ROD.

2.10 HEALTHY NEIGHBOR POLICY

The Supplemental IAP/EIS contains a new analysis that addresses potential public health effects of development in Northeast NPR-A. The BLM and the NSB encourage lessees and permittees engaged in oil and gas exploration, development, and abandonment procedures in the planning area to be cognizant of the potential public health impacts of their activities and to work with the local communities to develop and implement measures to avoid or minimize the potential for such

impacts. The BLM and NSB encourage lessees and permittees to work with the NSB and communities that could be affected by their activities through preparation of, and regular updates to, a plan for industry and community interaction. The plan should be developed to meet the needs of North Slope communities potentially affected by BLM-authorized activities in the planning area, and would be developed in consultation with the communities. See Appendix G for examples of elements that may be made part of the plan taken from development experiences elsewhere in the world.

Table 2-2. Comparison of Stipulations from the 1998 Record of Decision for the Northeast National Petroleum Reserve - Alaska Integrated Activity Plan and the Supplemental Northeast National Petroleum Reserve - Alaska Integrated Activity Plan's Alternatives B, C, and D.

1998 Northeast IAP/EIS Stipulations for the No Action Alternative	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative
<p>Note: The stipulations and ROPs are listed in order of their appearance in Alternative D, the Preferred Alternative. Some Alternative A stipulations are listed more than once because their requirements correspond to more than one stipulation or ROP listed for the other alternatives.</p> <p>The performance-based stipulations and required operating procedures would offer greater flexibility to adapt requirements/standards to specific situations and to modify the requirements/standards if they prove ineffective. Prescriptive based protective measures often attempt to define a requirement with a “one size fits all” approach that does not allow adjustments when site and project-specific information. Accordingly, while we have in some cases found a performance-based stipulation or ROP to be less effective than the corresponding prescriptive stipulation in Alternative A, this lesser effectiveness may be compensated for by the additional flexibility in the performance-based ROPs.</p>		
<p>WASTE PREVENTION, HANDLING, DISPOSAL, SPILLS, AND PUBLIC SAFETY</p>		
<p>6. Areas of operation shall be left clean of all debris</p>	<p><i>A-1 Required Operating Procedure</i> <u>Objective:</u> Protect the health and safety of oil field workers and the general public by disposing of solid waste and garbage in accordance with applicable Federal, state, and local law and regulations. <u>Requirement/Standard:</u> Areas of operation shall be left clean of all debris.</p>	
<p><i>Alternative A - Stipulation 6 and Alternatives B, C, and D - ROP A-1</i> would effectively provide the same benefits in reducing impacts to water resources and water quality, wetlands, birds, freshwater, estuarine, and marine water resources and water quality, terrestrial mammals, freshwater and marine fish, endangered and threatened species, subsistence harvest patterns, wild and scenic rivers, recreation/wilderness, and visual resources by requiring areas of operation be left clean of all debris and avoid the disposal of solid waste and garbage near areas of human activity. All mitigations would 1) protect water resources and water quality by reducing the potential for solid waste and garbage to contaminate surface waters; 2) protect wetlands from degradation from solid waste and garbage; 3) effectively protect birds by reducing the potential for solid waste and garbage to foul avian habitat or be consumed by birds; 4) reduce the potential effects of human refuse on grizzly bears, polar bears, arctic foxes, and other terrestrial mammals; 5) minimize potential inland and marine pollution and effects on freshwater and marine fish in areas where oil exploration and development may occur; 6) be effective in protecting endangered and threatened species by reducing the potential for solid waste and garbage to adversely impact habitat or be consumed by species of concern; 7) be effective in providing increased protection for terrestrial mammals, thus reducing the potential for impacts on subsistence-harvest patterns; 8) be effective in helping to protect the area's recreation/wilderness resources as well as the users; and 9) limit the degradation of visual resources caused by unregulated disposal of garbage.</p>		
<p>1. To prevent and minimize present and future pollution, management decisions affecting waste generation shall be addressed in the following order of priority:</p> <ul style="list-style-type: none"> -Prevention and Reduction -Recycling -Treatment -Disposal 	<p><i>A-2 Required Operating Procedure</i> <u>Objective:</u> Minimize impacts on the environment from non-hazardous and hazardous waste generation. Encourage continuous environmental improvement. Protect the health and safety of oil field workers and the general public. Avoid human-caused changes in predator populations. <u>Requirement/Standard:</u> Lessees/permittees shall prepare and implement a comprehensive waste management plan for all phases of exploration and development, including seismic activities. The plan shall be submitted to the AO for approval, in consultation with Federal, state, and NSB regulatory and resource agencies, as appropriate (based on agency legal authority and jurisdictional responsibility), as part of a plan of operations or other similar permit application. Management decisions affecting waste</p>	

<p>1998 Northeast IAP/EIS Stipulations for the No Action Alternative</p>	<p>Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C</p>	<p>Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative</p>
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<p>WASTE PREVENTION, HANDLING, DISPOSAL, SPILLS, AND PUBLIC SAFETY</p>	
<p>a. Lessees shall prepare a waste-management plan approved by the AO, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, to achieve specific waste-reduction and prevention goals for all phases of exploration and development (including activities conducted by contractors). The plan shall identify all waste streams that will be produced during each operation by type, volume, and toxicity and the method of disposal. For each waste stream, the lessee/operator shall describe what actions will be taken to minimize the volume. The plan should include activities that will integrate pollution prevention concepts into purchasing, inventory, shipping/receiving, operations maintenance, training, accounting, and design. The goal of the plan shall be continuous environmental improvement and achievement of reduction goals developed through the planning process. Lessees shall develop schedules for implementation and review to meet reduction and prevention goals, designate accountable personnel to carry out action items, and specify budget line items for plan elements. Lessees shall provide the AO with an annual waste-management report.</p> <p>c. Lessees shall conduct annual environmental compliance audits.</p> <p>2. Attracting wildlife to food and garbage is prohibited. All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. A current list of approved precautions, specific to type of permitted use, can be obtained from the AO. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner to prevent the attraction of wildlife.</p> <p>3. Burial of garbage is prohibited. All putrescible</p>	<p>generation shall be addressed in the following order of priority: 1) Prevention and reduction, 2) recycling, 3) treatment, and 4) disposal. The plan shall consider and take into account the following requirements:</p> <p>a. <u>Methods to avoid attracting wildlife to food and garbage.</u> All feasible precautions shall be taken to avoid attracting wildlife to food and garbage. (A list of approved precautions, specific to the type of permitted use, can be obtained from the AO.)</p> <p>b. <u>Disposal of putrescible waste.</u> Requirements prohibit the burial of garbage. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner that prevents the attraction of wildlife. All putrescible waste shall be incinerated, backhauled, or composted in a manner approved by the AO. All solid waste, including incinerator ash, shall be disposed of in an approved waste-disposal facility in accordance with USEPA and ADEC regulations and procedures. The burial of human waste is prohibited except as authorized by the AO.</p> <p>c. <u>Disposal of pumpable waste products.</u> Except as specifically provided, the BLM requires that all pumpable solid, liquid, and sludge waste be disposed of by injection in accordance with USEPA, ADEC, and the Alaska Oil and Gas Conservation Commission regulations and procedures. On-pad temporary muds and cuttings storage, as approved by ADEC, will be allowed as necessary to facilitate annular injection and/or backhaul operations.</p> <p>d. <u>Disposal of wastewater and domestic wastewater.</u> The BLM prohibits wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by a NPDES or state permit.</p>

1998 Northeast IAP/EIS Stipulations for the No Action Alternative	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative
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WASTE PREVENTION, HANDLING, DISPOSAL, SPILLS, AND PUBLIC SAFETY

waste shall be incinerated or composted through an AO-approved system, unless otherwise authorized by the AO. All solid waste, including incinerator ash, shall be removed from BLM lands and disposed of in an approved waste-disposal facility in accordance with USEPA and ADEC regulations and procedures. Burial of human waste is prohibited, except as authorized by the AO.

4. Except as specifically provided, all pumpable solid, liquid, and sludge waste shall be disposed of by injection, in accordance with USEPA, ADEC, and the Alaska Oil and Gas Conservation Commission regulations and procedures. On-pad temporary muds and cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations

5. Wastewater disposal:

- a. Unless authorized by the National Pollution Discharge Elimination System (NPDES) or state permit, disposal of domestic wastewater into bodies of freshwater, including wetlands, is prohibited.
- e. Alternate disposal methods will require an NPDES permit certified by the State.

Alternative A - Stipulation 1 and Alternatives B, C, and D - ROP A-2 provides essentially the same benefit in effectively reducing impacts to **soil, water resources, and water quality, wetlands, vegetation, freshwater and marine fishes, birds, terrestrial mammals (including grizzly bears, arctic foxes) and endangered and threatened species, recreation/wilderness and users, wild and scenic river values, visual resources, and public health** from solid and hazardous waste products by minimizing impacts on the environment from non-hazardous waste generation; by encouraging continuous environmental improvements; by protecting the health and safety of oil field workers and the general public; and avoiding human-caused changes in predator populations. Under all circumstances the lessee/permittee is required to prepare and implement a comprehensive waste management plan for all phases of exploration a development, including seismic activities; management decisions affecting waste general would be addressed in the following order of priority: 1) Prevention and reduction, 2) recycling, 3) treatment, and 4) disposal. Mitigations for all alternatives require containment of fuel, petroleum products, and liquid chemicals, reducing the likelihood of spills entering a lake or river; prohibits wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by the NPDES or state permit. This reduces the potential of harming or killing forage fish, which would benefit the breeding success of fish-eating birds such as loons, mergansers, and terns, and threatened and endangered eiders; limits the availability of food and garbage and the discharge of solid and hazardous waste products that could attract predators or harm habitat; limits reductions in water quality, loss of critical winter habitat and declines in outstandingly remarkable values for fish, wildlife, and subsistence use; prohibits the disposal of solid and hazardous waste products that would impact the visual characteristics near oil and gas sites.

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WASTE PREVENTION, HANDLING, DISPOSAL, SPILLS, AND PUBLIC SAFETY

The protection to subsistence resources is beneficial to the subsistence hunting and gathering.

Alternative A - Stipulation 2 and 3 and Alternatives B, C, and D - ROP A-2a and b provide essentially the same benefit in effectively reducing impacts to **water resources, and water quality, wetlands, vegetation, freshwater and marine fishes, birds, terrestrial mammals (including grizzly bears, arctic foxes) and endangered and threatened species, recreation/wilderness and users, wild and scenic river values, and visual resources** from solid and hazardous waste products by minimizing impacts on the environment from non-hazardous waste generation; by encouraging continuous environmental improvements; by regulating garbage disposal; by protecting the health and safety of oil field workers and the general public requiring all putrescible waste be incinerated, backhauled, or composted in a manner approved by the AO; and avoiding human-caused changes in predator populations. Under all circumstances the lessee/permittee is required to prepare and implement a comprehensive waste management plan for all phases of exploration a development, including seismic activities; management decisions affecting waste general would be addressed in the following order of priority: 1) Prevention and reduction, 2) recycling, 3) treatment, and 4) disposal. Mitigations for all alternatives require containment of fuel, petroleum products, and liquid chemicals, reducing the likelihood of spills entering a lake or river; prohibits wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by the NPDES or state permit. This reduces the potential of harming or killing forage fish, which would benefit the breeding success of fish-eating birds such as loons, mergansers, and terns, and threatened and endangered eiders; limits the availability of food and garbage and the discharge of solid and hazardous waste products that could attract predators or harm habitat; limits reductions in water quality, loss of critical winter habitat and declines in outstandingly remarkable values for fish, wildlife, and subsistence use; prohibits the disposal of solid and hazardous waste products that would impact the visual characteristics near oil and gas sites. The protection to subsistence resources is beneficial to the subsistence hunting and gathering.

Alternative A - Stipulation 4 and Alternatives B, C, and D - ROP A-2c provide essentially the same benefit in effectively reducing impacts from wastes to **water resources, and water quality, wetlands, vegetation, freshwater and marine fishes, birds, terrestrial mammals (including grizzly bears, arctic foxes) and endangered and threatened species, recreation/wilderness and users, wild and scenic river values, visual resources, and public health.**

Alternative A - Stipulation 5a and e and Alternatives B, C, and D - ROP A-2d would essentially provide the same benefits in reducing impacts to **soil, vegetation, wetlands, birds, freshwater, estuarine, and marine water resources and water quality, marine and terrestrial mammals, freshwater and marine fish, endangered and threatened species, subsistence harvest patterns, wild and scenic rivers, and public health** by *prohibiting* wastewater discharges or disposal of domestic wastewater into bodies of fresh, estuarine, and marine water, including wetlands, unless authorized by the NPDES or state permit. Mitigations would 1) reduce impacts to wetlands, soil, vegetation, water resources and water quality by regulating wastewater discharges and preventing such products from reaching the tundra or spreading further if they did actually reach the tundra; 2) lessen the impacts on birds by preventing wastewater discharges from impacting avian habitat; 3) be effective in reducing the potential for wastewater to be discharged and potentially impacting marine and terrestrial mammals; 4) lessen impacts to subsistence harvest patterns by providing increased protection for birds and terrestrial mammals; 5) be equally effective in protecting freshwater, estuarine, and marine water resources and water quality by regulating wastewater discharges to surface water bodies or marine waters; 6) be equally effective in reducing the likelihood of wastewater discharges contaminating environments inhabited by freshwater and marine fish; 7) effectively minimize impacts to endangered and threatened species from wastewater discharges into their habitat.

1. To prevent and minimize present and future pollution, management decisions affecting waste generation shall be addressed in the following order of priority:

- Prevention and Reduction
- Recycling

A-3 Required Operating Procedure

Objective: Minimize pollution through effective hazardous-materials contingency planning.

Requirement/Standard: For oil- and gas-related activities, a Hazardous Materials Emergency Contingency Plan shall be prepared and implemented before transportation, storage, or use of fuel or hazardous substances. The plan shall include a set of procedures to ensure prompt response, notification, and cleanup in the event of a hazardous substance spill or threat of a release.

<p align="center">1998 Northeast IAP/EIS Stipulations for the No Action Alternative</p>	<p align="center">Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C</p>	<p align="center">Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative</p>
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<p>-Treatment -Disposal</p> <p>b. Lessees shall implement a hazardous-materials tracking system to ensure proper use, storage, and management of materials being used within industrial processes. The use of chlorinated solvents is prohibited.</p> <p>c. Lessees shall conduct annual environmental compliance audits.</p> <p>7. All spills shall be cleaned up immediately and to the satisfaction of the AO and all agencies with regulatory authority over spills, including the USEPA, ADEC, and the U.S. Coast Guard.</p> <p>8. Notice of any spill shall be given to the AO as soon as possible. Other Federal, state, and NSB entities shall be notified as required by law.</p> <p>9. For oil and gas-related activities, a Hazardous-Materials Emergency-Contingency Plan shall be prepared and implemented prior to transportation, storage, or use of fuel. The plan shall include a set of procedures to ensure prompt response, notification, and cleanup in the event of a hazardous substance spill or threat of a release. Procedures applicable to fuel handling (associated with transportation vehicles) may consist of BMPs approved by the AO. The plan shall include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials or companies), and names and phone numbers of Federal, state, and NSB contacts. Other Federal and state regulations may apply and require additional planning requirements. All staff shall be instructed regarding these procedures.</p> <p>11. Lessees shall provide refresher spill-response training to NSB and local community spill-response teams on a yearly basis.</p> <p>12. Lessees shall plan and conduct a major spill-response field-deployment drill annually.</p>	<p>Procedures applicable to fuel and hazardous substances handling (associated with transportation vehicles) shall consist of Best Management Practices (BMPs) if approved by the AO. The plan shall include a list of resources available for response (e.g., heavy-equipment operators, spill-cleanup materials or companies), and names and phone numbers of federal, state, and NSB contacts. Other Federal and state regulations may apply and require additional planning requirements. All appropriate staff shall be instructed regarding these procedures.</p> <p>In addition contingency plans related to facilities developed for oil production shall include requirements to:</p> <p>a) provide refresher spill-response training to NSB and local community spill-response teams on a yearly basis,</p> <p>b) plan and conduct a major spill-response field-deployment drill annually,</p> <p>c) prior to production and as required by law, develop spill prevention and response contingency plans and participate in development and maintenance of the North Slope Subarea Contingency Plan for Oil and Hazardous Substances Discharges/Releases for the National Petroleum Reserve - Alaska operating area. Planning shall include development and funding of detailed (e.g., 1:26,000 scale) environmental sensitivity index maps for the lessee’s operating area and areas outside the lessee’s operating area that could be affected by their activities. (The specific area to be mapped shall be defined in the lease agreement and approved by the AO in consultation with appropriate resource agencies). Maps shall be completed in paper copy and geographic information system format in conformance with the latest version of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration’s Environmental Sensitivity Index Guidelines. Draft and final products shall be peer reviewed and approved by the AO in consultation with appropriate Federal, state, and NSB resource and regulatory agencies.</p>
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13. Prior to production and as required by law, lessees shall develop spill prevention and response contingency plans and participate in development and maintenance of the North Slope Subarea Contingency Plan for Oil and Hazardous Substances Discharges/Releases for the National Petroleum Reserve - Alaska operating area. Planning shall include development and funding of detailed (e.g., 1:26,000 scale) environmental sensitivity index maps for the lessee's operating area and areas outside the lessee's operating area that could be affected by their activities. (The specific area to be mapped shall be defined in the lease agreement and approved by the AO in consultation with appropriate resource agencies). Maps shall be completed in paper copy and geographic information system format in conformance with the latest version of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration's Environmental Sensitivity Index Guidelines. Draft and final products shall be peer reviewed and approved by the AO in consultation with appropriate Federal, state, and NSB resource and regulatory agencies.

Alternative A - Stipulations 1, 7, 8, 9, 11, 12, and 13 and Alternative B, C, and D - ROP A-3 would effectively provide protection from impacts to **soil, paleontological and cultural resources, water resources and water quality, vegetation, freshwater and marine fish, birds, terrestrial mammals, endangered and threatened species, subsistence-harvest patterns, wild and scenic river value, and public health** from hazardous materials through the development of a Hazardous Materials Emergency Contingency Plan (HMECP). The HMECP will be effective in protecting the above listed habitats and/or species by addressing and implementing plans for fuel and chemical storage, fuel handling, spill prevention and cleanup. The HMECP will 1) reduce the acreage of impacts to vegetation by reducing the probability of oil spills reaching the tundra or spreading further if they reach the tundra by providing for better clean-up of spills; 2) will be effective in providing increased protection to freshwater and marine fish and associated habitat during fuel use, handling and storage; 3) would effectively reduce contamination risk to birds, terrestrial mammals, endangered and threatened species from accidental spills of fuel or other hazardous substances by preventing their entry into water bodies and wetlands; 4) would be beneficial in effectively providing protection from potential impacts to subsistence harvest patterns by assuring prompt response to spills which would minimize impacts to birds, terrestrial and marine mammals, and fish and fish habitat.

8. Notice of any spill shall be given to the AO as soon as possible. Other Federal, state, and NSB entities shall be notified as required by law.

A-4 Required Operating Procedure

Objective: Minimize the impact of contaminants on fish, wildlife, and the environment, including wetlands, marshes and marine waters, as a result of fuel, crude oil, and other liquid chemical spills. Protect subsistence resources and subsistence activities. Protect public health and safety.

10. Oil-spill-cleanup materials (absorbents,

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containment devices, etc.) shall be stored at all fueling points and vehicle-maintenance areas and be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment.

11. Lessees shall provide refresher spill-response training to NSB and local community spill-response teams on a yearly basis.

12. Lessees shall plan and conduct a major spill-response field-deployment drill annually.

13. Prior to production and as required by law, lessees shall develop spill prevention and response contingency plans and participate in development and maintenance of the North Slope Subarea Contingency Plan for Oil and Hazardous Substances Discharges/Releases for the National Petroleum Reserve - Alaska operating area. Planning shall include development and funding of detailed (e.g., 1:26,000 scale) environmental sensitivity index maps for the lessee's operating area and areas outside the lessee's operating area that could be affected by their activities. (The specific area to be mapped shall be defined in the lease agreement and approved by the AO in consultation with appropriate resource agencies). Maps shall be completed in paper copy and geographic information system format in conformance with the latest version of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration's Environmental Sensitivity Index Guidelines. Draft and final products shall be peer reviewed and approved by the AO in consultation with appropriate Federal, state, and NSB resource and regulatory agencies.

14. Except during overland moves and seismic operations (see *Stipulation 24m*), fuel, other petroleum products, and other liquid chemicals designated by the AO, whether in excess of 660 gallons in a single tank or in excess of 1,320

Requirement/Standard: Before initiating any oil and gas or related activity or operation, including field research/surveys and/or seismic operations, lessees/permittees shall develop a comprehensive spill prevention and response contingency plan per 40 CFR § 112 (Oil Pollution Act). The plan shall consider and take into account the following requirements:

a. On-site Clean-up Materials. Sufficient oil-spill-cleanup materials (absorbents, containment devices, etc...) shall be stored at all fueling points and vehicle-maintenance areas and shall be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment.

b. Storage Containers. Fuel and other petroleum products and other liquid chemicals shall be stored in proper containers at approved locations. Except during overland moves and seismic operations, fuel, other petroleum products, and other liquid chemicals designated by the AO that in total exceed 1,320 gallons shall be stored within an impermeable lined and diked area or within approved alternate storage containers, such as over packs, capable of containing 110 percent of the stored volume. In areas within 500 feet of water bodies, fuel containers are to be stored within appropriate containment.

c. Liner Materials. Liner material shall be compatible with the stored product and capable of remaining impermeable during typical weather extremes expected throughout the storage period.

d. Permanent Fueling Stations. Permanent fueling stations shall be lined or have impermeable protection to prevent fuel migration to the environment from overfills and spills.

e. Proper Identification of Containers. All fuel containers, including barrels and propane tanks, shall be marked with the responsible party's name, product type, and year filled or purchased.

f. Notice of Reportable Spills. Notice of any reportable spill (as required by 40 CFR § 300.125 and 18 AAC § 75.300) shall be given to the AO as soon as possible, but no later than 24 hours after occurrence.

g. Identification of Oil Pans ("duck ponds"). All oil pans shall be marked with the responsible party's name.

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<p>gallons in multiple containers, shall be stored within an impermeable lined and diked area capable of containing 110% of the stored volume. The liner material shall be compatible with the stored product and capable of remaining impermeable during typical weather extremes expected throughout the storage period. Permanent fueling stations shall be lined or have impermeable protection to prevent fuel migration to the environment due to overfills and spills. The storage area shall be located at least 500 feet from any water body with the exception of small caches (up to 210 gallons) for motor boats, float planes, and ski planes.</p> <p>17. All fuel containers, including barrels and propane tanks, shall be marked with the responsible party's name, product type, and year filled or purchased.</p> <p>24. m. Operators shall use best available technology (e.g., self- contained containment systems) or other appropriate spill containment measures, approved by the AO, to prevent fuel migration from fuel or chemical storage areas to the environment due to overfills and spills.</p> <p>25. From May 1 through September 30, exploratory drilling other than from production pads is prohibited in the Special Caribou Stipulations Area.</p>	
<p><i>Alternative A - Stipulation 8 and Alternatives B, C, and D - ROP A-4f</i> provide essentially the same benefit in effectively reducing impacts to soil resources, water resources and water quality, wetlands, birds, marine and freshwater fish and fish habitat, terrestrial mammals, endangered and threatened species, subsistence harvest patterns, wild and scenic rivers, recreation/wilderness, visual resources, and public health by providing notice to BLM of spills.</p> <p><i>Alternative A - Stipulation 10 and Alternatives B, C, and D – ROP A-4a</i> would effectively provide the same benefits in reducing impacts to soil resources, water resources and water quality, wetlands, birds, marine and freshwater fish and fish habitat, terrestrial mammals, endangered and threatened species, subsistence harvest patterns, wild and scenic rivers, recreation/wilderness, visual resources, and public health by requiring that oil-spill-cleanup materials (absorbents, containment devices, etc.) shall be stored at all fueling points and vehicle-maintenance areas and be carried by field crews on all overland moves, seismic work trains, and similar overland moves by heavy equipment. These mitigations would 1) be effective in preventing fuel or crude oil spills from impacting soil resources; 2) be effective in protecting water resources and water quality by requiring clean-up materials be stored on-site; 3) reduce the impacts to vegetation by reducing the probability of oil spills reaching the tundra or spreading further if they reach</p>	

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the tundra and by providing better clean-up of spills; 4) protect wetlands from degradation by fuel and oil spills and by requiring spill prevention cleanup materials be on-site; 5) reduce contamination risk to birds from accidental spills of fuel or liquid chemicals during oil and gas activities by preventing their entry into water bodies and wetlands through implementation of a comprehensive spill prevention and response contingency plan which includes specifications on cleanup, materials, storage containers, and liner materials; 6) provide increased protection to marine and freshwater fish and fish habitat during fuel use, handling and storage; 7) reduce the contamination risk to grizzly bears, polar bears, arctic foxes, and other terrestrial mammals from fuel or crude oil spills; 8) minimize impacts to endangered and threatened species by reducing the risk of fuel or liquid chemical spills entering into water bodies and wetlands; 9) minimize impacts on subsistence-harvest patterns by reducing the potential for impacts on birds, terrestrial mammals, fish and fish habitat, and marine mammals during fuel use, handling, and storage; 10) limit the impacts that oil and gas exploration and development would have on wild and scenic river values; and 11) limit the degradation of visual resources caused by spills.

Alternative A – Stipulation 11, 12, 13 and 25 and Alternatives B, C, and D – ROP A-4 (and Federal Regulations at 40 CFR 112) would essentially all be effective in helping to prevent large fuel or crude oil spills, and consequently reduce the potential for impacts to the various resources mentioned below because mitigations under all alternatives call for some level of spill response training. Under *Alternatives B, C, and D*, the requirements of 40 CFR § 112 must be met - spill response training requirements fall under the enforcement authority of the Environmental Protection Agency 40 CFR § 112. 40 CFR § 112.21(a) calls for the owner and operator of any facility to prepare a facility response plan, and develop and implement a facility response training program and a drill/exercise program that satisfy the requirements of this section. Under all alternatives, spill response training requirements would educate and train participants in the specific area of oil spill response and clean-up techniques, skills and knowledge associated with the ability to perform spill response duties. Mitigations under all alternatives: would be equally effective in helping to prevent large fuel or crude oil spills, and consequently reduce the potential for impacts to **soil resources** from spill cleanup; effectively help to prevent large fuel or crude oil spills, and consequently reduce the potential for impacts to **paleontological and cultural resources** from spill cleanup; be effective in protecting **water resources and water quality** by regulating fuel and chemical storage, fuel handling, and developing and implanting spill prevention and cleanup plans; effectively reduce the impacts to **vegetation** by decreasing the probability of oil spills reaching the tundra or spreading further if they reach the tundra and by providing better clean-up of spills; effectively protect **wetlands and freshwater and marine fish and fish habitat** by regulating fuel and chemical storage, fuel handling and developing and implanting spill prevention and cleanup plans; be beneficial to **birds** by reducing contamination risk from accidental spills of fuel or liquid chemicals entering into water bodies and wetlands through implementation of a comprehensive spill prevention and response contingency plan, which would also include specifications on cleanup, materials, storage containers, and liner materials; help protect grizzly bears, arctic foxes, and other terrestrial mammals by reducing the potential effects of spills on this animals and their habitat; minimize impacts to **endangered and threatened species** by preventing entry of fuel or liquid chemicals into water bodies and wetlands, thus reducing contamination risk to eiders and whales from accidental spills of these substances; be effective in reducing impacts on **subsistence-harvest patterns** by reducing the potential for impacts on birds, terrestrial mammals, fish and fish habitat, and marine mammals during fuel use, handling, and storage; increase the protection of **wilderness and recreation resources**. *ROP A-4* would help reduce, if not eliminate, fuel spills in pristine areas; would effectively limit the impacts that oil and gas exploration and development will have on **wild and scenic river** values and limit the degradation of **public health and visual resources** caused by spills.

Alternative A - Stipulation 14 and Alternatives B, C, and D - ROP A-4 b, c, and d would be equally effective in protecting **soil resources, paleontological and cultural resources, water resources and water quality, wetlands, vegetation, freshwater and marine fish and fish habitat, birds, terrestrial mammals, endangered and threatened species, subsistence-harvest patterns, wilderness and recreation resources, wild and scenic river, and public health** values by requiring lessees/permittees to develop a comprehensive spill prevention and response contingency plan per 40 CFR § 112 (Oil Pollution Act) before initiating any oil and gas or related activity or operation, including field research/surveys and/or seismic operations. The plan shall take into account specifications for storage containers, liner materials and permanent fueling stations. These protective measures would 1) effectively protect soil resources, paleontological and cultural resources, and water resources and water quality by regulating fuel and chemical storage, fuel handling, spill prevention, and cleanup plans; 2) reduce the impacts to wetlands by reducing the probability of oil spills reaching wetlands; 3) reduce the

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impacts to wetlands by reducing the probability of oil spills reaching wetlands; 4) reduce the impacts to vegetation by reducing the probability of oil spills reaching the tundra or spreading further if they reach the tundra and by providing better clean-up of spills; 5) provide increased protection to freshwater and marine fish and fish habitat during fuel use, handling, and storage; 6) reduce contamination risk to birds from accidental spills by preventing spills from entering into water bodies and wetlands through implementation of a comprehensive spill prevention and response contingency plan which includes specifications on cleanup, materials, storage containers, and liner materials; 7) reduce the potential effects of spills on grizzly bears, arctic foxes, and other terrestrial mammals; 8) reduce impacts to endangered and threatened species by preventing entry of fuel or liquid chemicals into water bodies and wetlands, thus reducing contamination risk to eiders from accidental spills of these substances; 9) reduce impacts on subsistence-harvest patterns by reducing the potential for impacts on birds, terrestrial mammals, fish and fish habitat, and marine mammals during fuel use, handling, and storage; 10) increase the protection of wilderness and recreation resources. This ROP would help reduce, if not eliminate, fuel spills in pristine areas; and 11) limit the impacts that oil and gas exploration and development will have on wild and scenic river values.

Alternative A - Stipulation 17 and Alternatives B, C, and D - ROP A-4e would all effectively reduce impacts to **water resources and quality, freshwater and marine fish habitat and fish, birds, terrestrial and marine mammals, endangered and threatened species, subsistence use patterns, and public health** by requiring lessees/permittees to develop a comprehensive spill prevention and response contingency plan per 40 CFR § 112 (Oil Pollution Act); the plan shall consider and take into account the requirement of properly identifying containers which included all fuel containers, including barrels and propane tanks; and all containers shall be marked with the responsible party's name, product type, and year filled or purchased. This will ensure that should a spill occur, proper treatment procedures are implemented based on the type of material spilled. *These requirements* would be equally effective in determining the type of material and its likely impacts to freshwater and marine fish habitat and fish should a spill occur; would be equally effective in reducing the potential impacts to birds by ensuring that if a spill occurs, the spill material is correctly identified and proper response procedures implemented; would be equally effective in reducing impacts to terrestrial and marine mammals by ensuring that should a spill occur, proper spill response and treatment procedures are implemented based on the type of material spilled; would be equally effective in reducing impacts to endangered and threatened species by ensuring that should a spill occur, proper spill response and treatment procedures are implemented based on the type of material spilled; and would be equally effective in reducing impacts on subsistence use patterns by ensuring that the risks of consuming subsistence species that come into contact with a spilled material are identified based on the type of material spilled.

Alternative A – Stipulation 24(m) and Alternatives B, C, and D – ROP A-4 provide equal benefits in the avoidance and minimization of potential impacts to **soils, vegetation, and the terrestrial mammals and birds** dependent on the vegetation, **fish** and freshwater fish habitat by restricting the manner in which refueling of heavy equipment can take place, and **public health**. This measure should significantly reduce fuel spills by mandating proper fuel containment.

<p>14. Except during overland moves and seismic operations (see <i>Stipulation 24m</i>), fuel, other petroleum products, and other liquid chemicals designated by the AO, whether in excess of 660 gallons in a single tank or in excess of 1,320 gallons in multiple containers, shall be stored within an impermeable lined and diked area capable of containing 110% of the stored volume. The liner material shall be compatible with the stored product and capable of remaining impermeable during typical weather extremes expected throughout the storage period.</p>	<p><i>A-5 Required Operating Procedure</i> <u>Objective:</u> Minimize the impact of contaminants from refueling operations on fish, wildlife and the environment. <u>Requirement/Standard:</u> Refueling of equipment within 500 feet of the active flood plain of any fish-bearing water body and 100 feet of non-fish-bearing water bodies is prohibited. Small caches (up to 210 gallons) for motor boats, float planes, ski planes, and small equipment, e.g. portable generators and water pumps, will be permitted. The AO may allow storage and operations at</p>	<p><i>A-5 Required Operating Procedure</i> <u>Objective:</u> Minimize the impact of contaminants from refueling operations on fish, wildlife and the environment. <u>Requirement/Standard:</u> Refueling of equipment within 500 feet of the active flood plain of any water body is prohibited. Fuel storage stations shall be located at least 500 feet from any water body with the exception of small caches (up to 210 gallons) for motor boats, float planes, ski planes, and small equipment, e.g. portable generators and water pumps, will be permitted.</p>
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<p>Permanent fueling stations shall be lined or have impermeable protection to prevent fuel migration to the environment due to overfills and spills. The storage area shall be located at least 500 feet from any water body with the exception of small caches (up to 210 gallons) for motor boats, float planes, and ski planes.</p> <p>15. Fuels shall not be stored on the active floodplain of any water body. Although fuels may be off-loaded from aircraft on ice, fuels shall not be stored on lake or river ice.</p> <p>16. Refueling of equipment within 500 feet of the highest high water mark of any water body is prohibited with the exception of refueling motor boats, float planes, and ski planes. (See <i>Stipulation 24n</i> for restrictions related to overland moves and seismic operations.)</p> <p>24.n. Refueling of equipment is prohibited within the active floodplain of any water body</p> <p>25. From May 1 through September 30, exploratory drilling other than from production pads is prohibited in the Special Caribou Stipulations Area.</p> <p>70. Construction camps are prohibited on frozen lakes and river ice. Siting of construction camps on river sand and gravel bars is allowed and, where feasible, encouraged. Where leveling of trailers or modules is required and the surface has a vegetative mat, leveling shall be accomplished through blocking rather than use of a bulldozer.</p>	<p>areas closer than the stated distances if properly designed to account for local hydrologic conditions.</p>	<p>The AO may allow storage and operations at areas closer than the stated distances if properly designed to account for local hydrologic conditions.</p>
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Alternative A - Stipulations 14, 16, 25, and 70 would be somewhat more *Alternatives B and C - ROP A-5* and equally effective as *Alternative D - ROP A-5* in protecting **water resources and water quality, wetlands, freshwater and marine fish and fish habitat, wild and scenic river values, and public health** because refueling activities would be prohibited within 500 feet of both fish- and non-fish-bearing waters under *Stipulation 14 of Alternative A and ROP A-5 of Alternative D; ROP A-5 for Alternatives B and C, however, would allow refueling operations within 100 feet of non-fish-bearing waters.* These stipulations and ROPs would provide essentially the same level of protection to 1) vegetation by reducing the probability of oil spills reaching the tundra or spreading further if they reach the tundra and by providing better clean-up of spills; 2) birds by prohibiting the refueling of equipment within 500 feet of the active floodplain of fish-bearing and 100 feet of the active floodplain of non-fish-bearing water bodies, thus reducing the potential for spilled fuel to enter water bodies where water birds or their prey are found; 3) grizzly bears, arctic foxes, and other terrestrial mammals by reducing the potential effects of

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fuel spills; 4) endangered and threatened species by preventing spilled fuel from reaching water bodies where eiders could become contaminated; and 5) subsistence-harvest patterns by providing greater protection for terrestrial mammals, fish and fish habitat, and birds during fuel use, handling, near rivers and fish bearing lakes.

Alternative A - Stipulation 15 and Alternatives B, C, and D - ROP A-5 would be equally effective in protecting **water resources and water quality** by prohibiting fuel storage and refueling operations in the active floodplain; would not reduce the acreage of **vegetation** impacted by an action, but would be equally effective in shifting the impacts from more valuable wetland or riparian vegetation types to habitats perceived as lesser in value; would be equally effective in reducing the loss of **wetland habitat**; would be equally beneficial to **freshwater fish habitat and fish** by reducing the likelihood of a spill occurring in habitat used by fish; would be equally effective in reducing the potential impacts to **birds** by reducing the potential for spilled fuel to enter water bodies where water birds or their prey are found; would be equally effective in reducing impacts to **endangered and threatened species** by reducing the potential for a fuel spill to impact wetland habitat ;would be equally effective in reducing impacts on **subsistence use patterns and public health** by providing increased protection to fish and fish habitat by reducing the likelihood of fuel or oil contaminating water bodies; and would be equally effective in limiting the impacts that oil and gas exploration and development will have on **wild and scenic river** values.

Alternative A – Stipulation 24(n) and Alternatives B, C, and D – ROP A-5 provide equal benefits in the avoidance and minimization of potential impacts to **soils, vegetation, and the terrestrial mammals and birds** dependent on the vegetation, fish and freshwater fish habitat by restricting the location in which refueling of heavy equipment can take place. This measure should prevent spills from entering the aquatic environment by prohibiting refueling within floodplains. While *Alternative A - Stipulation 24(n)* prohibits refueling within active floodplain, *Alternatives B, C, and D, ROP A-5* extends that prohibition to the area within 500 ft of water bodies.

4. b. Surface discharge of reserve-pit fluids is prohibited unless authorized by applicable NPDES, ADEC, and NSB permits and approved by the AO.

A-6 Required Operating Procedure

Objective: Minimize the impact on fish, wildlife, and the environment from contaminants associated with the exploratory drilling process.

Requirement/Standard: Surface discharge of reserve-pit fluids is prohibited.

Alternative A - Stipulation 4b and Alternatives B, C, and D – A-6 would essentially provide the same benefits in reducing impacts to **soil, vegetation, wetlands, birds, freshwater, estuarine, and marine water resources and water quality, marine and terrestrial mammals, freshwater and marine fish, endangered and threatened species, subsistence harvest patterns, wild and scenic rivers, and public health** by prohibiting surface discharge of reserve-pit fluids unless authorized by applicable NPDES, ADEC, and NSB permits (as appropriate) and approved by the AO (an instance considered extremely unlikely given current industry practice) in the case of Stipulation 4b or prohibiting it altogether in the case of the other alternatives. Mitigations would 1) reduce impacts to wetlands, soil, vegetation, water resources and water quality by regulating discharges and preventing reserve-pit fluids from reaching the tundra or spreading further if they did actually reach the tundra; 2) lessen the impacts on birds by preventing reserve pit fluid discharges from impacting avian habitat; 3) be effective in reducing the potential for reserve pit fluid to be discharged and potentially impacting marine and terrestrial mammals; 4) lessen impacts to subsistence harvest patterns by providing increased protection for birds and terrestrial mammals; 5) be equally effective in protecting freshwater, estuarine, and marine water resources and water quality by regulating reserve pit fluid discharges to surface water bodies or marine waters; 6) be equally effective in reducing the likelihood of reserve pit fluid discharges contaminating environments inhabited by freshwater and marine fish; 7) effectively minimize impacts to endangered and threatened species from reserve pit fluid discharges into their habitat.

5.

c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface-

A-7 Required Operating Procedure

Objective: Minimize the impacts to the environment of disposal of produced fluids recovered during the development phase on fish, wildlife, and the environment.

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<p>disposal techniques. The AO, in consultation with the ADEC and USEPA, may permit alternate disposal methods, if the lessee demonstrates that subsurface disposal is not feasible or prudent.</p> <p>d. Discharge of produced waters into open or ice-covered marine waters less than 33 feet (10 meters) in depth is prohibited. The AO, in consultation with ADEC and USEPA, may approve discharges into waters greater than 33 feet (10 meters) in depth based on a case-by-case review of environmental factors and consistency with the conditions of a NPDES permit.</p>	<p><u>Requirement/Standard:</u> Discharge of produced water in upland areas and marine waters is prohibited.</p>	
<p><i>Alternative A - Stipulation 5 c and d and Alternatives B, C, and D – ROP A-7</i> would essentially provide the same benefits in reducing impacts to soil, vegetation, wetlands, birds, freshwater, estuarine, and marine water resources and water quality, marine and terrestrial mammals, freshwater and marine fish, endangered and threatened species, subsistence harvest patterns, wild and scenic rivers, and public health by minimizing the impacts to the environment of disposal of produced fluids recovered during the development phase on fish, wildlife, and the environment by requiring that disposal in upland areas, including wetlands, be by subsurface-disposal techniques; prohibiting the discharge of produced fluids at locations where currents and water depths, in combination with other conditions, are not adequate to prevent impacts to known biologically sensitive areas. Alternate disposal methods would require an NPDES permit certified by the state under Alternative A’s Stipulation 5 AO (an instance considered extremely unlikely given current industry practice) and would be prohibited altogether under the other alternatives. Mitigations would 1) reduce impacts to wetlands, soil, vegetation, water resources and water quality by regulating produced fluid discharges and preventing such fluids from reaching the tundra or spreading further if they did actually reach the tundra; 2) lessen the impacts on birds by preventing produced fluids from impacting avian habitat; 3) be effective in reducing the potential for, produced fluids to be discharged and potentially impacting marine and terrestrial mammals; 4) lessen impacts to subsistence harvest patterns by providing increased protection for birds and terrestrial mammals; 5) be equally effective in protecting freshwater, estuarine, and marine water resources and water quality by regulating produced fluid discharges to surface water bodies or marine waters; 6) be equally effective in reducing the likelihood of produced fluid discharges contaminating environments inhabited by freshwater and marine fish; 7) effectively minimize impacts to endangered and threatened species from produced fluid discharges into their habitats.</p>		
<p>76. Oil and gas lessees and their contractors and subcontractors will prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to: (a) minimize attraction of bears to the drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on drill sites and identify proper procedures to be followed; (d) if authorized, deter bears from the drill site; (e) provide contingencies in the event bears do not</p>	<p><i>A-8 Required Operating Procedure</i> <u>Objective:</u> Minimize conflicts resulting from interaction between humans and bears during oil and gas activities. <u>Requirement:</u> Oil and gas lessees and their contractors and subcontractors will, as a part of preparation of lease operation planning, prepare and implement bear-interaction plans to minimize conflicts between bears and humans. These plans shall include measures to:</p> <ol style="list-style-type: none"> a. Minimize attraction of bears to the work sites. b. Organize layout of buildings and work areas to minimize human/bear interactions. c. Warn personnel of bears near or on work sites and identify proper procedures to be followed. d. Establish procedures, if authorized, to discourage bears from approaching the work site. e. Provide contingencies in the event bears do not leave the site or cannot be discouraged by 	

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<p>leave the site or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The lessee's shall develop educational programs and camp layout and management plans as they prepare their lease operations plans. These plans shall be developed in consultation with appropriate Federal, state, and NSB regulatory and resource agencies and submitted to the AO.</p>	<p>authorized personnel. f. Discuss proper storage and disposal of materials that may be toxic to bears. g. Provide a systematic record of bears on the site and in the immediate area.</p>	<p>h. Encourage lessee/permittee to participate and comply with the Incidental Take Program under the Marine Mammal Protection Act.</p>
	<p><i>Alternative A Stipulation 76 and Alternatives B, C, and D - ROP A-8</i> would provide equal benefit in minimization of potential impacts to terrestrial mammals (grizzly bears) and marine mammals (polar bears) and to recreation and wilderness users of the area by requiring bear interaction plans that should avoid acclimatization of bears to human contact. The stipulation and ROP would benefit bears by reducing both the number of bears killed in “defense of life and property” and the number of bears becoming habituated to anthropogenic food sources</p>	

WATER USE FOR PERMITTED ACTIVITIES	
<p>20. Water withdrawal from rivers and streams during winter is prohibited. Water withdrawal is prohibited during winter flooding by a fish-bearing stream. Water may be withdrawn from isolated lakes that are less than 7 feet (2.1 m) deep that lack connection to or are not subject to seasonal flooding by a fish-bearing stream. After consultation with the appropriate Federal, state, and NSB regulatory and resource agencies, the AO may authorize withdrawals from any lake less than 7 feet (2.1 m) deep, if the proponent demonstrates that no fish exist in the lake.</p> <p>Generally, water withdrawal drawdown during winter from lakes 7 feet (2.1 m) deep or deeper shall be limited to 15% of the estimated free-water volume (i.e., excluding the ice). After consultation with the appropriate Federal, state, and NSB regulatory and resource agencies, the AO may authorize drawdown exceeding 15% from a lake greater than 7 feet (2.1 m) deep, if the proponent of the additional drawdown demonstrates that no fish exist in the lake. Operators are encouraged to use new ice-road and ice-pad construction</p>	<p><i>B-1 Required Operating Procedure</i> <u>Objective:</u> Maintain populations of, and adequate habitat for, fish and invertebrates. <u>Requirement/Standard:</u> Water withdrawal from rivers and streams during winter is prohibited.</p>

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WATER USE FOR PERMITTED ACTIVITIES

methods, such as using aggregate ‘chips’ shaved from frozen lakes, to decrease water demands, construction time, and impact on fisheries.

Alternative A - Stipulation 20 and Alternatives B, C, and D - ROP B-1 would be equally beneficial in protecting **water resources and water quality, freshwater fish, bird species, subsistence-harvest patterns, wild and scenic rivers, water resources and water quality, and local hydrology** by prohibiting water removal from streams and rivers during winter. These protective measures would be effective in protecting overwintering habitat, and preventing harm to **freshwater fish** from fish intake structures; would be equally effective in reducing impacts to some **bird** species by preventing winter die-off of fish prey of fish-eating birds (e.g., loons, mergansers, terns), which could adversely affect the breeding success of these water bird species; would be equally effective in reducing impacts on **subsistence-harvest patterns** by providing increased protection to fish and fish habitat and by prohibiting water removal from rivers and streams; would be equally effective in preserving instream flows in eligible **wild and scenic rivers**; and would be equally effective in protecting **water resources and water quality, and local hydrology** by prohibiting or limiting water removal from rivers and streams.

20. Water withdrawal from rivers and streams during winter is prohibited. Water withdrawal is prohibited during winter flooding by a fish-bearing stream. Water may be withdrawn from isolated lakes that are less than 7 feet (2.1 m) deep that lack connection to or are not subject to seasonal flooding by a fish-bearing stream. After consultation with the appropriate Federal, state, and NSB regulatory and resource agencies, the AO may authorize withdrawals from any lake less than 7 feet (2.1 m) deep, if the proponent demonstrates that no fish exist in the lake.

Generally, water withdrawal drawdown during winter from lakes 7 feet (2.1 m) deep or deeper shall be limited to 15% of the estimated free-water volume (i.e., excluding the ice). After consultation with the appropriate Federal, state, and NSB regulatory and resource agencies, the AO may authorize drawdown exceeding 15% from a lake greater than 7 feet (2.1 m) deep, if the proponent of the additional drawdown demonstrates that no fish exist in the lake. Operators are encouraged to use new ice-road and ice-pad construction methods, such as using aggregate ‘chips’ shaved from frozen lakes, to decrease water demands, construction time, and impact on fisheries.

19. Compaction of snow cover or snow removal from fish-bearing water bodies shall be prohibited

B-2 Required Operating Procedure
Objective: Maintain natural hydrologic regimes in soils surrounding lakes and ponds, and maintain populations of, and adequate habitat for, fish and invertebrates, and waterfowl.
Requirement/Standard: Water withdrawal from lakes may be authorized on a site-specific basis depending on water volume, and depth, and fish population and species diversification. Current water withdrawal requirements specify:

- a. Lakes that are ≥7 feet with sensitive fish (any fish except ninespine stickleback or Alaska blackfish), water available for withdrawal is limited to 15% of calculated volume deeper than 7 feet; lakes that are between 5 and 7 feet with sensitive fish, water available for withdrawal would be calculated on a case by case basis.
- b. Lakes that are ≥5 feet with only non-sensitive fish (i.e., ninespine stickleback or Alaska blackfish), water is available for withdrawal is limited to 30% of calculated volume deeper than 5 feet.
- c. Any lake with no fish present, regardless of depth, water available for withdrawal is up to 35% as specified within the permit.
- d. A water-monitoring plan may be required to assess draw down and water quality changes before, during, and after pumping any fish-bearing lake or lake of special concern.
- e. The removal of naturally grounded ice may be authorized from lakes and shallow rivers on a site-specific basis depending upon its size, water volume, and depth, and fish population and species diversification.
- f. Removed ice aggregate shall be included in the 15% or 30% withdrawal limits—whichever is the appropriate case—unless otherwise approved.
- g. Any water intake structures in fish bearing or non-fish bearing waters shall be designed, operated, and maintained to prevent fish entrapment, entrainment, or injury. Note: All water withdrawal equipment must be equipped and must utilize fish screening devices approved by the Alaska Department of Natural Resources (ADNR).
- h. Compaction of snow cover or snow removal from fish-bearing water bodies shall be prohibited except at approved ice road crossings, water pumping stations on lakes, or areas of grounded ice.

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except at approved ice-road crossings		
<p><i>Alternative A – Stipulation 20 and Alternatives B, C, and D - ROP B-2</i> would be equally effective in reducing impacts on subsistence-harvest patterns by providing protection to fish and fish habitat and by limiting water removal from fish-bearing lakes and preventing harm to fish from fish intake structures and would be essentially as effective in protecting sensitive (any fish except nine-spine stickleback or Alaska blackfish) freshwater fish and their habitats. Stipulation 20 would be more effective in reducing impacts to some bird species by preventing winter die-off of fish prey of fish-eating birds (e.g., loons, mergansers, terns), which could adversely affect the breeding success of these water bird species.</p> <p>Alternative A - Stipulation 19 and Alternatives B, C, and D - ROP B-2h would be equally effective in protecting water resources and water quality, freshwater fish and their habitats, bird, and subsistence-harvest patterns by requiring water withdrawal requirements to specify that compaction of snow cover or snow removal from fish-bearing water bodies be prohibited except at approved ice road crossings, water pumping stations on lakes. This requirement would effectively protect water resources and water quality and freshwater fish and their habitats by prohibiting snow compaction and removal from fish-bearing water bodies; would be equally effective in reducing impacts to some bird species by preventing winter die-off of prey of fish-eating birds (e.g., loons, mergansers, terns), which could adversely affect the breeding success of these bird species; and would be equally effective in reducing impacts on subsistence-harvest patterns by providing increased protection to fish and fish habitat and by limiting snow removal from water bodies</p>		
WINTER OVERLAND MOVES AND SEISMIC WORK		
<p>The following lease stipulations and ROPs apply to overland moves, seismic work, and any similar cross-country vehicle use of heavy equipment on non-roaded surfaces during the winter season. These restrictions do not apply to the use of such equipment on ice roads after they are constructed.</p>		
<p>75. Petroleum exploration and production activities are prohibited within ½ mile of occupied grizzly bear dens, identified by the ADFG, unless alternative protective measures are approved by the AO in consultation with appropriate Federal, state, and NSB regulatory and resource agencies.</p> <p>24. The following restrictions apply to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on unroaded surfaces during the winter season:</p> <p>a. Because polar bears are known to den predominantly within 25 miles of the coast, operators shall consult with the USFWS prior to initiating activities in such habitat between October 30 and April 15. Activities are prohibited within 1 mile of known or observed polar bear dens; obtain locations from the</p>	<p><i>C-1 Required Operating Procedure</i> <u>Objective:</u> Protect grizzly bear, polar bear, and marine mammal denning and/or birthing locations. <u>Requirement/Standard:</u></p> <p>a. Cross-country use of heavy equipment and seismic activities is prohibited within ½ mile of occupied grizzly bear dens identified by the ADFG unless alternative protective measures are approved by the AO in consultation with the ADFG.</p> <p>b. Cross-country use of heavy equipment and seismic activities is prohibited within 1 mile of known or observed polar bear dens or seal birthing lairs. Operators shall consult with the USFWS and/or NOAA Fisheries, as appropriate, before initiating activities in coastal habitat between October 30 and April 15.</p>	

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WINTER OVERLAND MOVES AND SEISMIC WORK

<p>USFWS, (907) 786-3800. Operators are encouraged to apply for a letter of authorization from the USFWS to conduct activities in polar bear denning areas.</p> <p>77. Operators are encouraged to apply for a letter of authorization from the USFWS to conduct activities in polar bear denning areas.</p>		
<p><i>Alternative A Stipulation 75 and Alternatives B, C, and D - ROP C-1(a)</i> would provide equal benefit in reducing potential impacts on terrestrial mammals by requiring avoidance of known grizzly bear dens. The ½ mile setback is thought to be sufficient to prevent disturbance to denning grizzly bears from seismic operations and other overland moves. The success of this ROP would be relative to the effort made to locate bear dens before initiating work</p> <p><i>Alternative A – Stipulations 24(a) and 77 and Alternatives B, C, and D – ROP C-1(b)</i> provide the same benefit in minimizing potential impacts to marine and terrestrial mammals, specifically polar bears and seals, and subsistence use patterns for these resources by prohibiting the use of heavy equipment or seismic activities within 1.0 miles of any known polar bear dens or seal lairs throughout the area within the Planning Area where they may be found. Such activities could potentially disturb denning polar bears putting cubs at greater risk. It is thought that such disturbance is unlikely at a distance of 1.0 miles or greater. Such activities could also crush snow lairs used by seal pups or potentially disturb the seals. The location of all such dens and lairs is not known</p>		
<p>67. All activities shall be conducted to avoid or minimize disturbance to vegetation.</p> <p>24. The following restrictions apply to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on unroaded surfaces during the winter season:</p> <p>b. Motorized ground-vehicle use will be minimized within the Colville River Raptor, Passerine, and Moose Area LUEA from April 15 through August 5, with the exception that use will be minimized in the vicinity of gyrfalcon nests beginning March 15. Such use will remain ½ mile away from known raptor-nesting sites, unless authorized by the AO. The BLM shall consult with USFWS to plan travel routes to minimize disturbance to raptors.</p> <p>f. On-the-ground activities shall use low-ground-pressure vehicles such as Rolligons, ARDCO, Trackmaster, Nodwell, or similar types of vehicles. A current list of approved vehicles can be obtained from the AO. Limited</p>	<p><i>C-2 Required Operating Procedure</i> <u>Objective:</u> Protect stream banks, minimize compaction of soils, and minimize the breakage, abrasion, compaction, or displacement of vegetation. <u>Requirement/Standard:</u></p> <p>a. Ground operations shall be allowed only when frost and snow cover are at sufficient depths to protect the tundra. Ground operations shall cease when the spring snowmelt begins (approximately May 5 in the foothills area where elevations reach or exceed 500 feet and approximately May 15 in the northern coastal areas). The exact dates will be determined by the AO.</p> <p>b. Only low-ground-pressure vehicles shall be used for on-the-ground activities off ice roads or pads. A list of approved vehicles can be obtained from the AO. Limited use of tractors equipped with wide tracks or “shoes” will be allowed to pull trailers, sleighs or other equipment with</p>	<p><i>C-2 Required Operating Procedure</i> <u>Objective:</u> Protect stream banks, minimize compaction of soils, and minimize the breakage, abrasion, compaction, or displacement of vegetation. <u>Requirement/Standard:</u></p> <p>a. Ground operations shall be allowed only when frost and snow cover are at sufficient depths to protect the tundra. Ground operations shall cease when the spring snowmelt begins (approximately May 5 in the foothills area where elevations reach or exceed 500 feet and approximately May 15 in the northern coastal areas). The exact dates will be determined by the AO.</p> <p>b. Only low-ground-pressure vehicles shall be used for on-the-ground activities off ice roads or pads. A list of approved vehicles can be obtained from the AO. Limited use of tractors equipped with wide tracks or “shoes” will be allowed to pull trailers, sleighs or other equipment with approved undercarriage. <u>Note: This provision</u></p>

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WINTER OVERLAND MOVES AND SEISMIC WORK		
<p>use of tractors equipped with wide tracks or "shoes" will be allowed to pull trailers.</p> <p>g. Bulldozing of tundra, trails, or seismic lines is prohibited. This stipulation, however, does not prohibit the clearing of drifted snow along a trail, seismic line, or in a camp, to the extent that the tundra mat is not disturbed. Snow may be cleared from a water body ice surface to prepare an aircraft runway, if approved by the AO in consultation with appropriate Federal, state, and NSB regulatory and resource agencies.</p> <p>h. To reduce the possibility of ruts, vehicles shall avoid using the same trails for multiple trips unless necessitated by serious safety or superseding environmental concern. This provision does not apply to ice roads (see <i>Stipulation 18</i> below).</p> <p>i. Ground operations are to begin only after the seasonal frost in the tundra and underlying mineral soils has reached a depth of 12 inches, and the average snow cover is 6 inches deep. The exact date shall be determined by the AO.</p> <p>j. Ground operations shall cease when the spring melt of snow begins; approximately May 5 in the foothills area where elevations exceed 300 feet, and approximately May 15 in the northern coastal areas. The exact date will be determined by the AO.</p> <p>k. Seismic activities and overland moves within the Goose Molting LUEA and the Teshekpuk Lake Caribou Habitat LUEA from May 1 through September 30 are prohibited. (Note that this overrides language in <i>Stipulation 24j</i>)</p> <p>l. To prevent surface disturbance to tundra and other vegetation, tracked vehicles will not execute tight turns by locking one track.</p> <p>22. Except for approved crossings, alteration of the banks of a waterway is prohibited.</p>	<p>approved undercarriage. <u>Note: This provision does not include the use of heavy equipment such as front-end loaders and similar equipment required during ice road construction.</u></p> <p>c. Bulldozing of tundra mat and vegetation, trails, or seismic lines is prohibited; however, on existing trails, seismic lines or camps, clearing of drifted snow is allowed to the extent that the tundra mat is not disturbed.</p> <p>d. To reduce the possibility of ruts, vehicles shall avoid using the same trails for multiple trips unless necessitated by serious safety or superseding environmental concern. This provision does not apply to hardened snow trails for use by low-ground-pressure vehicles such as Rolligons.</p> <p>e. The location of winter ice roads shall be designed and located to minimize compaction of soils and the breakage, abrasion, compaction, or displacement of vegetation. Offsets may be required to avoid using the same route or track in the subsequent year. (See K-7(a) for an equivalent to Alternative D, ROP C-2(f))</p>	<p><u>does not include the use of heavy equipment such as front-end loaders and similar equipment required during ice road construction.</u></p> <p>c. Bulldozing of tundra mat and vegetation, trails, or seismic lines is prohibited; however, on existing trails, seismic lines or camps, clearing of drifted snow is allowed to the extent that the tundra mat is not disturbed.</p> <p>d. To reduce the possibility of ruts, vehicles shall avoid using the same trails for multiple trips unless necessitated by serious safety or superseding environmental concern. This provision does not apply to hardened snow trails for use by low-ground-pressure vehicles such as Rolligons.</p> <p>e. The location of winter ice roads shall be designed and located to minimize compaction of soils and the breakage, abrasion, compaction, or displacement of vegetation. Offsets may be required to avoid using the same route or track in the subsequent year.</p> <p>f. Motorized ground-vehicle use within the CRSA associated with overland moves, seismic work, and any similar use of heavy equipment shall be minimized within the Colville River Raptor, Passerine, and Moose Area from April 15 through August 5, with the exception that use will be minimized in the vicinity of gyrfalcon nests beginning March 15. Such use will remain ½ mile away from known raptor nesting sites, unless authorized by the AO.</p>

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WINTER OVERLAND MOVES AND SEISMIC WORK

<p>Waterways include natural features with sufficient water to create riparian (willow) habitat such as rivers, streams, deep and shallow lakes, tundra ponds, and shallow water tracks. Clearing of willows along the riparian zone is prohibited. Movement of equipment through willow stands shall be avoided whenever possible.</p> <p>18. The location of winter ice roads shall be offset from year to year to minimize vegetative impacts. The offset shall be greater than or equal to the width of the road.</p>		
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*Alternative A – Stipulations 67 and 24(f), (g), (h), (i), (k) and (l) and Alternatives B, C, and D – ROP C-2(a), (b), (c), and (d) provide generally equal benefits in the avoidance and minimization of potential impacts to **soils, paleontological and cultural resources, vegetation, and the terrestrial mammals and birds** dependent on the vegetation, by restricting the equipment, season, and manner in which overland moves and seismic operations can be conducted. Many tundra habitats are sensitive to physical disturbance and the movement of heavy equipment across the tundra can result in long-standing damage or changes to the soils and vegetation. Under all alternatives, these protective measures require the use of approved low ground-pressure vehicles, bulldozing of tundra, the off-setting of trails to prevent damage by repeated use in the same area, and the cessation of activities when spring snow melt begins. Stipulation 24(i) – Alternative A allows commencement of such overland moves only after there are 12 inches of frost and 6 inches of snow cover, while ROP C-2(a) permits activities when frost and snow cover are of sufficient depth to prevent damage, which should result in the same benefit. Studies have shown that little long-term changes or damage result when overland moves on the North Slope are conducted under these conditions. Stipulation 24(i) provides additional protection for early nesting birds compared with ROP C-2 and stipulation 24(l) provides slightly more protection for birds and vegetation than ROP C-2.*

*Alternative A – Stipulations 67 and 22 and Alternatives B, C, and D – ROP C-2c and e would be equally effective in providing protection for **soils, paleontological and cultural resources, water resources and water quality, vegetation, wetlands, freshwater fish habitat and fish, terrestrial mammals, subsistence use patterns, wild and scenic river values, and visual resource values** by prohibiting bulldozing of tundra mat and vegetation, and seismic lines on existing trails; seismic lines or camps; clearing of drifted snow would only be allowed to the extent that the tundra mat is not disturbed. The location of winter ice roads shall be designed and located to minimize compaction of soils and the breakage, abrasion, compaction, or displacement of vegetation. Offsets may be required to avoid using the same route or track in the subsequent year. These protective measures would be equally: effective in providing protection for **soils** by reducing damage to stream banks, reducing rutting, and generally reducing impacts to **vegetation** by restricting seismic activity and overland moves to winter; effective in providing protection from seismic and overland move activities that could potentially disturb the vegetative mat and impact **paleontological and cultural resources** that are near the surface; effective in protecting **water resources and water quality** by regulating overland moves, seismic work, ice-road construction, and other heavy equipment travel during the winter to limit impacts to water resources; equally effective in reducing the level of impacts to vegetation and wetlands by reducing impacts of off-road vehicles; beneficial to **freshwater fish** habitat and fish by reducing damage to stream banks at river crossings and reducing rutting and other damage to the vegetative mat; and would put restrictions on the types of heavy equipment used and the seasons of allowable use and would be equally beneficial to **terrestrial mammals** by reducing the amount of habitat disturbed during overland moves and seismic work. They would be also equally effective in reducing impacts on subsistence use patterns by providing increased protection to **fish and fish habitat**, and effective in limiting the impacts that oil and gas exploration and development would have on **wild and scenic river** values as well as **visual resource** values.*

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WINTER OVERLAND MOVES AND SEISMIC WORK

Alternative A – Stipulations 67 and 18 and Alternatives B, C, and D - ROP C-2e would all effectively provide protection for soil, paleontological and cultural resources, water resources and water quality, vegetation, terrestrial mammals, endangered and threatened species, subsistence use patterns, wild and scenic river values, and visual resources by requiring the lessees/permittees to design and locate winter ice roads to minimize compaction of soils and the breakage, abrasion, compaction, or displacement of vegetation. Offsets may be required to avoid using the same route or track in the subsequent year. This protective measure would reduce damage to stream banks, reducing rutting and erosion, and generally reducing impacts to vegetation by restricting seismic activity and overland moves to winter; would be equally effective in providing protection from seismic and overland move activities that could potentially disturb the vegetative mat and impact paleontological and cultural resources that are near the surface; would be equally effective in protecting water resources and water quality by regulating overland moves, seismic work, ice-road construction, and other heavy equipment travel during the winter; would be equally effective in reducing the level of impacts to vegetation by reducing impacts of off-road vehicles; would be equally beneficial to terrestrial mammals by reducing the amount of habitat disturbed during overland moves and seismic work.; would be equally beneficial to endangered and threatened species by reducing the amount of habitat disturbed during overland moves and seismic work; would be equally effective in reducing impacts on subsistence use patterns by providing increased protection to fish and wildlife habitat; would be equally effective in limiting the impacts that oil and gas exploration and development will have on wild and scenic river values; and would be equally beneficial to visual resources by reducing the amount of surface disturbance due to seismic activities.

- 24.
- c. Crossing of waterway courses shall be made using a low-angle approach to avoid disruption of the natural stream or lake bank. Except at approved crossings, operators are encouraged to travel a minimum of 100 feet from overwintering fish streams and lakes.
 - d. If snow ramps or snow bridges are used at water crossings for bank protection, the ramps and bridges shall be substantially free of soil and/or debris. Snow bridges shall be removed or breached immediately after use or before spring breakup.
 - e. To avoid additional freeze down of deep-water pools harboring overwintering fish, waterways shall be crossed at shallow riffles from point bar to point bar whenever possible

C-3 Required Operating Procedure

Objective: Maintain natural spring runoff patterns and fish passage, avoid flooding, prevent streambed sedimentation and scour, protect water quality and protect stream banks.

Requirement/Standard: Crossing of waterway courses shall be made using a low-angle approach. Snow and ice bridges shall be removed, breached, or slotted before spring breakup. Ramps and bridges shall be substantially free of soil and debris. Except at approved crossings, operators are encouraged to travel a minimum of 100 feet from known overwintering fish streams and lakes.

C-4 Required Operating Procedure

Objective: Avoid additional freeze-down of deep-water pools harboring over-wintering fish and invertebrates used by fish.

Requirement/Standard: Travel up and down streambeds is prohibited unless it can be demonstrated that there will be no additional impacts from such travel to over-wintering fish or the invertebrates they rely on. Rivers and streams shall be crossed at shallow riffles from point bar to point bar whenever possible.

Alternative A – Stipulation 24(c), (d), and (e), and Alternatives B, C, and D – ROP C-3 and C-4 provide equal benefits in the avoidance and minimization of potential impacts to fish, subsistence activities associated with fish, and freshwater fish habitat by directing lessees or seismic operators to cross streams at locations that are not over-wintering habitat, and by crossing at locations where the bank will not be disturbed. Clearing or compaction of snow over ice covered streams can increase the depth to which streams freeze. If this were to happen in the deeper areas where fish overwinter, the habitat could be lost temporarily, oxygen depleted, or fish displaced. These stipulations and ROPs direct the lessees and seismic operators to conduct their stream crossings in areas that are not overwintering fish habitat (e.g. riffles) effectively avoiding potential impacts to the overwintering habitat. These stipulations and ROPs also mandate that only clean snow be used in construction of snow bridges, and to use a low angle approach at the stream

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WINTER OVERLAND MOVES AND SEISMIC WORK

banks at crossings so the riparian habitat is maintained, and there is no subsequent degradation of aquatic habitats, wetlands, and riparian habitats due to erosions, protecting water resources and water quality, and wild and scenic rivers values.

OIL AND GAS EXPLORATORY DRILLING

<p>28. Exploratory drilling in river, stream, and lake beds, as determined by the highest high water mark, is prohibited. Exceptions to this stipulation may be authorized by the AO in cases of shallow lakes which freeze to the bottom, do not support significant fish or bird populations, and are hydrologically isolated. Further, such an exception may be granted only if it is environmentally preferable to maintaining the restriction.</p>	<p><i>D-1 Lease Stipulation</i> <u>Objectives:</u> Protect fish-bearing rivers, streams, and lakes from blowouts and minimize alteration of riparian habitat. <u>Requirement/Standard:</u> Exploratory drilling is prohibited in rivers and streams, as determined by the active floodplain, and fish-bearing lakes, except where the lessee can demonstrate on a site-specific basis that impacts would be minimal, or it is determined that there is no feasible or prudent alternative.</p>	<p><i>D-1 Lease Stipulation</i> <u>Objectives:</u> Protect fish-bearing rivers, streams, and lakes from blowouts and minimize alteration of riparian habitat. <u>Requirement/Standard:</u> Exploratory drilling is prohibited in rivers and streams, as determined by the active floodplain, and fish-bearing lakes.</p>
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Stipulation 28 and Lease Stipulation D-1 would be equally effective in protecting **water resources, water quality, and wetlands** by prohibiting exploratory drilling in most lakes, streams, and floodplains; in reducing impacts to **fish** and fish habitat during oil and gas exploratory drilling; in reducing the potential for damage to the riparian habitats used by **birds**; in reducing impacts on **subsistence-harvest patterns and public health** by providing increased protection for terrestrial mammals; **in limiting the impacts that oil and gas exploration and development will have on wild and scenic river values; and** in reducing the potential for damage to the riparian habitats that are so important to many species of **terrestrial mammals**, including moose, bear and wolverine by prohibiting exploratory drilling in active floodplains. Disturbance impacts to wolverines and moose would also be reduced.

<p>27. Permanent or gravel oil and gas facilities including roads shall not be constructed during the exploration phase of oil and gas development.</p> <p>67. All activities shall be conducted to avoid or minimize disturbance to vegetation.</p>	<p><i>D-2 Lease Stipulation</i> <u>Objective:</u> Minimize surface impacts from exploratory drilling. <u>Requirement/Standard:</u> Exploratory drilling shall be limited to temporary facilities such as ice pads, ice roads, and ice airstrips, unless the lessee demonstrates that construction of permanent facilities such as gravel airstrips, storage pads, and connecting roads is environmentally preferable or necessary to carry out exploration more economically.</p>	<p><i>D-2 Lease Stipulation</i> <u>Objective:</u> Minimize surface impacts from exploratory drilling. <u>Requirement/Standard:</u> Construction of permanent or gravel oil and gas facilities shall be prohibited for exploratory drilling. Use of a previously constructed road or pad may be permitted if it is environmentally preferred.</p>
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Alternative A Stipulations 27 and 67 and Alternatives B, C, and D ROP D-2— Because Alternative A would prohibit permanent facilities during exploration while the other alternatives may allow some permanent development, Stipulation 27 would be more effective than ROP D-2 in protecting **soils** by reducing damage from permanent facilities constructed during exploration; protecting **paleontological and cultural resources** that are near the surface; protecting **water resources and water quality** by regulating the construction of permanent roads during exploration; reducing the level of effects on estuarine water quality by limiting exploratory drilling to temporary facilities such as ice pads; reducing the level of impacts to **vegetation** by regulating the construction of permanent facilities during exploration; benefiting freshwater fish habitat and **fish** by reducing damage to fish habitat from construction of permanent facilities; benefiting **terrestrial mammals** by reducing the amount of habitat disturbed from permanent facilities; reducing the level of

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OIL AND GAS EXPLORATORY DRILLING

impacts to **endangered and threatened species** and their habitats by regulating the construction of permanent facilities during exploration; reducing impacts on **subsistence** use patterns by providing increased protection to fish and fish habitat; limiting the impacts that oil and gas exploration and development would have on **wild and scenic river values**; and limiting the impacts that oil and gas exploration and development will have on **visual resources**.

FACILITY DESIGN AND CONSTRUCTION		
<p>48. Permanent roads (i.e. gravel, sand) connecting to a road system or docks outside the planning area are prohibited, and no exceptions may be granted. Permanent roads necessary to connect pads within independent, remote oil fields are allowed but they must be designed and constructed to create minimal environmental impacts. Roads connecting production sites between separate oil fields may be considered if road-connected operations are environmentally preferable to independent, consolidated operations that each include airstrip, housing, production, and support facilities. This exception will only be granted following consultations with appropriate Federal, state, and NSB regulatory and resources agencies, and the appropriate level of NEPA review.</p>	<p><i>E-1 Required Operating Procedure</i> Objective: Protect subsistence use and access to traditional subsistence hunting and fishing areas and minimize the impact of oil and gas activities on air, land, water, fish and wildlife resources. Requirement/Standard: All roads must be designed, constructed, maintained, and operated to create minimal environmental impacts and to protect subsistence use and access to traditional subsistence hunting and fishing areas. Subject to approval by the AO, the construction, operation and maintenance of oil field roads is the responsibility of the lessee. <u>Note: This provision does not apply to intercommunity or other permanent roads constructed with public funds for general transportation purposes. This preserves the opportunity to plan, design and construct public transportation systems to meet the economic, transportation, and public health and safety needs of the State of Alaska and/or communities within the National Petroleum Reserve - Alaska.</u></p>	<p><i>E-1 Required Operating Procedure</i> Objective: Protect subsistence use and access to traditional subsistence hunting and fishing areas and minimize the impact of oil and gas activities on air, land, water, fish and wildlife resources. Requirement/Standard: All roads must be designed, constructed, maintained, and operated to create minimal environmental impacts and to protect subsistence use and access to traditional subsistence hunting and fishing areas. The AO will consult with appropriate Federal, state, and NSB regulatory and resources agencies prior to approving construction of roads. Subject to approval by the AO, the construction, operation and maintenance of oil field roads is the responsibility of the lessee unless the construction, operation, and maintenance of roads are assumed by the appropriate governing entity.</p>

Alternative A Stipulation 48 theoretically would be somewhat more effective than *Alternatives B, C, and D - ROP E-1* in minimizing effects on **soils, paleontological and cultural resources, water resources and water quality, vegetation, and wetlands** because it would explicitly prohibit the construction of a permanent road connecting to a road system or docks outside of the Planning Area that could impact near-surface resources and increase the amount of disturbance area. This benefit, however, is only theoretical. None of the alternatives provides for such a road and BLM considers construction of such a road as speculative, and consequently has not analyzed it in the Supplemental IAP/EIS. Thus this Supplemental IAP/EIS does not provide sufficient analytical support for authorizing such a road. Under no alternative could such a road be built without proper project-specific NEPA analysis—undoubtedly an EIS. If such a road was not constructed, *Stipulation 48 and ROP E-1* would be equally effective.

Alternative A Stipulation 48 would be somewhat more effective than Alternatives B, C, and D - ROP E-1 in minimizing effects on **endangered and threatened species, terrestrial mammal and bird habitat** because it would not allow the construction of a permanent road connecting to a road system or docks outside of the Planning Area that could impact habitat. ROP E-1 may be more effective than Stipulation 48 in protecting **threatened and endangered species** (eiders), **terrestrial mammals** (including caribou) and **birds** if construction of a permanent road connecting to a road system or docks outside of the Planning Area reduces the number of aircraft flights, which could disturb animals, between facilities. If such a road was

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FACILITY DESIGN AND CONSTRUCTION

not constructed, Stipulation 48 and ROP E-1 would be equally effective. Stipulation 48 be somewhat more effective than ROP E-1 in protecting **subsistence** use and access to traditional hunting and fishing areas and **public health** because it would not allow the construction of a permanent road connecting to a road system or docks outside of the Planning Area that could impact caribou and other subsistence resources and the ability of hunters to pursue subsistence resources. Stipulation 48 would be somewhat more effective than ROP E-1 in limiting the impact that oil and gas exploration and development would have on **recreation, wilderness, and wild and scenic river values**. Without this ROP, we would expect greater impacts from road construction, and declines in outstandingly remarkable values for fish, wildlife, and subsistence use. Alternative A Stipulation 48 would be somewhat more effective than Alternatives B, C, and D - ROP E-1 in limiting the impact that oil and gas exploration and development would have on **visual resource** values. Without this ROP, we would expect greater impacts from road construction, and declines in the beneficial visual characteristics of the landscape.

41. For those water bodies not listed in *Stipulation 39*, permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited upon or within 500 feet as measured from the highest high water mark of the active floodplain. Essential pipeline and road crossings will be permitted on a case-by-case basis.

70. Construction camps are prohibited on frozen lakes and river ice. Siting of construction camps on river sand and gravel bars is allowed and, where feasible, encouraged. Where leveling of trailers or modules is required and the surface has a vegetative mat, leveling shall be accomplished through blocking rather than use of a bulldozer.

E-2 Lease Stipulation
Objective: Protect fish-bearing water bodies, water quality, and aquatic habitats.
Requirement/Standard: The design and location of permanent oil and gas facilities within 500 feet of fish-bearing or 100 feet of non-fish-bearing water bodies will only be approved on a case by case basis if the lessee can demonstrate that impacts to fish, water quality, and aquatic and riparian habitats would be minimal. Note: Also refer to Area-Specific Stipulations and ROPs for Rivers Area (Lease Stipulation K-1) and Deep Water Lakes (Lease Stipulation K-2).

E-2 Lease Stipulation
Objective: Protect fish-bearing water bodies, water quality, and aquatic habitats.
Requirement/Standard: Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited upon or within 500 feet as measured from the ordinary high water mark. Essential pipeline and road crossings will be permitted on a case-by-case basis. Note: Also refer to Area-Specific Stipulations and ROPs for Rivers Area (Lease Stipulation K-1) and Deep Water Lakes (Lease Stipulation K-2).
 Construction camps are prohibited on frozen lakes and river ice. Siting of construction camps on river sand and gravel bars is allowed and, where feasible, encouraged. Where leveling of trailers or modules is required and the surface has a vegetative mat, leveling shall be accomplished through blocking rather than use of a bulldozer.

Alternatives A Stipulation 41 would be would be somewhat more effective than *Alternatives B and C - ROP E-2* and equally effective as *Alternative D – ROP E-2* in protecting **soil resources, water resources and water quality, paleontological and cultural resources, vegetation, wetlands, freshwater fish and fish habitat, threatened and endangered species, birds, subsistence use patterns, wild and scenic river values, and public health** because permanent oil and gas facilities would be prohibited within 500 feet of all waterbodies under Alternatives A and D, but would be prohibited within only 100 feet of non-fish-bearing lakes under Alternatives B and C.

Alternative A Stipulation 41 and Alternatives B, C, and D Lease Stipulation E-2 would be equally effective in reducing the potential effects of fuel spills on grizzly bears, arctic foxes, and other **terrestrial mammals** and in increasing the protection of **wilderness and recreation resources**.

30. Causeways and docks are prohibited in river mouths or deltas. Artificial gravel islands and bottom-founded structures are prohibited in

E-3 Lease Stipulation
Objective: Maintain free passage of marine and anadromous fish and protect subsistence use and access to traditional subsistence hunting and fishing.

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FACILITY DESIGN AND CONSTRUCTION		
<p>river mouths or active stream channels on river deltas, except as provided in the paragraphs below.</p> <p>The BLM discourages the use of continuous-fill causeways. Environmentally preferred alternatives for field development include the use of onshore directional drilling, elevated structures, or buried pipelines. Approved causeways shall be designed, sited, and constructed to prevent significant changes to near shore oceanographic circulation patterns and water-quality characteristics (e.g., salinity, temperature, suspended sediments) that result in exceeding water-quality criteria, and must maintain free passage of marine and anadromous fish.</p> <p>Causeways, docks, artificial gravel islands, and bottom-founded structures may be permitted if the AO, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, determines that a causeway or other structure is necessary for field development, and that no feasible and prudent alternative exists. A monitoring program may be required to address the objectives of water quality and free passage of fish. Additional mitigation shall be required where significant deviation from these objectives occurs.</p>	<p><u>Requirement/Standard:</u> Causeways and docks are prohibited in river mouths or deltas. Artificial gravel islands and bottom-founded structures are prohibited in river mouths or active stream channels on river deltas. Causeways, docks, artificial islands, and bottom-founded drilling structures shall be designed to ensure free passage of marine and anadromous fish and to prevent significant changes to nearshore oceanographic circulation patterns and water quality characteristics. A monitoring program, developed in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, shall be required to address the objectives of water quality and free passage of fish.</p>	
<p><i>Alternative A – Stipulation 30 and Alternatives B, C, and D – Lease Stipulation E-3</i> provide the same and equal benefit in effectively reducing but not eliminating impacts to freshwater and marine fish, water resources and water quality, wild and scenic rivers values, subsistence use and access to traditional use areas, environmental justice concerns, and public health, by prohibiting the placement of causeways and docks in river mouths or deltas, and artificial gravel islands and bottom-founded structures in active stream channels, river mouths, and deltas. Elsewhere these facilities must be constructed in a manner that does not restrict or impede fish movements or degrade water quality or flow. These are critical areas for fish and subsistence fisheries.</p>		
<p>38. All crude oil, produced water, seawater, and natural gas pipelines shall be constructed to accommodate the best available technology for detecting corrosion or mechanical defects</p>	<p><i>E-4 Required Operating Procedure</i> <u>Objective:</u> Minimize the potential for pipeline leaks, the resulting environmental damage and industrial accidents. <u>Requirement/Standard:</u> All pipelines shall be designed, constructed, and operated under an AO-approved Quality Assurance/Quality Control plan that is specific to the product transported and shall</p>	

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during routine structural integrity inspections	be constructed to accommodate the best available technology for detecting and preventing corrosion or mechanical defects during routine structural integrity inspections.
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Alternative A Stipulation 38 and Alternatives B, C, and D ROP E-4 should provide equal benefit in the avoidance of impact to **soils, water quality and water resources, fish and fish habitat, wetlands, vegetation, and birds** by ensuring that pipelines are designed, constructed, and operated in a technically sound manner so as to prevent petroleum releases through pipeline failure.

<p>32. Lessees shall use maximum economically feasible extended-reach drilling for production drilling to minimize the number of pads and the network of roads between pads. New developments shall share facilities with existing development when prudent and technically feasible. All oil and gas facilities, except airstrips, docks, and seawater-treatment plants, will be co-located with drill pads. If possible, airstrips will be integrated with roads. Given the paucity of gravel sites in the planning area and the cost of transporting gravel from outside the planning area, lessees are encouraged to implement gravel-reduction technologies e.g., insulated or pile-supported pads.</p> <p>67. All activities shall be conducted to avoid or minimize disturbance to vegetation.</p>	<p><i>E-5 Required Operating Procedure</i> <u>Objective:</u> Minimize impacts of the development footprint. <u>Requirement/Standard:</u> Facilities shall be designed and located to minimize the development footprint to the maximum extent practicable considering environmental, economic, safety, and social impacts. Issues and methods that are to be considered include: a) use of maximum feasible extended-reach drilling for production drilling to minimize the number of pads and the network of roads between pads; b) sharing facilities with existing development when prudent and technically feasible; c) collocation of all oil and gas facilities, except airstrips, docks, and seawater-treatment plants, with drill pads; d) integration of airstrips with roads; e.) use of gravel-reduction technologies, e.g., insulated or pile-supported pads. <u>Note: Where aircraft traffic is a concern, consideration shall be given to balancing gravel pad size and available supply storage capacity with potential reductions in the use of aircraft to support oil and gas operations.</u></p>
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Alternative A Stipulations 32 and 67 and Alternatives B, C, and D - ROP E-5 would be equally effective in minimizing effects on **soils, paleontological and cultural resources, water resources and water quality, vegetation, wetlands, and fish and fish habitat** by minimizing the development footprint and amount of gravel use. *Stipulation 32 and ROP E-5* would be equally effective in minimizing effects on terrestrial mammal, bird, and endangered species habitat, and on subsistence and sociocultural systems by requiring minimal facility footprint. *ROP E-5* would be more effective than *Stipulation 32* in reducing impacts to terrestrial mammals, birds, and endangered species from aircraft activity, as facility footprint size would be balanced against the need for additional air traffic to support the facility when designing facilities. *Stipulation 32 and ROP E-5* would be equally effective in minimizing effects on recreation, wilderness area, and wild and scenic river values by minimizing the development footprint and amount of gravel use. *ROP E-5* would be more effective than *Stipulation 32* in reducing impacts to these resources and resource users from aircraft activity, as facility footprint size would be balanced against the need for additional air traffic to support the facility when designing facilities. *Stipulation 32 and ROP E-5* would be equally effective in minimizing effects on visual resources by minimizing the development footprint and amount of gravel use.

<p>42. Bridges, rather than culverts, shall be used for any allowed road crossings on all major rivers, including those water bodies listed in <i>Stipulation 39</i> or identified by the AO in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, to reduce</p>	<p><i>E-6 Required Operating Procedure</i> <u>Objective:</u> Reduce the potential for ice-jam flooding, impacts to wetlands and floodplains, erosion, alteration of natural drainage patterns, and restriction of fish passage. <u>Requirement/Standard:</u> Stream and marsh crossings shall be designed and constructed to ensure free passage of fish, reduce erosion, maintain natural drainage, and minimize adverse effects to natural stream flow. <u>Note: Bridges, rather than culverts, are the preferred method for crossing rivers. When</u></p>
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<p>the potential of ice-jam flooding and erosion. When necessary on smaller streams, culverts shall be large enough to avoid restriction of fish passage or adversely affecting natural stream flow.</p> <p>43. The natural drainage pattern will be identified prior to and maintained during and after construction. All permanent structures constructed adjacent to a body of water, such as approved road and pipeline crossings, shall be sited and designed to limit erosion from flooding and wave action (e.g., through use of slope-protection measures). Cross-drainage structures will be sited, maintained, and properly abandoned to prevent impoundments or alteration of local or area-wide hydrology. Gravel structures shall be designed and sited to minimize the length that is perpendicular to sheet flow.</p>	<p><u>necessary, culverts can be constructed on smaller streams, if they are large enough to avoid restricting fish passage or adversely affecting natural stream flow.</u></p>	
<p><i>Alternative A Stipulations 42 and 43 and Alternatives B, C, and D - ROP E-6</i> would be equally effective in minimizing effects on soils, water resources and water quality, wetlands, freshwater fish habitat and fish, subsistence use patterns for these species, and wild and scenic rivers values, by maintaining natural drainages that may reduce erosion, and requiring construction in a manner that allows free passage of fish. Maintenance of the natural drainage would protect stream flows and therefore the fish, fish habitat within the streams, and riparian habitats such as wetlands. Reducing impacts on fish and will minimize and impacts to subsistence-harvest patterns associated with the fish. The stipulations would also be effective in limiting the impacts that oil and gas exploration and development will have on wild and scenic river values. Without this ROP we expect greater impacts due to the obstruction to fish passage and declines in outstandingly remarkable values for fish, and subsistence use.</p>		
<p>34. Lessees shall separate elevated pipelines from roads by a minimum of 500 feet, if feasible. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipe and road converge on a drill pad.</p> <p>35. To minimize delay or deflection of caribou movements, lessees shall place pipeline on the appropriate side of the road as determined by the AO (depending on general caribou movements in the area).</p> <p>36. In the Special Caribou Stipulations Area and where facilities or terrain may funnel caribou movement, ramps over pipelines, buried pipe, or</p>	<p><i>E-7 Required Operating Procedure</i> Objective: Minimize disruption of caribou movement and subsistence use. Requirement/Standard: Pipelines and roads shall be designed to allow the free movement of caribou and the safe, unimpeded passage of the public while participating in traditional subsistence activities. Listed below are the accepted design practices:</p> <ul style="list-style-type: none"> a. Above ground pipelines shall be elevated a minimum of 7 feet as measured from the ground to the bottom of the pipeline at vertical support members. b. In areas where facilities or terrain may funnel caribou movement, ramps over pipelines, buried pipelines, or pipelines buried under roads may be required by the AO after consultation with Federal, state, and NSB regulatory and resource agencies (as appropriate, based on agency legal authority and jurisdictional responsibility). 	
	<p>c. A minimum distance of 500 feet between</p>	<p>c. A minimum distance of 500 feet between</p>

<p align="center">1998 Northeast IAP/EIS Stipulations for the No Action Alternative</p>	<p align="center">Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C</p>	<p align="center">Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative</p>
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<p>pipe buried under the road may be required by the AO after consultation with appropriate Federal, state, and NSB regulatory and resource agencies.</p> <p>37. Aboveground pipelines shall be elevated at least 5 feet, as measured from the ground to the bottom of the pipe, except where the pipeline intersects a road, pad, or a ramp installed to facilitate wildlife passage and subsistence passage and access. The AO, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, may make an exception if no feasible and prudent means exist to meet the requirement.</p>	<p>pipelines and roads shall be maintained when feasible. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipelines and roads converge on a drill pad.</p>	<p>pipelines and roads shall be maintained. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipelines and roads converge on a drill pad. Where it is not feasible to separate pipelines and roads, alternative pipeline routes, designs and possible burial within the road will be considered by the AO.</p>
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*Stipulations 34 to 36 and Alternatives B, C, and D ROP E-7 would be equally effective in reducing **sociocultural and public health** impacts and disruption of **subsistence-harvest patterns** by minimizing the disruption of caribou movement by requiring pipelines and roads to be designed to allow the free movement of caribou and the safe and unimpeded passage of subsistence hunters. *Stipulation 37* would be less effective than *ROP E-7* in reducing **sociocultural** impacts and disruption of **subsistence-harvest patterns** by minimizing the disruption of caribou movement as pipeline height would be approximately 5 feet or higher for *Stipulation 37*, but 7 feet or higher for *ROP E-7*.*

*Alternative A Stipulations 34 to 36 and ROP E-7 would be equally effective in reducing impacts of oil development on caribou and other large **terrestrial mammals** by requiring design of roads and pipelines to allow for free movement of caribou. *Stipulation 37* would be less effective than *ROP E-7* in facilitating movement of caribou and other large **terrestrial mammals** from insect-relief habitat to inland foraging habitat, as pipelines would be 5 feet or higher under *Stipulation 37*, but 7 feet or higher under *ROP E-7*.*

<p>40. Gravel mining sites required for development activities will be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Where feasible and prudent, gravel sites shall be designed and constructed to function as water reservoirs for future use. Gravel mine sites are prohibited within the active floodplain of a river, stream, or lake unless the AO, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, determines that there is no feasible and prudent alternative or that a floodplain site would enhance fish and wildlife habitat after mining operations are completed and</p>	<p><i>E-8 Required Operating Procedure</i> <u>Objective:</u> Minimize the impact of mineral materials mining activities on air, land, water, fish, and wildlife resources. <u>Requirement/Standard:</u> Gravel mine site design and reclamation will be in accordance with a plan approved by the AO. The plan shall be developed in consultation with appropriate Federal, state, and NSB regulatory and resource agencies and consider:</p> <ol style="list-style-type: none"> a. Locations outside the active flood plain. b. Design and construction of gravel mine sites within active flood plains to serve as water reservoirs for future use. c. Potential use of the site for enhancing fish and wildlife habitat.
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<p>the site is closed. Mine site development and rehabilitation within a floodplain shall follow the procedures outlined in McLean (1993), North Slope Gravel Pit Performance Guidelines; Alaska Department of Fish and Game, Habitat and Restoration Division Technical Report 93-9.</p>		
<p><i>Alternative A Stipulation 40</i> and Alternatives B, C, and D <i>ROP E-8</i> would be equally effective in minimizing effects on soils through the design and reclamation of mine sites that minimizes the size of the mine footprint and reduces erosion and maintains natural drainages. <i>Stipulation 40</i> and <i>ROP E-8</i> would be equally effective in protecting paleontological and cultural resources, water resources and water quality, vegetation, and freshwater fish by limiting the size of the gravel mine site, and therefore impacts to floodplains. <i>Stipulation 40</i> and <i>ROP E-8</i> would be equally effective in reducing impacts to vegetation by minimizing the size of the mine footprint and by increasing the likelihood of vegetation would eventually be returned to a natural (or at least more productive) state, and be equally beneficial in creating new wetland habitat. <i>Stipulation 40</i> and <i>ROP E-8</i> would be equally beneficial in minimizing the mine site footprint to reduce loss of bird habitat, and reclaiming the site to provide habitat for fish and fish-eating birds and loafing habitat for other birds. <i>Stipulation 40</i> and <i>ROP E-8</i> would reduce impacts on subsistence-harvest patterns by reducing the impact of gravel mining operations on birds, fish, and fish habitat.</p>		
<p>72. The feeding of wildlife by authorized users is prohibited.</p>	<p><i>E-9 Required Operating Procedure</i> <u>Objective:</u> Avoidance of human-caused increases in populations of predators of ground nesting birds. <u>Requirement/Standard:</u> Lessee shall utilize best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee shall provide the AO with an annual report on the use of oil and gas facilities by ravens, raptors and foxes as nesting, denning, and shelter sites. Alaska Administrative Code 5 AAC 92.230**</p>	<p><i>E-9 Required Operating Procedure</i> <u>Objective:</u> Avoidance of human-caused increases in populations of predators of ground nesting birds. <u>Requirement/Standard:</u> a. Lessee shall utilize best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee shall provide the AO with an annual report on the use of oil and gas facilities by ravens, raptors and foxes as nesting, denning, and shelter sites. b. Feeding of wildlife is prohibited and will be subject to non-compliance regulations.</p>
<p><i>Alternative B and C, and D ROP E-9(a)</i> should provide the same benefit in minimizing potential impacts to birds, threatened and endangered species, and terrestrial mammals, by requiring lessees to use the best technology to prevent facilities from becoming nesting or shelter sites for predators. Additional shelter or denning sites could result in an increased local predator population and consequent increased predation on other species. Alternative A has no direct counterpart.</p> <p><i>Alternative A Stipulation 72 and Alternatives B and C Alaska Administrative Code 5 AAC 92.230, and Alternative D ROP E-9(b)</i> are equally effective in prohibiting the feeding of wildlife. 5 AAC 92.230 applies to all activities in the Planning Area under all alternatives. Specifically, the law states: A person may not intentionally feed a moose (except under terms of a permit issued by the department), bear, wolf, coyote, fox, or wolverine, or negligently leave human food, pet food, or garbage in a manner that attracts these animals”</p>		

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	<p><i>E-10 Required Operating Procedure</i> <u>Objective:</u> Prevention of migrating waterfowl, including species listed under the Endangered Species Act, from striking oil and gas and related facilities during low light conditions. <u>Requirement/Standard:</u> Except for safety lighting, illumination of higher structures shall be designed to direct artificial exterior lighting inward and downward, rather than upward and outward. All drilling structures, production facilities, and other structures that exceed 20 feet in height shall be illuminated as outlined above.</p>
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Alternative B, C, and D ROP E-10 should provide the same benefit in minimizing potential impacts to **birds and threatened and endangered species**, and **terrestrial mammals**, by requiring lessees to apply lighting to structures in a manner that reduces bird collisions. Directing the lighting inward and downward is thought to reduce the attractiveness to birds and therefore reduce collisions. Alternative A stipulations have no direct counterpart.

	<p><i>E-11 Required Operating Procedure</i> <u>Objective:</u> Minimize the take of species listed under the Endangered Species Act and minimize the disturbance of other species of interest from direct or indirect interaction with oil and gas facilities. <u>Requirement/Standard:</u> In accordance with the guidance below, before the approval of facility construction, aerial surveys of breeding pairs of the following species shall be conducted within any area proposed for development. <u>Special Conditions in Spectacled and/or Steller’s Eiders Habitats:</u> a. Surveys shall be conducted by the lessee for at least 3 years before authorization of construction, if such construction is within the USFWS North Slope eider survey area and at least 1 year outside that area. Results of aerial surveys and habitat mapping may require additional ground nest surveys. Spectacled and/or Steller’s eider surveys shall be conducted following accepted BLM-protocol during the second week of June. b. If spectacled and/or Steller’s eiders are determined to be present within the proposed development area, the applicant shall consult with the USFWS and BLM in the design and placement of roads and facilities in order to</p>	<p><i>E-11 Required Operating Procedure</i> <u>Objective:</u> Minimize the take of species listed under the Endangered Species Act and minimize the disturbance of other species of interest from direct or indirect interaction with oil and gas facilities. <u>Requirement/Standard:</u> In accordance with the guidance below, before the approval of facility construction, aerial surveys of the following species shall be conducted within any area proposed for development. <u>Special Conditions in Spectacled and/or Steller’s Eiders Habitats:</u> a. Surveys shall be conducted by the lessee for at least 3 years before authorization of construction, if such construction is within the USFWS North Slope eider survey area and at least 1 year outside that area. Results of aerial surveys and habitat mapping may require additional ground nest surveys. Spectacled and/or Steller’s eider surveys shall be conducted following accepted BLM-protocol during the second week of June. b. If spectacled and/or Steller’s eiders are determined to be present within the proposed development area, the applicant shall consult with the USFWS and BLM in the design and placement of roads and facilities in order to minimize impacts to nesting and brood-rearing</p>
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	<p>minimize impacts to nesting and brood-rearing eiders and their preferred habitats. Such consultation shall address timing restrictions and other temporary mitigating measures, construction of permanent facilities, placement of fill, alteration of eider habitat, aircraft operations, and introduction of high noise levels.</p> <p>c. To reduce the possibility of spectacled and/or Steller’s eiders striking above ground utility lines (power and communication), such lines shall either be buried in access roads, or suspended on vertical support members, to the extent practical. Support wires associated with communication towers, radio antennas, and other similar facilities, shall be clearly marked along their entire length to improve visibility for low flying birds. Such markings shall be jointly developed through consultation with the USFWS. Overhead power and/or communication lines for oil and gas activities will be limited to the following circumstances.</p> <ol style="list-style-type: none"> 1. Overhead power or communication lines may be allowed when located entirely within the boundaries of a facility pad; 2. Overhead power or communication lines may be allowed when engineering constraints at the specific location make it unfeasible to bury or connect them to a vertical support member, or 3. Overhead power or communication lines may be allowed when human safety would be compromised by other methods. (Note: Unlike the case with the first two circumstances listed immediately above, this circumstance may justify overhead power or communications lines over a larger portion of the Planning Area.) 	<p>eiders and their preferred habitats. Such consultation shall address timing restrictions and other temporary mitigating measures, construction of permanent facilities, placement of fill, alteration of eider habitat, aircraft operations, and introduction of high noise levels.</p> <p>c. To reduce the possibility of spectacled and/or Steller’s eiders striking above ground utility lines (power and communication), such lines shall either be buried in access roads, or suspended on vertical support members, to the extent practicable. Support wires associated with communication towers, radio antennas, and other similar facilities, shall be clearly marked along their entire length to improve visibility for low flying birds. Such markings shall be jointly developed through consultation with the USFWS. Overhead power and/or communication lines for oil and gas activities will be limited to the following circumstances.</p> <ol style="list-style-type: none"> 1. Overhead power or communication lines may be allowed when located entirely within the boundaries of a facility pad; 2. Overhead power or communication lines may be allowed when engineering constraints at the specific location make it unfeasible to bury or connect them to a vertical support member, or 3. Overhead power or communication lines may be allowed when human safety would be compromised by other methods. (Note: Unlike the case with the first two circumstances listed immediately above, this circumstance may justify overhead power or communications lines over a larger portion of the Planning Area.)

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	<p><u>Special Conditions in Yellow-billed Loon Habitats:</u></p> <p>a. Aerial surveys shall be conducted by the lessee for at least 3 years before authorization of construction of facilities proposed for development which are within 1 mile of a lake 25 acres or larger in size. These surveys along shorelines of large lakes shall be conducted following accepted BLM protocol during nesting in late June and during brood rearing in late August.</p> <p>b. Should yellow-billed loons be present, the design and location of facilities must be such that disturbance is minimized. Accepted mitigation is a 1-mile buffer around all recorded nest sites and a minimum 1,625-foot (500-meter) buffer around the remainder of the lake shoreline. Development may be prohibited within buffers or activities curtailed while birds are present.</p>	<p><u>Special Conditions in Yellow-billed Loon Habitats:</u></p> <p>a. Aerial surveys shall be conducted by the lessee for at least 3 years before authorization of construction of facilities proposed for development which are within 1 mile of a lake 25 acres or larger in size. These surveys along shorelines of large lakes shall be conducted following accepted BLM protocol during nesting in late June and during brood rearing in late August.</p> <p>b. Should yellow-billed loons be present, the design and location of facilities must be such that disturbance is minimized. The default standard mitigation is a 1-mile buffer around all recorded nest sites and a minimum 1,625-foot (500-meter) buffer around the remainder of the shoreline. Development will generally be prohibited within buffers unless no other option exists.</p>
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Alternatives B, C, and D ROP E-11 provide benefits in minimizing potential impacts to **birds** and **threatened and endangered species** by requiring lessees to conduct studies of eiders and loons to ensure that facility siting minimizes impacts to birds and by improving the visibility of towers, power lines, and guy wires in a manner that reduces bird collisions. Alternative A stipulations have no direct counterpart.

<p>43. The natural drainage pattern will be identified prior to and maintained during and after construction. All permanent structures constructed adjacent to a body of water, such as approved road and pipeline crossings, shall be sited and designed to limit erosion from flooding and wave action (e.g., through use of slope-protection measures). Cross-drainage structures will be sited, maintained, and properly abandoned to prevent impoundments or alteration of local or area-wide hydrology. Gravel structures shall be designed and sited to minimize the length that is perpendicular to sheet flow.</p> <p>44. Dewatering during construction shall be</p>	<p><i>E-12 Required Operating Procedure</i></p> <p><u>Objective:</u> Use ecological mapping as a tool to assess wildlife habitat before development of permanent facilities, to conserve important habitat types during development.</p> <p><u>Requirement/Standard:</u> An ecological land classification map of the development area shall be developed before approval of facility construction. The map will integrate geomorphology, surface form, and vegetation at a scale, level of resolution, and level of positional accuracy adequate for detailed analysis of development alternatives. The map shall be prepared in time to plan one season of ground-based wildlife surveys, if deemed necessary by the AO, before approval of the exact facility location and facility construction.</p>
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<p>conducted using BMPs. A current list of BMPs will be available from the AO. Examples include the use of splash plates, dewatering points, natural filtration through vegetation, and dewatering during low-water period.</p> <p>46. Lessees shall minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region. Lessees shall identify on a map or aerial photograph the largest surface area, including future expansion areas, within which a facility is to be sited or an activity is to occur. The AO will consult with Federal, state, and NSB regulatory and resource agencies to identify key wetlands and work with lessees during the development of operating plans. To minimize impact, the lessee shall avoid siting facilities in the identified wetlands, unless no feasible and prudent alternative exists. Key wetland types include but are not limited to fish-bearing lakes and streams, riparian shrub, and the following classes described by Bergman et al. (1977): shallow and deep-<i>Arctophila</i> ponds, deep-open lakes, basin-complex wetlands, and coastal wetlands.</p>	
<p><i>Alternative A Stipulations 43, 44, and 46 and Alternatives B, C, and D - ROP E-12</i> would be equally effective in minimizing impacts to soil, water resources and water quality, vegetation, wetlands, birds, and terrestrial mammals, by ensuring that facilities are sited to minimize alteration of local or area-wide hydrology. Preventing changes to hydrology will avoid impacts to water resources and water quality, vegetation, and the birds and terrestrial mammals that use the area habitats. Stipulation 43 and ROP E-12 would be equally effective in mitigating impacts to vegetation by requiring development of an ecological land classification map or facility site plan that reduces impacts to vegetation. Stipulation 43 and ROP E-12 would be equally effective in mitigating impacts to wetlands, birds, terrestrial mammals, and endangered and threatened species, subsistence use, sociocultural systems, and public health by requiring development of an ecological land classification map or facility site plan that reduces the amount of important habitat types that might be impacted by development. Conserving important habitat types will minimize impacts to the endangered species (eiders), terrestrial mammals, birds, and subsistence use of these habitats and species. Minimization of impacts to subsistence translates directly to avoidance of sociocultural systems and public health impacts.</p>	
74. Lessees shall conduct a cultural and paleontological resources survey prior to any	<p><i>E-13 Required Operating Procedure</i> Objective: Protect cultural and paleontological resources.</p>

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ground-disturbing activity. Upon finding any potential cultural or paleontological resource, the lessee or their designated representative shall notify the AO and suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the AO.	<p><u>Requirement/Standard:</u> Lessees shall conduct a cultural and paleontological resources survey prior to any ground-disturbing activity. Upon finding any potential cultural or paleontological resource, the lessee or their designated representative shall notify the AO and suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the AO.</p> <p>Paleontological resource protection addressed in NEPA review of project.</p>

Alternative A Stipulation 74 and Alternatives B, C, and D ROP E-13 would provide equal benefit in reducing potential impacts to **cultural and paleontological resources** by requiring surveys for these resources and authorization of the AO before conducting any ground-disturbing activities. Additionally, if the survey was to miss such resources and they were discovered during construction, the AO must be notified and protective measures would be set in motion.

USE OF AIRCRAFT FOR PERMITTED ACTIVITIES

<p>53. Helicopter overflights for BLM-permitted activities shall be suspended in the Goose Molting LUEA from June 15 through August 20.</p> <p>55. Aircraft shall maintain an altitude of at least 1,000 feet above ground level (AGL) (except for takeoffs and landings) over caribou winter ranges from October 1 through May 15 and 2,000 feet AGL over the Teshekpuk Lake Caribou Habitat LUEA from May 16 through July 31, unless doing so would endanger human life or violate safe flying practices.</p> <p>56. Aircraft shall maintain an altitude of at least 1,500 feet AGL when within ½ mile of cliffs identified as raptor nesting sites from April 15 through August 5, unless doing so would endanger human life or violate safe flying practices. Aircraft shall maintain an altitude of 1,500 feet AGL when within ½ mile of known gyrfalcon nest sites from March 15 to April 15. Permittees shall obtain information from BLM necessary to plan flight routes near gyrfalcon nests.</p>	<p><i>F-1 Required Operating Procedure</i> <u>Objective:</u> Minimize the effects of low-flying aircraft on wildlife, traditional subsistence activities, and local communities. <u>Requirement/Standard:</u> The lessee shall ensure that aircraft used for permitted activities maintain altitudes according to the following guidelines:</p> <p>a. Aircraft shall maintain an altitude of at least 1,500 feet above ground level (AGL) when within ½ mile of cliffs identified as raptor nesting sites from April 15 through August 15 and within ½ mile of known gyrfalcon nest sites from March 15 to August 15, unless doing so would endanger human life or violate safe flying practices. Permittees shall obtain information from the BLM necessary to plan flight routes when routes may go near falcon nests.</p> <p>b. Aircraft shall maintain an altitude of at least 1,000 feet AGL (except for takeoffs and landings) over caribou winter ranges from October 1 through May 1, unless doing so would endanger human life or violate safe flying practices. Caribou wintering areas will be defined annually by the AO.</p> <p>c. The number of takeoffs and landings to support oil and gas operations with necessary</p>	<p><i>F-1 Required Operating Procedure</i> <u>Objective:</u> Minimize the effects of low-flying aircraft on wildlife, traditional subsistence activities, and local communities. <u>Requirement/Standard:</u> The lessee shall ensure that aircraft used for permitted activities maintain altitudes according to the following guidelines (Note: This ROP is not intended to restrict flights necessary to survey wildlife to gain information necessary to meet the stated objectives of the stipulations and ROPs. However, flights necessary to gain this information will be restricted to the minimum necessary to collect such data.):</p> <p>a. Aircraft shall maintain an altitude of at least 1,500 feet above ground level (AGL) when within ½ mile of cliffs identified as raptor nesting sites from April 15 through August 15 and within ½ mile of known gyrfalcon nest sites from March 15 to August 15, unless doing so would endanger human life or violate safe flying practices. Permittees shall obtain information from the BLM necessary to plan flight routes when routes may go near falcon nests.</p> <p>b. Aircraft shall maintain an altitude of at least 1,000 feet AGL (except for takeoffs and landings) over caribou winter ranges from December 1</p>
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USE OF AIRCRAFT FOR PERMITTED ACTIVITIES		
	<p>materials and supplies should be limited to the maximum extent possible. During the design of proposed oil and gas facilities, larger landing strips and storage areas should be considered so as to allow larger aircraft to be employed, resulting in fewer flights to the facility.</p> <p>d. Use of aircraft, especially rotary wing aircraft, near known subsistence camps and cabins or during sensitive subsistence hunting periods (spring goose hunting and fall caribou and moose hunting) should be kept to a minimum.</p> <p>e. Aircraft used for permitted activities shall maintain an altitude of at least 2,000 feet AGL (except for takeoffs and landings) over the Teshekpuk Lake Caribou Habitat Area (Map 2-2) from May 20 through August 20, unless doing so would endanger human life or violate safe flying practices. Aircraft use (including fixed wing and helicopter) by oil and gas lessees in the Goose Molting Area (Map 2-2) should be minimized from May 20 through August 20, unless doing so would endanger human life or violate safe flying practices.</p>	<p>through May 1, unless doing so would endanger human life or violate safe flying practices. Caribou wintering areas will be defined annually by the AO. The AO will consult directly with the Alaska Department of Fish and Game in annually defining caribou winter ranges.</p> <p>c. Land user shall submit an aircraft use plan as part of an oil and gas exploration or development proposal. The plan shall address strategies to minimize impacts to subsistence hunting and associated activities, including but not limited to the number of flights, type of aircraft, and flight altitudes and routes, and shall also include a plan to monitor flights. Proposed aircraft use plans should be reviewed by appropriate Federal, State, and Borough agencies. Consultations with these same agencies will be required if unacceptable disturbance is identified by subsistence users. Adjustments, including possible suspension of all flights, may be required by the AO if resulting disturbance is determined to be unacceptable. The number of takeoffs and landings to support oil and gas operations with necessary materials and supplies should be limited to the maximum extent possible. During the design of proposed oil and gas facilities, larger landing strips and storage areas should be considered so as to allow larger aircraft to be employed, resulting in fewer flights to the facility.</p> <p>d. Use of aircraft, especially rotary wing aircraft, near known subsistence camps and cabins or during sensitive subsistence hunting periods (spring goose hunting and fall caribou and moose hunting) should be kept to a minimum.</p> <p>e. Aircraft used for permitted activities shall maintain an altitude of at least 2,000 feet AGL (except for takeoffs and landings) over the Teshekpuk Lake Caribou Habitat Area (Map 2-2)</p>

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		<p>from May 20 through August 20, unless doing so would endanger human life or violate safe flying practices. Aircraft use (including fixed wing and helicopter) by oil and gas lessees in the Goose Molting Area (Map 2-2) should be minimized from May 20 through August 20, unless doing so would endanger human life or violate safe flying practices.</p>
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Alternative A – Stipulation 53 and Alternatives B, C and D – ROPs F-1 provide the same and equal benefit in effectively reducing impacts to **birds, terrestrial mammals, endangered and threatened species, subsistence, and public health** use by limiting the number of helicopter landings and take-offs during critical periods (peak waterfowl nesting/molting period) in the Goose Molting Area. Helicopter flights have been shown in some instances and situations to disturb wildlife. A reduction in the number of flights should provide a concomitant reduction in wildlife disturbance. While these stipulations are targeted at reducing impacts to geese in this important area, they should result in similar reductions in potential impact to other wildlife species as well as the subsistence activities associated with these wildlife species .

Alternative A – Stipulation 55 and Alternatives B, C, and D – ROPs F-1(b) and (e) provide the same and equal benefit in effectively reducing impacts to **birds, terrestrial mammals, endangered and threatened species, and subsistence use** by establishing a minimum altitude that aircraft may be flown over caribou winter range (1,000 ft) during winter and over the Teshekpuk Lake Caribou Habitat Area (2,000 ft) during the calving period. Approximately the same time periods apply in all the above-referenced stipulations and ROPs and are designed to coincide with caribou wintering and peak calving. Studies have shown that wildlife disturbance tends to diminish with altitude, therefore holding aircraft flights to minimum altitudes should reduce impacts. While these stipulations are targeted at reducing impacts to caribou in these important areas, they should result in similar reductions in potential impact to other sensitive wildlife species as well as the **subsistence** activities and **public health** associated with these wildlife species.

Alternative A – Stipulation 56 and Alternatives B, C, and D – ROPs F-1(a) provide equal benefit in effectively reducing impacts to **birds, terrestrial mammals, endangered and threatened species, and subsistence use** by establishing a minimum altitude (1,500 ft) that aircraft may be flown when within ½ mile of gyrfalcon nests or cliffs identified as raptor nest sites, during the nesting period. The identified nesting period is approximately the same for each of the identified stipulations and ROPs. Studies have shown that wildlife disturbance tends to diminish with altitude and distance, therefore holding aircraft flights to minimum altitudes within certain distances should reduce any potential impacts. While these stipulations are targeted at reducing impacts to gyrfalcons and other raptors at their nesting sites, they should result in similar reductions in potential impact to other sensitive wildlife species in the area as well as the **subsistence** activities and **public health** associated with these wildlife species.

Alternatives B, C, and D—ROP F-1(c) and (d) provide equal benefit by reducing disturbance to **birds, terrestrial mammals, endangered and threatened species, and subsistence use and public health** by encouraging limiting the number of aircraft take offs and landings to the maximum extent possible and encouraging that use of aircraft near known subsistence camps and cabins during sensitive subsistence hunting periods be kept to a minimum. Alternative A stipulations have no direct counterpart.

OILFIELD ABANDONMENT

<p>58. Upon field abandonment or expiration of a lease or oil- and gas-related permit, all facilities shall be removed and sites rehabilitated to the satisfaction of the AO, in consultation with appropriate Federal, state,</p>	<p><i>G-1 Lease Stipulation</i> <u>Objective:</u> Ensure the final disposition of the land meets the current and future needs of the public. <u>Requirement/Standard:</u> Upon abandonment or expiration of the lease, all oil- and gas-related</p>	<p><i>G-1 Lease Stipulation</i> <u>Objective:</u> Ensure the final disposition of the land meets the current and future needs of the public. <u>Requirement/Standard:</u> Upon abandonment or expiration of the lease, all oil- and gas-related</p>
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OILFIELD ABANDONMENT

<p>and NSB regulatory and resource agencies. The AO may determine that it is in the best interest of the public to retain some or all of the facilities. Lessees shall comply with all exploration and development bonding required by law and regulation (43 CFR 3154.1 and 3134.1). No exceptions shall be granted to this provision.</p>	<p>facilities shall be removed and sites rehabilitated to as near the original condition as practicable, subject to the review of the AO. The AO may determine that it is in the best interest of the public to retain some or all facilities.</p>	<p>facilities shall be removed and sites rehabilitated to as near the original condition as practicable, subject to the review of the AO. The AO may determine that it is in the best interest of the public to retain some or all facilities. Within the Goose Molting Area, the AO, when determining if it is in the best interest of the public to retain a facility, will consider the impacts of retention to molting geese and goose molting habitat.</p>
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Alternative A – Stipulation 58 and Alternatives B, C, and D – Lease Stipulation G-1 provide equal benefits in the avoidance and minimization of potential impacts to **vegetation, water resources, water quality, and estuarine water quality**, by mandating the removal of all or most oil and gas facilities and rehabilitation of the sites after abandonment or expiration of the lease. Removal of facilities and rehabilitation of the site should prevent the possibility of petroleum releases from abandoned facilities that could negatively affect soils, water quality and water resources, and restore any previously affected drainage patterns that could affect water resources. The rehabilitation should eventually permit or accelerate the return of natural vegetation communities, however the effectiveness is considered moderate as some gravel may be left in place, and because in some areas rehabilitation may not yield the same vegetation type.

SUBSISTENCE CONSULTATION FOR PERMITTED ACTIVITIES
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<p>26. Exploratory drilling is prohibited within 1,200 feet of any known, long-term cabin or campsite, identified by the AO, without written permission of the AO. The AO's decision will be informed by the consultation process described in <i>Stipulation 61</i>.</p> <p>47. Permanent oil and gas facilities are prohibited within 1 mile of known long-term cabins or long-term campsites, identified by the AO, except that pipelines and roads are allowed up to ¼ mile from such cabins or campsites. The AO's decision will be informed by the consultation process described in <i>Stipulation 61</i></p> <p>59. During exploration, development, and production, the lessee shall develop and implement a plan, approved by the AO in consultation with the Research and Monitoring Team and the Subsistence Advisory Panel, to monitor the effects of activities on subsistence. The lessee shall provide biannual reports to BLM, the Research and Monitoring Team, and</p>	<p><i>H-1 Required Operating Procedure</i> <u>Objective:</u> Provide opportunities for participation in planning and decision making to prevent unreasonable conflicts between subsistence uses and oil and gas and related activities. <u>Requirement/Standard:</u> Lessee/permittee shall consult directly with affected communities using the following guidelines:</p> <p>a. Before submitting an application to the BLM, the applicant shall consult with directly affected subsistence communities, the NSB, and the National Petroleum Reserve - Alaska Subsistence Advisory Panel to discuss the siting, timing and methods of proposed operations. Through this consultation, the applicant shall make every reasonable effort, including such mechanisms as conflict avoidance agreements and mitigating measures, to ensure that proposed activities will not result in unreasonable interference with subsistence activities.</p>	<p><i>H-1 Required Operating Procedure</i> <u>Objective:</u> Provide opportunities for participation in planning and decision making to prevent unreasonable conflicts between subsistence uses and oil and gas and related activities. <u>Requirement/Standard:</u> Lessee/permittee shall consult directly with affected communities using the following guidelines:</p> <p>a. Before submitting an application to the BLM, the applicant shall consult with directly affected subsistence communities, the NSB, and the National Petroleum Reserve - Alaska Subsistence Advisory Panel to discuss the siting, timing, and methods of their proposed operations to help discover local traditional and scientific knowledge, resulting in measures that minimize impacts to subsistence uses. Through this consultation, the applicant shall make every reasonable effort, including such mechanisms as conflict avoidance agreements and mitigating measures, to ensure that proposed activities will</p>
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SUBSISTENCE CONSULTATION FOR PERMITTED ACTIVITIES

<p>the Subsistence Advisory Panel.</p> <p>60. Lessees shall not unreasonably restrict access by subsistence users in oil field development areas.</p> <p style="padding-left: 20px;">a. Lessees shall establish procedures for entrance to facilities, the use of roads, and firearms discharge. These procedures shall be developed in consultation with affected local communities, NSB, and the Subsistence Advisory Panel and be approved by the AO. In cases where the lessee and the Panel disagree, the AO will determine the appropriate procedure.</p> <p style="padding-left: 20px;">b. Lessees shall develop and distribute information about how to conduct subsistence activities in development areas safely (so equipment is not damaged and people are not endangered) to the communities through public meetings, newsletters, radio, and signs in both English and Iñupiaq.</p> <p>61. Exploration and development and production operations shall be conducted in a manner that prevents unreasonable conflicts between the oil and gas industry and subsistence activities. Prior to submitting an exploration plan or development and production plan (including associated oil-spill contingency plans) to the BLM, the lessee shall consult with potentially affected subsistence communities (e.g., Barrow, Nuiqsut, Atqasuk, or Anaktuvuk Pass), NSB, and the Subsistence Advisory Panel to discuss potential conflicts with the siting, timing, and methods of proposed operations and safeguards or mitigating measures that could be implemented by the operator to prevent unreasonable conflicts. Through this consultation, the lessee shall make every reasonable effort, including such mechanisms</p>	<p>b. The applicant shall submit documentation of consultation efforts as part of its operations plan. Applicants should submit the proposed plan of operations to provide an adequate time for review and comment by the National Petroleum Reserve - Alaska Subsistence Advisory Panel and to allow time for formal Government-to-Government consultation with Native Tribal governments. The applicant shall submit documentation of its consultation efforts and a written plan that shows how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. Operations plans must include a discussion of the potential effects of the proposed operation, and the proposed operation in combination with other existing or reasonably foreseeable operations.</p> <p>c. A subsistence plan addressing the following items must be submitted:</p> <ol style="list-style-type: none"> 1. A detailed description of the activity(ies) to take place (including the use of aircraft and vessels). 2. A description of how the lessee/permittee will minimize and/or deal with any potential impacts identified by the AO during the consultation process. 3. A detailed description of the monitoring effort to take place, including process, procedures, personnel involved and points of contact both at the work site and in the local community. 4. Communication elements to provide information on how the applicant will keep potentially affected individuals and communities up-to-date on the progress of the activities and locations of possible, short-term conflicts (if any) with subsistence activities. Communication methods could include holding 	<p>not result in unreasonable interference with subsistence activities.</p> <p>b. The applicant shall submit documentation of consultation efforts as part of its operations plan. Applicants should submit the proposed plan of operations to provide an adequate time for review and comment by the National Petroleum Reserve - Alaska Subsistence Advisory Panel and to allow time for formal Government-to-Government consultation with Native Tribal governments. The applicant shall submit documentation of its consultation efforts and a written plan that shows how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. Operations plans must include a discussion of the potential effects of the proposed operation, and the proposed operation in combination with other existing or reasonably foreseeable operations.</p> <p>c. A subsistence plan addressing the following items must be submitted:</p> <ol style="list-style-type: none"> 1. A detailed description of the activity(ies) to take place (including the use of aircraft and vessels). 2. A description of how the lessee/permittee will minimize and/or deal with any potential impacts identified by the AO during the consultation process. 3. A detailed description of the monitoring effort to take place, including process, procedures, personnel involved and points of contact both at the work site and in the local community. 4. Communication elements to provide information on how the applicant will keep potentially affected individuals and communities up-to-date on the progress of the activities and locations of possible, short-term
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<p>SUBSISTENCE CONSULTATION FOR PERMITTED ACTIVITIES</p>		
<p>as a conflict avoidance agreement, to ensure that exploration, development, and production activities are compatible with subsistence hunting, fishing, and other subsistence activities and will not result in unreasonable interference with subsistence harvests.</p> <p>A discussion of resolutions reached during this consultation process, specific conflict avoidance agreement(s), and plans for continued consultation shall be included in the permit application, exploration plan, or the development and production plan. In particular, the lessee shall show in the plan how its activities, in combination with other activities in the area, will be scheduled and located to prevent unreasonable conflicts with subsistence activities. Lessees also shall include a discussion of multiple or simultaneous operations, such as exploration and delineation well drilling and seismic activities, that can be expected to occur during operations to more accurately assess the potential for any cumulative effects. Communities, individuals, and other entities who were involved in the consultation shall be identified in the application or plan. The AO shall send a copy of the exploration plan or development and production plan (including associated oil-spill-contingency plans) to the potentially affected communities, the NSB, and the Subsistence Advisory Panel at the time they are submitted to the BLM to allow concurrent review and comment as part of the plan approval process.</p> <p>In the event no agreement is reached between the parties, the AO shall consult with representatives from the subsistence communities, Subsistence Advisory Panel, NSB, and the lessee(s) to specifically address the conflict and attempt to resolve the issues before</p>	<p>community meetings, open house meetings, workshops, newsletters, radio and television announcements, etc.</p> <p>5. Procedures necessary to facilitate access by subsistence users to conduct their activities.</p> <p>In the event that no agreement is reached between the parties, the AO shall consult with the directly involved parties and determine which activities will occur, including the timeframes. During development, monitoring plans must be established for new permanent facilities, including pipelines, to assess an appropriate range of potential effects on resources and subsistence as determined on a case-by-case basis given the nature and location of the facilities. The scope, intensity, and duration of such plans will be established in consultation with the AO and Subsistence Advisory Panel.</p>	<p>conflicts (if any) with subsistence activities. Communication methods could include holding community meetings, open house meetings, workshops, newsletters, radio and television announcements, etc.</p> <p>5. Procedures necessary to facilitate access by subsistence users to conduct their activities.</p> <p>In the event that no agreement is reached between the parties, the AO shall consult with the directly involved parties and determine which activities will occur, including the timeframes. During development, monitoring plans must be established for new permanent facilities, including pipelines, to assess an appropriate range of potential effects on resources and subsistence as determined on a case-by-case basis given the nature and location of the facilities. The scope, intensity, and duration of such plans will be established in consultation with the AO and Subsistence Advisory Panel.</p> <p>Permittees that propose barging facilities, equipment, supplies, or other materials to NPR-A in support of oil and gas activities in the planning area shall notify, confer, and coordinate with the Alaska Eskimo Whaling Commission, the appropriate local community whaling captains' associations, and the NSB to minimize impacts from the proposed barging on subsistence whaling activities.</p>

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<p>making a final determination on the adequacy of the measures taken to prevent unreasonable conflicts with subsistence harvests.</p> <p>The lessee shall notify the AO of all concerns expressed by subsistence users during operations and of steps taken to address such concerns. Lease-related use will be restricted, when the AO determines it is necessary to prevent unreasonable conflicts with local subsistence hunting, fishing, and other subsistence activities.</p> <p>In enforcing this stipulation, the AO will work with other agencies and the public to assure that potential conflicts are identified and efforts are taken to avoid these conflicts, e.g., planning seismic operations to avoid traditional land use sites and allotments. These efforts may include seasonal drilling restrictions, seismic restrictions, and directional drilling requirements or use of other technologies deemed appropriate by the AO.</p> <p>The consultation process described in this stipulation will also be required of applicants for geophysical (i.e. seismic) permits to address potential conflicts with the setback requirements for cabins and campsites described in <i>Stipulation 23</i>. This consultation will help provide information to the AO on the advisability of modifying or waiving the restriction on seismic activity identified in <i>Stipulation 23</i>.</p> <p>62. The following subsistence, wildlife habitat, and traditional/cultural land use areas are of significant concern to local communities and will be given special consideration during the consultation process outlined in <i>Stipulation 61</i>:</p> <ul style="list-style-type: none"> a. Long-term cabins and campsites: a 2-mile zone around the cabins and campsites. b. Ikpikpuk River: a 2-mile zone from the 		
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<p>east bank of the river.</p> <p>c. Miguakiak River: a 3-mile zone from each bank of the river.</p> <p>d. Fish Creek: (1) a 3-mile zone from each bank downstream from Sec. 31. T. 11 N., R. 1 E. U.M.; (2) a 2-mile zone from each bank in and upstream from Sec. 31, T. 11 N., R. 1 E. U.M.</p> <p>e. Judy Creek: a 2-mile zone from each bank of the creek.</p> <p>f. Kogosukruk River: a 2-mile zone from each bluff (or bank if there is no bluff) of the river (including the four tributaries off the southern bank) downstream from T. 2 N., R. 3 W., U.M.</p> <p>g. Kikiakrorak River: a 2-mile zone from each bluff (or bank if there is no bluff) of the river downstream from T. 2 N, R. 4 W., U.M.</p> <p>h. Colville River: a 2-mile zone from the west bluff (or bank if there is no bluff) extending the length of river in the Colville River Raptor, Passerine, and Moose LUEA.</p> <p>In addition, a permittee or lessee engaged in oil and gas related activity shall consult with the BLM, USFWS, ADFG, and the NSB regarding wildlife concerns prior to submitting a geophysical (i.e. seismic) permit, exploration plan, or development and protection plan involving activity within the 2-mile zones around the Kogosukruk (and its tributaries), Kikiakrorak, and Colville rivers described above. In the event that the permittee or lessee and the agencies are unable to reach agreement on steps necessary to address wildlife concerns, the AO will consult with the other agencies and the permittee or lessee before making a determination on the adequacy of the measures taken to prevent conflicts with wildlife.</p> <p>64. Lessees shall conduct an inventory of known</p>		

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<p>traditional land use sites prior to any field activity. This inventory will be compiled from sites listed in the most current Traditional Land Use Inventory available from the NSB's Iñupiat History, Language, and Cultural Commission, and shall be approved by the AO. Based on this inventory, the lessee shall develop a plan to avoid these sites and mitigate any potential damage that could result from field activities. The plan shall indicate how access to the site by local subsistence users will be provided. Lessees shall submit copies of the plan to BLM and the Subsistence Advisory Panel with any application for permit to drill.</p>		
<p><i>Alternative A – Stipulations 26 and 47</i> would be more effective than <i>Alternatives B, C, and D – ROP H-1</i> in preventing unreasonable conflicts between subsistence activities and exploratory drilling and some permanent oil and gas facilities near cabins and campsites. The <i>ROP H-1</i> might allow oil and gas activity to occur at closer distances to cabins or campsites than would occur under <i>Stipulations 26 and 47</i>. <i>Alternative A – Stipulations 62 and 64</i> may be more effective than <i>Alternatives B, C, and D—ROP-H-1</i> in reducing impacts to traditional land use sites by assuring that such sites are taken into account during oil and gas activity planning and that local subsistence users access is provided. <i>Stipulations 26, 47, 62, and 64 and ROP H-1</i> would also reduce impacts on subsistence harvest patterns and would reduce impacts to sociocultural systems and public health as well as address potential environmental justice concerns by providing opportunities for local participation in planning and decision-making.</p> <p><i>Alternative A – Stipulations 59, 60, and 61 and Alternatives B, C, and D – ROP H-1(c)</i> provide equal benefits in the avoidance and minimization of potential impacts to subsistence harvest patterns, sociocultural systems, and public health as well as address environmental justice concerns, by mandating that lessees consult with subsistence users, and develop and implement a plan to prevent unreasonable conflicts between subsistence uses and oil and gas related activities. The plan must provide procedures that facilitate access by subsistence users, and provide follow-up monitoring to document the effectiveness.</p>		
<p>23. Seismic work is prohibited within 1,200 feet of any known, long-term cabin or campsite, identified by the AO, without the written permission of the AO. The AO's decision will be informed by the consultation process described in <i>Stipulation 61</i>.</p> <p>61. (last paragraph only provided here) The consultation process described in this stipulation will also be required of applicants for geophysical (i.e. seismic) permits to address potential conflicts with the setback requirements for cabins and campsites described in <i>Stipulation</i></p>	<p><i>H-2 Required Operating Procedure</i> <u>Objective:</u> Prevent unreasonable conflicts between subsistence activities and geophysical (seismic) exploration. <u>Requirement/Standard:</u> In addition to the consultation process described above for permitted activities, before applying for permits to conduct geophysical (seismic) exploration, the applicant shall consult with local communities and residents.</p>	<p><i>H-2 Required Operating Procedure</i> <u>Objective:</u> Prevent unreasonable conflicts between subsistence activities and geophysical (seismic) exploration. <u>Requirement/Standard:</u> In addition to the consultation process described in ROP H-1 for permitted activities, before applying for permits to conduct geophysical (seismic) exploration, the applicant shall 1.) consult with local communities and residents and 2.) notify the local Search and Rescue organizations of current and recent seismic surveys. For the purpose of this standard, a potentially affected cabin/campsite is defined as</p>

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<p>23. This consultation will help provide information to the AO on the advisability of modifying or waiving the restriction on seismic activity identified in <i>Stipulation 23</i>.</p> <p>62. The following subsistence, wildlife habitat, and traditional/cultural land use areas are of significant concern to local communities and will be given special consideration during the consultation process outlined in <i>Stipulation 61</i>:</p> <p>a. Long-term cabins and campsites: a 2-mile zone around the cabins and campsites.</p> <p>b. Ikpikpuk River: a 2-mile zone from the east bank of the river.</p> <p>c. Miguakiak River: a 3-mile zone from each bank of the river.</p> <p>d. Fish Creek: (1) a 3-mile zone from each bank downstream from Sec. 31, T. 11 N., R. 1 E. U.M.; (2) a 2-mile zone from each bank in and upstream from Sec. 31, T. 11 N., R. 1 E. U.M.</p> <p>e. Judy Creek: a 2-mile zone from each bank of the creek.</p> <p>f. Kogosukruk River: a 2-mile zone from each bluff (or bank if there is no bluff) of the river (including the four tributaries off the southern bank) downstream from T. 2 N., R. 3 W., U.M.</p> <p>g. Kikiakrorak River: a 2-mile zone from each bluff (or bank if there is no bluff) of the river downstream from T. 2 N, R. 4 W., U.M.</p> <p>h. Colville River: a 2-mile zone from the west bluff (or bank if there is no bluff) extending the length of river in the Colville River Raptor, Passerine, and Moose LUEA.</p> <p>In addition, a permittee or lessee engaged in oil and gas related activity shall consult with the BLM, USFWS, ADFG, and the NSB regarding wildlife concerns prior to submitting a geophysical (i.e. seismic) permit, exploration</p>		<p>any camp or campsite within the boundary of the area subject to proposed geophysical exploration and/or within 1 mile of actual or planned travel routes used to supply the seismic operations while it is in operation.</p> <ul style="list-style-type: none"> • Because of the large land area covered by typical geophysical operations and the potential to impact a large number of subsistence users during the exploration season, the permittee/operator will notify in writing all potentially affected long-term cabin and camp users. • The official recognized list of cabin and campsite users is the NSB's 2001 (or most current) inventory of cabins and campsites. • A copy of the notification letter and a list of potentially affected users shall also be provided to the office of the appropriate Native Tribal government. • The AO will prohibit seismic work within 1 mile of any known, long-term, cabin or campsite unless an alternate agreement between the cabin/campsite owner/user is reached through the consultation process and presented to the AO. (Regardless of the consultation outcome, the AO will prohibit wintertime seismic work within 300 feet of a known long-term cabin or campsite.) • The permittee shall notify the appropriate local Search and Rescue (e.g., Nuiqsut Search and Rescue, Atqasuk Search and Rescue) of their current operational location within the NPR-A on a weekly basis. This notification should include a map indicating the current extent of surface use and occupation, as well as areas previously used/occupied during the course of the operation in progress. The purpose of this notification is to allow hunters up-to-date information regarding where seismic exploration is occurring, and has

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SUBSISTENCE CONSULTATION FOR PERMITTED ACTIVITIES

<p>plan, or development and protection plan involving activity within the 2-mile zones around the Kogosukruk (and its tributaries), Kikiakrorak, and Colville rivers described above. In the event that the permittee or lessee and the agencies are unable to reach agreement on steps necessary to address wildlife concerns, the AO will consult with the other agencies and the permittee or lessee before making a determination on the adequacy of the measures taken to prevent conflicts with wildlife.</p>		<p>occurred, so that they can plan their hunting trips and access routes accordingly. Identification of the appropriate Search and Rescue offices to be contacted can be obtained from the NPR-A Subsistence Advisory Panel.</p>
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Alternative A – Stipulations 23, 61, and 62 and Alternatives B, C, and D – ROPs H-2 provide some mitigation for potential impacts to **subsistence** harvest patterns and **sociocultural systems and public health**. Seismic operations can disturb and potentially displace (temporarily) subsistence species and therefore disrupt subsistence activities, therefore restriction or minimization of seismic operations in proximity to subsistence cabins should minimize and avoid some potential impacts to subsistence. *Stipulation 23 (Alternative A)* may be more effective in providing additional protection as it prohibits seismic operations within 1,200 ft of known cabins, whereas *ROP H-2* only requires notification of owners of cabins within 1,200 ft. The AO must authorize the seismic program under either stipulation.

ORIENTATION PROGRAMS ASSOCIATED WITH PERMITTED ACTIVITIES

<p>63. the lessee shall include in any application for permit to drill a proposed orientation program for all personnel involved in exploration or development and production activities (including personnel of lessee's agents, contractors, and subcontractors) for review and approval by the AO. The program shall be designed in sufficient detail to inform individuals working on the project of specific types of environmental, social, and cultural concerns that relate to the planning area. The program shall address the importance of not disturbing archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals and provide guidance on how to avoid disturbance. Guidance shall include the production and distribution of information cards on endangered and/or threatened species in the planning area. The program shall be designed to increase sensitivity and understanding of personnel to community values, customs, and</p>	<p><i>I-1 Required Operating Procedure</i> <u>Objective:</u> Minimize cultural and resource conflicts. <u>Requirement/Standard:</u> All personnel involved in oil and gas and related activities shall be provided information concerning applicable stipulations, ROPs, standards, and specific types of environmental, social, traditional, and cultural concerns that relate to the region. The lessee/permittee shall ensure that all personnel involved in permitted activities shall attend an orientation program at least once a year. The proposed orientation program shall be submitted to the AO for review and approval and should:</p> <ol style="list-style-type: none"> a. provide sufficient detail to notify personnel of applicable stipulations and ROPs as well as inform individuals working on the project of specific types of environmental, social, traditional and cultural concerns that relate to the region. 	<p><i>I-1 Required Operating Procedure</i> <u>Objective:</u> Minimize cultural and resource conflicts. <u>Requirement/Standard:</u> All personnel involved in oil and gas and related activities shall be provided information concerning applicable stipulations, ROPs, standards, and specific types of environmental, social, traditional, and cultural concerns that relate to the region. The lessee/permittee shall ensure that all personnel involved in permitted activities shall attend an orientation program at least once a year. The proposed orientation program shall be submitted to the AO for review and approval and should:</p> <ol style="list-style-type: none"> a. provide sufficient detail to notify personnel of applicable stipulations and ROPs as well as inform individuals working on the project of specific types of environmental, social, traditional and cultural concerns that relate to the region. b. Address the importance of not disturbing archaeological and biological resources and
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ORIENTATION PROGRAMS ASSOCIATED WITH PERMITTED ACTIVITIES		
<p>lifestyles in areas in which personnel will be operating. The orientation program shall also include information concerning avoidance of conflicts with subsistence, commercial fishing activities, and pertinent mitigation.</p> <p>The program shall be attended at least once a year by all personnel involved in on-site exploration or development and production activities (including personnel of lessee's agents, contractors, and subcontractors) and all supervisory and managerial personnel involved in lease activities of the lessee and its agents, contractors, and subcontractors. Individual training is transferable from one facility to another except for elements of the training specific to a particular site.</p> <p>Lessees shall maintain a record onsite of all personnel who attend the program for so long as the site is active, though not to exceed the 5 most recent years of operations. This record shall include the name and dates(s) of attendance of each attendee.</p> <p>65. It is the responsibility of the authorized user to ensure that all individuals brought to the planning area under its auspices adhere to these stipulations. Authorized users of the planning area shall provide all employees, contractors, subcontractors, and clients with a briefing regarding stipulations applicable to the lease and/or permit. A copy of applicable stipulations will be posted in a conspicuous place in each work site and campsite.</p> <p>73. Hunting and trapping by lessee's employees, agents, and contractors are prohibited when persons are on "work status." Work status is defined as the period during which an individual is under the control and supervision of an employer. Work status is terminated when the individual's shift ends and he/she returns to a</p>	<p>b. Address the importance of not disturbing archaeological and biological resources and habitats, including endangered species, fisheries, bird colonies, and marine mammals, and provide guidance on how to avoid disturbance.</p> <p>c. Include guidance on the preparation, production, and distribution of information cards on endangered and/or threatened species.</p> <p>d. Be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel will be operating.</p> <p>e. Include information concerning avoidance of conflicts with subsistence, commercial fishing activities, and pertinent mitigation.</p> <p>f. Include information for aircraft personnel concerning subsistence activities and areas/seasons that are particularly sensitive to disturbance by low-flying aircraft. Of special concern is aircraft use near traditional subsistence cabins and campsites, flights during spring goose hunting and fall caribou and moose hunting seasons, and flights near North Slope communities.</p> <p>g. Provide that individual training is transferable from one facility to another except for elements of the training specific to a particular site.</p> <p>h. Include on-site records of all personnel who attend the program for so long as the site is active, though not to exceed the 5 most recent years of operations. This record shall include the name and dates(s) of attendance of each attendee.</p> <p>i. Include a module discussing bear interaction plans to minimize conflicts between bears and humans.</p>	<p>habitats, including endangered species, fisheries, bird colonies, and marine mammals, and provide guidance on how to avoid disturbance.</p> <p>c. Include guidance on the preparation, production, and distribution of information cards on endangered and/or threatened species.</p> <p>d. Be designed to increase sensitivity and understanding of personnel to community values, customs, and lifestyles in areas in which personnel will be operating.</p> <p>e. Include information concerning avoidance of conflicts with subsistence, commercial fishing activities, and pertinent mitigation.</p> <p>f. Include information for aircraft personnel concerning subsistence activities and areas/seasons that are particularly sensitive to disturbance by low-flying aircraft. Of special concern is aircraft use near traditional subsistence cabins and campsites, flights during spring goose hunting and fall caribou and moose hunting seasons, and flights near North Slope communities.</p> <p>g. Provide that individual training is transferable from one facility to another except for elements of the training specific to a particular site.</p> <p>h. Include on-site records of all personnel who attend the program for so long as the site is active, though not to exceed the 5 most recent years of operations. This record shall include the name and dates(s) of attendance of each attendee.</p> <p>i. Include a module discussing bear interaction plans to minimize conflicts between bears and humans.</p> <p>j. Provide a copy of 43 CFR 3163 regarding Non-Compliance Assessment and Penalties to on-site personnel.</p>

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ORIENTATION PROGRAMS ASSOCIATED WITH PERMITTED ACTIVITIES

public airport (e.g., Fairbanks, Barrow, Nuiqsut, or Deadhorse). Use of lessee facilities, equipment, or transport for personnel access or aid in hunting and trapping is prohibited.		
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Alternative A Stipulations 63, 65, 73 and Alternatives B, C, and D ROP I-1 would be equally effective in reducing the impacts to **vegetation; birds; terrestrial mammals; endangered and threatened species; and subsistence** species and their users by making personnel involved in oil and gas activities more aware of the applicable stipulations and ROPs and their purpose. The stipulations should be equally effective in reducing disturbance to birds by providing all personnel with information concerning applicable required operating procedures and stipulations, and on the importance of not disturbing biological resources, habitats, and bird colonies. Personnel would be instructed annually on the required methods of handling garbage and waste which should help avoid the dumping of garbage and other wastes onto the tundra; impacts on **visual resources, wild and scenic river and wilderness**, should therefore be reduced, as well as make oil and gas sites less attractive for predators. Without this stipulation and ROP we would expect greater impacts on fish, birds, and terrestrial mammals and declines in outstandingly remarkable values for fish, wildlife and subsistence use. *Stipulation 63 and ROP I-1* would also reduce cultural conflicts as well as address potential **environmental justice and public health** concerns by providing a cultural orientation program for all oil and gas workers involved in Planning Area activities in order to minimize cultural and resource conflicts with local inhabitants. Also, the stipulation would include information for aircraft personnel concerning subsistence activities and area/seasons that are particularly sensitive to disturbance by low flying aircraft. In addition to the training program required of all oil and gas workers, a module discussing bear interaction and minimizing conflicts between bears and humans would be included.

ENDANGERED SPECIES ACT—SECTION 7 CONSULTATION PROCESS

	J. The lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or to have some other special status. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activities that will contribute to the need to list such a species or their habitat. The BLM may require modifications to or disapprove a proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 USC § 1531 et seq., including completion of any required procedure for conference or consultation.
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There is no practical difference in the effectiveness in protecting **threatened and endangered species** between Alternative A and the Endangered Species Act Section 7 consultation process described for Alternatives B through D, because the same process would be required under the ESA under Alternative A.

LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS

39. Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited within and adjacent to the water bodies listed below at the distances identified to protect fish and raptor habitat, cultural and paleontological resources, and subsistence and other resource	<i>K-1 Lease Stipulation - Rivers</i> <u>Objective:</u> Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of floodplain and riparian areas; the loss of spawning, rearing or over-wintering habitat for fish; the loss of cultural and paleontological resources; the loss of raptor habitat; impacts to subsistence cabin and campsites; the disruption of subsistence activities; and impacts to scenic and other resource values.
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LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS		
<p>values. Setbacks include the bed of the water body and are measured from the bank's highest high water mark.</p>	<p>Requirement/Standard: Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited in the streambed and adjacent to the rivers listed below at the distances identified. (Gravel mines may be located within the active flood plain consistent with ROP E-8.) With the exception of the Ikpikpuk River, these setbacks are measured from the bank of the river as determined by the hydrology at the time of application. The standard setback is ½ mile (from the bank's highest high water mark) and increased to ¾ mile (from the bank's highest high water mark) where subsistence cabin and campsites are numerous. Along the Colville River and a portion of the Ikpikpuk a 1-mile (from the bank's highest high water mark) setback is required to protect important raptor habitat (for locations along rivers where setback distances change). On a case-by case basis, and in consultation with Federal, state, and NSB regulatory and resource agencies (as appropriate, based on agency legal authority and jurisdictional responsibility), essential pipeline and road crossings to the main channel will be permitted through setback areas. The above setbacks may not be practical within river deltas. In these situations, permanent facilities shall be designed to withstand a 200-year flood event.</p>	
<p>a. Colville River: a 1-mile setback from the western bluff (or bank if there is no bluff) of the Colville River extending the length of the river as described in the Colville River Raptor, Passerine, and Moose LUEA. This restriction does not apply within 1½ miles of the Umiat airstrip (fish, raptor, passerine, moose, paleontological, subsistence, scenic, and recreational resources).</p>	<p>a. Colville River: a 1-mile setback from the northern bluff (or bank if there is no bluff) of the Colville River extending the length of that portion of the river located within the Planning Area. <u>Note: The Planning Area excludes conveyed Native lands along the lower reaches of the Colville River.</u> Development of road crossings intended to support oil and gas activities shall be consolidated with other similar projects and uses to the maximum extent possible. <u>Note: This provision does not apply to intercommunity or other permanent roads constructed with public funds for general transportation purposes. This preserves the opportunity to plan, design, and construct public transportation systems to meet the economic, transportation, and public health and safety needs of the State of Alaska and/or communities within National Petroleum Reserve - Alaska.</u></p>	<p>a. Colville River: a 1-mile setback from the boundary of NPR-A along the Colville River as determined by cadastral survey to be the highest high watermark on the left (western or northern) bank extending the length of that portion of the river located within the Planning Area. <u>Note: The Planning Area excludes conveyed Native lands along the lower reaches of the Colville River.</u> Development of road crossings intended to support oil and gas activities shall be consolidated with other similar projects and uses to the maximum extent possible. <u>Note: This provision does not apply to intercommunity or other permanent roads constructed with public funds for general transportation purposes. This preserves the opportunity to plan, design, and construct public transportation systems to meet the economic, transportation, and public health and safety needs of the State of Alaska and/or communities within National Petroleum Reserve - Alaska.</u></p>
<p>b. Ikpikpuk River: a ½-mile setback from the bank of the Ikpikpuk River within the Planning Area (fish, raptors, subsistence, cultural, and paleontological resources).</p>	<p>b. Ikpikpuk River: a ¾-mile setback from each side of the centerline (1½ miles total) of the Ikpikpuk River extending from the mouth south to Sec. 19, T. 7 N., R. 11 W., U.M. (Umiat Meridian). From Sec. 19, T. 7 N., R. 11 W., U.M.,</p>	<p>b. Ikpikpuk River: a ¾-mile setback from each side of the centerline (1½ miles total) of the Ikpikpuk River extending from the mouth south to Sec. 19, T. 7 N., R. 11 W., U.M. (Umiat</p>

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LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS

b. **Miguakiak River:** a ½-mile setback from each bank of the Miguakiak River (fish and subsistence resources).

h. **Kikiakrorak River:** a 1-mile setback from each bluff (or bank if there is no bluff) of the Kikiakrorak River downstream from T.2 N, R. 4 W., Umiat Meridian (raptor, passerine, and moose resources).

i. **Kogosukruk River:** a 1-mile setback from each bluff (or bank if there is no bluff) of the Kogosukruk River (including the four tributaries off the southern bank) downstream from T.2 N., R.3W., Umiat Meridian (raptor, passerine, and moose resources).

d. **Fish Creek:** (1) a 3-mile setback from each bank of Fish Creek downstream from Sec. 31, T11 N., R. 1 E.; (2) a ½-mile setback from each bank of Fish Creek in and upstream from Sec. 31, T. 11 N., R. 1 E. (fish and subsistence resources).

e. **Judy Creek:** a ½-mile setback from each bank of Judy Creek extending from the mouth to the confluence of an unnamed tributary in Sec. 8, T8N., R.2W., Umiat Meridian (fish and

to Sec. 4, T. 3 N., R. 12 W., U.M., a 1-mile setback is required. Beginning at Sec. 4, T. 3 N., R. 12 W., U.M., a ½-mile setback from the centerline (1 mile total) will be required to the confluence of the Kigalik River and Maybe Creek. Note: The setback distances only apply to the east bank where the Ikpikpuk River is the Planning Area boundary.

c. **Miguakiak River:** a ½-mile setback from the bank's highest high water mark.

d. **Kikiakrorak and Kogosukruk Rivers:** Note: The following discussion refers only to portions of the Kikiakrorak River downstream from T. 2 N., R. 4 W., U.M. and the Kogosukruk River (including the four tributaries off the southern bank) downstream from T. 2 N., R. 3 W., U.M.. No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within 1 mile of the top of the bluff (or bank if there is no bluff) on either side of the rivers and several of the Kogosukruk tributaries.

e. **Fish Creek:** No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within 3 miles (from the bank's highest high water mark) of the creek downstream from the eastern edge of Sec. 31, T. 11 N., R. 1 E., U.M. or within ½ mile (from the bank's highest high water mark) of the creek farther upstream.

f. **Judy Creek:** a ½-mile setback from the banks' highest high water mark extending from the mouth to the confluence of an unnamed

Meridian). From Sec. 19, T. 7 N., R. 11 W., U.M., to Sec. 4, T. 3 N., R. 12 W., U.M., a 1-mile setback is required. Beginning at Sec. 4, T. 3 N., R. 12 W., U.M., a ½-mile setback from the centerline (1 mile total) will be required to the confluence of the Kigalik River and Maybe Creek. Note: The setback distances only apply to the east bank where the Ikpikpuk River is the Planning Area boundary.

c. **Miguakiak River:** a ½-mile setback from the bank's highest high water mark.

d. **Kikiakrorak and Kogosukruk Rivers:** Note: The following discussion refers only to portions of the Kikiakrorak River downstream from T. 2 N., R. 4 W., U.M. and the Kogosukruk River (including the four tributaries off the southern bank) downstream from T. 2 N., R. 3 W., U.M.. No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within 1 mile of the top of the bluff (or bank if there is no bluff) on either side of the rivers and several of the Kogosukruk tributaries.

e. **Fish Creek:** No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within 3 miles (from the bank's highest high water mark) of the creek downstream from the eastern edge of Sec. 31, T. 11 N., R. 1 E., U.M. or within ½ mile (from the bank's highest high water mark) of the creek farther upstream.

f. **Judy Creek:** a ½-mile setback from the banks' highest high water mark extending from the mouth to the confluence of an unnamed tributary in Sec. 8, T8N., R.2W, Umiat Meridian.

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<p>subsistence resources).</p> <p>On a case-by-case basis, essential pipeline and road crossings will be permitted, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, through setback areas in those instances where no other suitable sites are available. Stream crossings will be sited perpendicular to the main channel flow; lake crossings will be at the narrowest point. Pipeline and road crossings are prohibited in the setback around Teshekpuk Lake, with no exceptions. Road crossings are prohibited in the setback adjacent to the Colville River with no exceptions.</p>	<p>tributary in Sec. 8, T8N., R.2W., Umiat Meridian.</p> <p>g. Tingmiaksiqvik River: No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within ½ mile (from the bank’s highest high water mark) of this river from its headwaters within Sec. 13, T. 7 N., R. 1 W., U.M. downstream to its confluence with Fish Creek. <u>Note: This stipulation applies only to Alternative B.</u></p>	<p>g. Tingmiaksiqvik River: No permanent oil and gas surface facilities, except essential transportation crossings, would be allowed within ½ mile (from the bank’s highest high water mark) of this river from its headwaters within Sec. 13, T. 7 N., R. 1 W., U.M. downstream to its confluence with Fish Creek.</p>
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Alternative A Stipulation 39 would provide less benefit for all the following listed resources and uses along the Tingmiaksiqvik River than would *Alternatives B and D - Lease Stipulation K-1*. With this exception Stipulation 39 and K-1 would be equally effective in reducing the potential for **soil** disturbance and erosion and impacts to soil from oil spills by establishing setbacks along the major rivers and streams. The same would hold true for avoiding impacts to **paleontological and cultural resources** found on and within the soil, for **water resources and water quality** by protecting aquatic and riparian areas adjacent to major rivers and streams. These stipulations would be equally protective of aquatic, floodplain and riparian **vegetation** and **wetlands** by protecting aquatic and riparian areas adjacent to major rivers and streams. *Stipulation 39 and Lease Stipulation K-1* would be equally beneficial to both **freshwater and marine fish and fish habitat** by reducing the potential for accidental spills to enter riverine waters which in turn could contaminate coastal/marine waters where marine fishes might be impacted. The setbacks also would increase the opportunity for oil spill response and cleanup to occur well before contaminants enter either riverine or coastal/marine fish habitats. *Stipulation 39 and Lease Stipulation K-1* would be equally effective in reducing disturbance of raptors nesting along listed waterways and other **birds** occupying adjacent corridors—as well as avoiding destruction of habitats—by prohibiting permanent oil and gas facilities within established setback zones along listed waterways. *Stipulation 39 and Lease Stipulation K-1* would be equally effective in reducing impacts to **endangered and threatened species** by helping to reduce disturbance of eiders nesting or occupying areas along identified waterways, as well as by avoiding destruction of habitats by prohibiting permanent oil and gas facilities within the listed setback areas. *Stipulation 39 and Lease Stipulation K-1* would be equally effective in reducing impacts on **subsistence-harvest patterns** by specifically identifying the rivers of prime importance to subsistence and defining setback requirements. These setbacks protect against impeding subsistence pursuits, guard against potential **sociocultural** disruptions and related **public health** impacts that then fall under the purview of **environmental justice**. *Stipulation 39 and Lease Stipulation K-1* would be beneficial to **wild and scenic river** values by reducing the potential for disturbance to major rivers and streams and for accidental spills to enter riverine waters.

<p>39. Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited within and adjacent to the water bodies listed below at the distances identified to protect fish and raptor habitat, cultural and paleontological resources, and subsistence and other resource</p>	<p>K-2 Lease Stipulation—Deep Water Lakes <u>Objective:</u> Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of deep water lakes; the loss of</p>	<p>K-2 Lease Stipulation—Deep Water Lakes <u>Objective:</u> Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of deep water lakes; the loss of</p>
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<p>values. Setbacks include the bed of the water body and are measured from the bank's highest high water mark.</p> <p>g. Deep Water Lakes: a ¼-mile setback around the perimeter of any fish-bearing lake within or partially within the deep lake zone. If the fish-bearing status of the water body is unknown, the burden is on the lessee to demonstrate whether fish are present.</p> <p>On a case-by-case basis, essential pipeline and road crossings will be permitted, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, through setback areas in those instances where no other suitable sites are available. Stream crossings will be sited perpendicular to the main channel flow; lake crossings will be at the narrowest point.</p>	<p>spawning, rearing or over wintering habitat for fish; the loss of cultural and paleontological resources; impacts to subsistence cabin and campsites; and the disruption of subsistence activities.</p> <p><u>Requirement/Standard:</u> Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited on the lake or lakebed and within ¼ mile of the ordinary high water mark of any deep lake as determined to be in lake zone III (i.e., depth greater than 13 feet [4 meters]; Mellor 1985). On a case-by-case basis, and in consultation with Federal, state and NSB regulatory and resource agencies (as appropriate based on agency legal authority and jurisdictional responsibility), essential pipeline, road crossings, and other permanent facilities may be permitted through or in these areas where the lessee can demonstrate on a site-specific basis that impacts would be minimal or if it is determined that there is no feasible or prudent alternative.</p>	<p>spawning, rearing or over wintering habitat for fish; the loss of cultural and paleontological resources; impacts to subsistence cabin and campsites; and the disruption of subsistence activities.</p> <p><u>Requirement/Standard:</u> Generally, permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited on the lake or lakebed and within ¼ mile of the ordinary high water mark of any deep lake as determined to be in lake zone III (i.e., depth greater than 13 feet [4 meters]; Mellor 1985). On a case-by-case basis in consultation with Federal, State and NSB regulatory and resource agencies (as appropriate based on agency legal authority and jurisdictional responsibility), essential pipeline(s), road crossings, and other permanent facilities may be considered through the permitting process in these areas where the lessee can demonstrate on a site-specific basis that impacts will be minimal and if it is determined that there is no feasible or prudent alternative.</p>
<p><i>Alternative A Stipulation 39 and Alternatives B, C, and D Lease Stipulation K-2</i> would be equally effective in reducing the potential for soil disturbance and erosion and impacts to soil from oil spills, and therefore reducing impacts to paleontological and cultural resources by establishing setbacks along fish-bearing (Alternative A) or deep-water (Alternatives B, C, and D) lakes. They would also be equally protective of water resources and water quality, vegetation, wetlands, and fish and fish habitat by protecting aquatic and riparian areas adjacent to deep-water lakes by establishing setbacks along fish-bearing (Alternative A) or deep-water (Alternatives B, C, and D) lakes. Stipulation 39 and Lease Stipulation K-2 would be equally effective in reducing disturbance to birds by minimizing the loss of habitat of fish prey of fish-eating birds (e.g., loons, mergansers, terns), which could adversely affect the breeding success of these water bird species that use fish-bearing (Alternative A) or deep-water (Alternatives B, C, and D) lakes. Stipulation 39 and Lease Stipulation K-2 would be equally effective in reducing impacts to endangered and threatened species by helping to reduce disturbance of eiders nesting or occupying areas along identified lakes as well as by avoiding destruction of habitats by prohibiting permanent oil and gas facilities within the listed setback areas. Stipulation 39 and Lease Stipulation K-2 would be equally effective in reducing impacts on subsistence-harvest patterns by specifically identifying the lakes of prime importance to subsistence and defining setback requirements. These setbacks protect against impeding subsistence pursuits, guard against potential sociocultural disruptions and related public health impacts that then fall under the purview of environmental justice.</p>		
<p>31. Permanent oil and gas surface occupancy, including but not limited to permanent oil and gas facilities, pads, rigs, platforms, gravel roads, airstrips, pipelines, gravel or other</p>	<p>K-3 Stipulation - Teshekpuk Lake Teshekpuk Lake contains sensitive biological resources and/or subsistence concerns. The standard(s) for exploration and development</p>	<p>K-3 Stipulation - Teshekpuk Lake Shoreline (Note: Teshekpuk Lake and islands within the lake (approximately 219,000 acres) will not be available for oil and gas leasing.)</p>

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<p>material extraction sites, and exploration and delineation drilling facilities are prohibited in the Teshekpuk Lake Surface Protection Area (specifically, T. 13 N., Rs. 3-7 W., U.M.; Secs. 1-6, 8-16, 21-25, 36, T. 13 N., R. 8 W., U.M.; T. 14 N., Rs. 1-2 E. and Rs. 1-8 W., U.M.; Secs. 1-2, 11-14, T. 14 N., R. 9 W., U.M.; T. 15 N., Rs. 2-8 W., U.M.; Secs. 1-3, 7-30, 35-36, T. 15 N., R. 9 W., U.M.; T. 16 N., Rs. 2-8 W., U.M.; Secs. 1-6, 8-17, 21-27, 34-36, T. 16 N., R. 9 W., U.M.; T. 17 N., Rs. 1-9 W., U.M.; and T. 18 N., Rs. 2-8 W., U.M.). No exceptions will be granted to this stipulation.</p> <p>39. Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited within and adjacent to the water bodies listed below at the distances identified to protect fish and raptor habitat, cultural and paleontological resources, and subsistence and other resource values. Setbacks include the bed of the water body and are measured from the bank's highest high water mark.</p> <p>c. Teshekpuk Lake: a ½-mile setback from the bank and around the perimeter of Teshekpuk Lake (fish and subsistence resources).</p> <p>On a case-by-case basis, essential pipeline and road crossings will be permitted, in consultation with appropriate Federal, state, and NSB regulatory and resource agencies, through setback areas in those instances where no other suitable sites are available. Stream crossings will be sited perpendicular to the main channel flow; lake crossings will be at the narrowest point. Pipeline and road crossings are prohibited in the setback around Teshekpuk Lake, with no exceptions.</p>	<p>activities are set high with the burden of proof resting with the lessee to demonstrate to the AO that granting an approval for exploration and/or development is warranted.</p> <p>Objective: Protect fish and wildlife habitat, preserve air and water quality, and minimize impacts to traditional subsistence activities and historic travel routes on Teshekpuk Lake.</p> <p>Requirement/Standard (Exploration): Requests for approval of any activities must be submitted in advance and must be accompanied by evidence and documentation that demonstrates to the satisfaction of the AO that the actions or activities meet all of the following criteria:</p> <ol style="list-style-type: none"> a. Exploration activities will not unreasonably conflict with traditional subsistence uses or significantly impact seasonally concentrated fish and wildlife resources. b. There is adequate spill response capability to effectively respond during periods of broken ice and/or open water or, the availability of alternative methods to prevent well blowouts during periods when adequate response capability cannot be demonstrated. Such alternative methods may include improvements in blowout prevention technology, equipment, and/or changes in operational procedures, and “top-setting” of hydrocarbon-bearing zones. c. Reasonable efforts to avoid or minimize impacts related to oil spill response activities, including vessel, aircraft, and pedestrian traffic will be made to minimize additional impacts or further compounding of “direct spill”-related impacts on area resources and subsistence uses. d. The location of exploration and related activities shall be sited so as to not pose a hazard to navigation by the public using high-use traditional subsistence-related travel routes on Teshekpuk Lake, recognizing that marine 	<p>Objective: Minimize the disruption of natural flow patterns and changes to water quality; the disruption of natural functions resulting from the loss or change to vegetative and physical characteristics of this large and regionally significant deep water lake; the loss of cultural and paleontological resources; impacts to subsistence cabins, campsites and associated activities; and to protect fish and wildlife habitat including important insect relief areas.</p> <p>Requirement/Standard: Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited within ¼ mile of the ordinary high water mark of Teshekpuk Lake. (No alternative procedures will be approved.)</p>
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	<p>and near-shore travel routes change over time, subject to shifting environmental conditions.</p> <p><u>Requirement/Standard (Development):</u> With the exception of linear features such as pipelines and causeways, permanent oil and gas platforms or production equipment would not be permitted on or under the water within ¼ mile of the shoreline, and on land ¼ mile landward of the shoreline of Teshekpuk Lake. Activities will only be permitted if they can meet all the following criteria:</p> <ul style="list-style-type: none"> a. Design and construction of facilities shall minimize impacts to traditional subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources. b. Daily operational activities, including use of support vehicles, watercraft, and aircraft traffic, alone or in combination with other past, present, and reasonably foreseeable activities, shall be conducted to minimize impacts to traditional subsistence uses, travel corridors, and seasonally concentrated fish and wildlife resources. c. The location of oil and gas facilities, including artificial islands, platforms, associated pipelines, ice or other roads, bridges or causeways, shall be sited and constructed so as to not pose a hazard to navigation by the public using traditional high-use subsistence-related travel routes into and through Teshekpuk Lake. d. Demonstrated year-round oil spill response capability, including the capability of adequate response during periods of broken ice or open water, or the availability of alternative methods to prevent well blowouts during periods when adequate response capability cannot be demonstrated. Such alternative methods may include seasonal drilling restrictions, improvements in blowout prevention technology, 	
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<p>LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS</p>		
	<p>equipment and/or changes in operational procedures, and “top-setting” of hydrocarbon-bearing zones.</p> <p>e. Reasonable efforts will be made to avoid or minimize impacts related to oil spill response activities, including vessel, aircraft, and pedestrian traffic that add to impacts or further compound “direct spill” related impacts on area resources and subsistence uses.</p>	
<p><i>Alternative A – Stipulation 31 and Alternatives B, C, and D – Lease Stipulation K-3</i> provide similar but not equal benefits in an area encompassing Teshekpuk Lake and nearby lands. <i>Alternative A Stipulation 31</i> would be more effective than <i>Lease Stipulation K-3</i> in protecting soils, water, fish, birds, terrestrial mammals, and endangered and threatened species in Teshekpuk Lake Surface Protection Area because no permanent oil and gas facilities would be allowed in the TLSP Area under <i>Stipulation 31</i>, but permanent oil and gas facilities would be allowed in the TLSP Area under <i>Lease Stipulation K-3</i>. <i>Lease Stipulation K-3</i> for Alternative D would be more protective than <i>Lease Stipulation K-3</i> for the Alternatives B and C for Teshekpuk Lake, as the lake would not be available for oil and gas leasing under Alternative D, which is not the case for Alternatives B and C. However, other elements of each alternative, i.e. Restricted Surface Occupancy restrictions, and/or management decisions that make lands available or unavailable to oil and gas leasing, provide a different means for resource protection. A comparison between the effectiveness of Stipulation K-3 for Alternatives B, C, and D, on the one hand, and Stipulation 31 for Alternative A on the other is misleading without considering the mitigative effects of other stipulations and ROPs in the former set of action alternatives. Please see Table 2.3 for a discussion regarding the comparison of impacts among alternatives.</p>		
<p>31. Permanent oil and gas surface occupancy, including but not limited to permanent oil and gas facilities, pads, rigs, platforms, gravel roads, airstrips, pipelines, gravel or other material extraction sites, and exploration and delineation drilling facilities are prohibited in the Teshekpuk Lake Surface Protection Area (specifically, T. 13 N., Rs. 3-7 W., U.M.; Secs. 1-6, 8-16, 21-25, 36, T. 13 N., R. 8 W., U.M.; T. 14 N., Rs. 1-2 E. and Rs. 1-8 W., U.M.; Secs. 1-2, 11-14, T. 14 N., R. 9 W., U.M.; T. 15 N., Rs. 2-8 W., U.M.; Secs. 1-3, 7-30, 35-36, T. 15 N., R. 9 W., U.M.; T. 16 N., Rs. 2-8 W., U.M.; Secs. 1-6, 8-17, 21-27, 34-36, T. 16 N., R. 9 W., U.M.; T. 17 N., Rs. 1-9 W., U.M.; and T. 18 N., Rs. 2-8 W., U.M.). No exceptions will be granted to this stipulation.</p> <p>21. The AO, in consultation with appropriate Federal, state, and NSB regulatory and</p>	<p><i>K-4 Lease Stipulation - Goose Molting Area</i> <u>Objective:</u> Minimize disturbance to molting geese and loss of goose molting habitat in and around lakes in the Goose Molting Area. <u>Requirement/Standard:</u> In goose molting habitats, the following standards will be followed for permitted activities:</p> <p>a. Water extraction from any lake used by molting geese shall not alter hydrological conditions that could adversely affect identified goose-feeding habitat along lakeshore margins. Considerations will be given to seasonal use by operators (generally in winter) and geese (generally in summer), as well as recharge to lakes from the spring snowmelt.</p> <p>b. From May 20 through August 20 drilling other than from current production pads is prohibited. The intent of this rule is to restrict</p>	<p><i>K-4 Lease Stipulation - Goose Molting Area</i> <u>Objective:</u> Minimize disturbance to molting geese and loss of goose molting habitat in and around lakes in the Goose Molting Area. <u>Requirement/Standard (General):</u> Within the Goose Molting Area no permanent oil and gas facilities, except for pipelines will be allowed on the approximately 240,000 of lake buffers illustrated in lavender on Map 2-5. No alternative procedures will be considered. Prior to the permitting of a pipeline in the Goose Molting Area, a workshop will be convened to determine the best corridor for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources. The workshop participants will include but will not be limited to Federal, State, and NSB representatives. In addition, only “In Field” roads will be authorized as part of oil and gas field development. <u>Requirement/Standard (Exploration):</u> In goose</p>

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resource agencies, may allow water extraction from any lake used by molting geese, if it is determined that the withdrawal is consistent with *Stipulation 20* and will not adversely affect identified goose-feeding habitat along lakeshore margins. An analysis/demonstration of the hydrologic functions of the lake(s) under review may be required of the lessee by the AO prior to approval of the withdrawal.

53. Helicopter overflights for BLM-permitted activities shall be suspended in the Goose Molting LUEA from June 15 through August 20.

54. Fixed-wing aircraft traffic takeoffs and landing for BLM-permitted activities in the Planning Area shall be limited to an average of one round-trip flight a day from May 20 through June 20 at aircraft facilities in the Teshekpuk Lake Caribou Habitat LUEA. Within the Goose Molting LUEA, fixed-wing aircraft use for such activities shall be restricted from June 15 to August 20 to flight corridors and frequencies established by BLM in consultation with the appropriate Federal, state, and NSB regulatory and resource agencies.

exploration drilling during the period when geese are present. There are no seasonal restrictions on development or exploration drilling for fields in operation.

c. Oil and gas exploration and development activities will avoid alteration (e.g., damage or disturbance of soils, vegetation, or surface hydrology) of critical goose-feeding habitat types along lakeshore margins (grass/sedge/moss), as identified by the AO in consultation with the USFWS.

d. Permanent oil and gas facilities (including gravel roads, pads, and airstrips but excluding pipelines) and material sites will be sited to meet the stated objective. With the exception of linear features such as pipelines and causeways, permanent oil and gas platforms or production equipment would not be permitted on or under the water within ¼ mile of the shoreline, and on land ¼ mile landward of the shoreline of goose molting lakes. Goose Molting Area lakes shall be identified by the AO in consultation with appropriate Federal, state, and NSB regulatory and resource agencies.

e. Oil and gas facility layout located within 1½ miles of a Goose Molting Area lake from May 20 through August 20 shall incorporate features (e.g., temporary fences, siting/orientation) that screen/shield human activity from view of any Goose Molting Area lake, as identified by the AO in consultation with appropriate Federal, state, and NSB regulatory and resource agencies.

f. Major construction activities using heavy equipment (e.g., sand/gravel extraction and transport, pipeline and pad construction, but not drilling from existing production pads) shall be suspended within 1½ mile of the Goose Molting Area lakes from May 20 through August 20,

molting habitat area exploratory drilling shall be limited to temporary facilities such as ice pads, ice roads, and ice airstrips, unless the lessee demonstrates that construction of permanent facilities (outside the identified Goose Molting Restricted Surface Occupancy Areas) such as gravel airstrips, storage pads, and connecting roads is environmentally preferable (Also see *Stipulation K-11* regarding allowable surface disturbance). In addition, the following standards will be followed for permitted activities:

a. From June 15 through August 20 exploratory drilling and associated activities are prohibited. The intent of this rule is to restrict exploration drilling during the period when geese are present.

b. Water extraction from any lake used by molting geese shall not alter hydrological conditions that could adversely affect identified goose-feeding habitat along lakeshore margins. Considerations will be given to seasonal use by operators (generally in winter) and geese (generally in summer), as well as recharge to lakes from the spring snowmelt.

c. Oil and gas exploration activities will avoid alteration (e.g., damage or disturbance of soils, vegetation, or surface hydrology) of critical goose-feeding habitat types along lakeshore margins (grass/sedge/moss), as identified by the AO in consultation with the USFWS.

Requirement/Standard (Development): In Goose Molting Area, the following standards will be followed for permitted activities:

a. Within the Goose Molting Area from June 15 through August 20, all off-pad activities and major construction activities using heavy equipment (e.g., sand/gravel extraction and transport, pipeline and pad construction, but not

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	<p>unless approved by the AO in consultation with the appropriate Federal, state, and NSB regulatory and resource agencies.</p> <p>g. Strategies to minimize ground traffic will be implemented from May 20 through August 20. These strategies may include limiting trips, use of convoys, different vehicle types, etc. to the extent practicable.</p> <p>h. Nonessential helicopter overflights by oil and gas lessees and all other users shall be reviewed and may be suspended in and around Goose Molting Area lakes from May 20 through August 20.</p> <p>i. Within the Goose Molting Area, use of fixed-wing aircraft by authorized users shall be restricted from May 20 to August 20. Restrictions may include 1) limited to two round-trip flights/week, and 2) restricted to flight corridors will be established by the BLM after discussions with appropriate Federal, state, and NSB regulatory and resource agencies. Note: This site-specific stipulation is not intended to restrict flights necessary to survey wildlife to gain information necessary to meet the stated objective of this stipulation. However, flights necessary to gain this information would be restricted to the minimum necessary to collect such data.</p>	<p>drilling from existing production pads) shall be suspended (see also Lease Stipulation K-5-d), unless approved by the AO in consultation with the appropriate Federal, State, and NSB regulatory and resource agencies. The intent of this requirement is to restrict activities that will disturb molting geese during the period when geese are present.</p> <p>b. Water extraction from any lakes used by molting geese shall not alter hydrological conditions that could adversely affect identified goose-feeding habitat along lakeshore margins. Considerations will be given to seasonal use by operators (generally in winter) and geese (generally in summer), as well as recharge to lakes from the spring snowmelt.</p> <p>c. Oil and gas activities will avoid altering (i.e., damage or disturbance of soils, vegetation, or surface hydrology) critical goose-feeding habitat types along lakeshore margins (grass/sedge/moss) and salt marsh habitats.</p> <p>d. Permanent oil and gas facilities (including gravel roads, pads, and airstrips, but excluding pipelines) and material sites will be sited outside the identified buffers and RSO areas. Additional limits on development footprint apply; (also see Lease Stipulation K-11.)</p> <p>e. Between June 15 and August, 20 within the Goose Molting Area, oil and gas facilities shall incorporate features (e.g., temporary fences, siting/orientation) that screen/shield human activity from view of any Goose Molting Area lake, as identified by the AO in consultation with appropriate Federal, State, and NSB regulatory and resource agencies.</p> <p>f. Strategies to minimize ground traffic shall be implemented from June 15 through August 20. These strategies may include limiting trips, use of convoys, different vehicle types, etc. to the</p>

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		<p>extent practicable. The lessee shall submit with the development proposal a vehicle use plan that considers these and any other mitigation. The vehicle use plan shall also include a vehicle-use monitoring plan. Adjustments will be required by the AO if resulting disturbance is determined to be unacceptable.</p> <p>g. Within the Goose Molting Area aircraft use (including fixed wing and helicopter) shall be restricted from June 15 through August 20 unless doing so endangers human life or violates safe flying practices. Restrictions may include: 1) limiting flights to two round-trips/week, and 2) limiting flights to corridors established by the BLM after discussions with appropriate Federal, State, and NSB regulatory and resource agencies. The lessee shall submit with the development proposal an aircraft use plan that considers these and other mitigation. The aircraft use plan shall also include an aircraft monitoring plan. Adjustments, including perhaps suspension of all aircraft use, will be required by the AO if resulting disturbance is determined to be unacceptable. Note: This site-specific lease stipulation is not intended to restrict flights necessary to survey wildlife to gain information necessary to meet the stated objective of the stipulations and ROPs. However, flights necessary to gain this information will be restricted to the minimum necessary to collect such data.</p> <p>h. Any permit for development issued under this IAP/EIS will include a requirement for the lessee to conduct monitoring studies necessary to adequately determine consequences of development and any need for change to mitigations. Monitoring studies will be site- and development-specific within a set of over-arching guidelines developed by the BLM after conferring</p>
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<p>1998 Northeast IAP/EIS Stipulations for the No Action Alternative</p>	<p>Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C</p>	<p>Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative</p>
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		<p>with appropriate Federal, State, NSB agencies. The study(s) will include the construction period and will continue for a minimum of 3 years after construction has been completed and production has begun. The monitoring studies will be a continuation of evaluating the effectiveness of the K-4 Lease Stipulation requirements in meeting the objective of K-4 and determine if any changes to the lease stipulation or any project specific mitigation(s) are necessary. If changes are determined to be necessary, the BLM, with the lessee and/or their representative, will conduct an assessment of the feasibility of altering development operation (e.g. reduced human activity, visibility barriers, noise abatement). Any changes determined necessary will be implemented prior to authorization of any new construction.</p>
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Alternative A – Stipulation 31 and Alternatives B, C, and D – Lease Stipulation K-4 provide similar but not equal benefits. *Alternative A Stipulation 31* would be more effective than *Lease Stipulation K-4* in protecting **soils, water, fish, birds, terrestrial mammals, and endangered and threatened species** in the Goose Molting Area because no permanent oil and gas facilities would be allowed in the area under *Stipulation 31*, but permanent oil and gas facilities would be allowed in the TLSP Area under *Lease Stipulation K-4*. *Lease Stipulation K-4* for Alternative D would be more protective for birds, water, and endangered and threatened species than *Lease Stipulation K-4 for the Alternatives B and C* because of larger setbacks around lakes heavily used by molting geese. However, other elements of each alternative, i.e. Restricted Surface Occupancy restrictions, and/or management decisions that make lands available or unavailable to oil and gas leasing, provide a different means for resource protection. A comparison between the effectiveness of Stipulation K-4 for Alternatives B, C, and D, on the one hand, and Stipulation 31 for Alternative A on the other is misleading without considering the mitigative effects of other stipulations in the former set of action alternatives. Please see Table 2.3 for a discussion regarding the comparison of impacts among alternatives.

In the Goose Molting Area: Where it applies, *Stipulation 21(Alternative A), Lease Stipulation K-4a (Alternatives B and C) and Lease Stipulation K-4b (Alternative D)* provide essentially the same level of protection for lakes used by molting geese (in the goose molting area north of Teshekpuk Lake) by ensuring that water extraction from any lake used by molting geese shall not alter hydrological conditions that could adversely affect identified goose-feeding habitat along lakeshore margins. However, other elements of each alternative, i.e. Restricted Surface Occupancy restrictions, and/or management decisions that make lands available or unavailable to oil and gas leasing, provide a different means for resource protection. Therefore, while the protective measures are comparable in providing protection to this resource, this is not to say that the overall level of protection under the various *Alternatives* is necessarily equal or the same based on management decisions in the planning area. Please see Table 2.3 for a discussion regarding the comparison of impacts among alternatives. Each of these stipulations would effectively protect **water resources and water quality, wetlands, vegetation, freshwater fish, and birds** by limiting water withdrawals from lakes used by molting geese; would effectively reduce impacts to **endangered and threatened species** by limiting habitat loss or disturbance of nesting and brood-rearing eiders and other birds by ensuring that water extraction from goose molting lakes does not harm foraging habitat; would effectively reduce impacts to **subsistence use patterns** by limiting habitat loss or disturbance of nesting and brood-rearing waterfowl and other birds, by ensuring that water extraction from

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goose molting lakes does not impact foraging habitat.

Alternative A – Stipulation 53 and Alternatives B and C – Stipulation K-4(i) and Alternative D ROP F-1 and Stipulation K-4(g) provide the same and equal benefit in effectively reducing impacts to **birds, terrestrial mammals, endangered and threatened species, and subsistence use** and related **public health** impacts by limiting the number of helicopter landings and take-offs during critical periods (peak waterfowl nesting/molting period) in the Goose Molting Area. Helicopter flights have been shown in some instances and situations to disturb wildlife. A reduction in the number of flights should provide a concomitant reduction in wildlife disturbance. While these stipulations are targeted at reducing impacts to geese in this important area, they should result in similar reductions in potential impact to other wildlife species as well as the subsistence activities associated with these wildlife species.

Alternative A – Stipulation 54 and Alternatives B and C – ROP F-1 and Stipulation K-4(i) and Alternative D Stipulation K-4(k) provide the equal benefit in effectively reducing impacts to **birds, terrestrial mammals, endangered and threatened species, and subsistence use** and related **public health** impacts by limiting the number of fixed wing aircraft landings and take-offs during the same critical periods in the Teshekpuk Lake Caribou Habitat Area (peak caribou calving period) and restricting the number and location aircraft flights in the Goose Molting Area (peak waterfowl nesting/molting period). Aircraft flights have been shown in some instances and situations to disturb wildlife. A reduction in the number of flights should provide a concomitant reduction in wildlife disturbance and subsistence activities associated with these wildlife species.

29. At least 3 years prior to approval of any development plan for leases within the Special Caribou Stipulations Area, the lessee shall design and implement a study of caribou movement, including historical information regarding the distribution and range use of the Teshekpuk Lake caribou, as well as maps of caribou trails within the area. Study data may be gathered concurrent with approved seismic and exploration activity. The study design shall be approved by the AO in consultation with the Research and Monitoring Team. The study will include a minimum of 3 years of data to assist in providing the information necessary to determine facility design and location, including pipelines, which will be part of the development plan. Lessees may submit individual plans or they may combine with other lessees in the area to do a joint study. Total study funding by all lessees will not exceed \$500,000

31. Permanent oil and gas surface occupancy, including but not limited to permanent oil and gas facilities, pads, rigs, platforms, gravel roads, airstrips, pipelines, gravel or other material extraction sites, and exploration and

K-5 Lease Stipulation - Teshekpuk Lake Caribou Habitat Area

Objective: Minimize disturbance and hindrance of caribou, or alteration of caribou movements through portions the Teshekpuk Lake Caribou Habitat Area that are essential for all season use, including calving and rearing, insect-relief, and migration.

Requirement/Standard: In the Teshekpuk Lake Caribou Habitat Area the following standards will be applied to permitted activities:

- a. Before authorization of construction of permanent facilities, the lessee shall design and implement a study of caribou movement unless an acceptable study(s) has been completed within the last 10 years. The study shall include a minimum of 3 years of current data on caribou movements and the study design shall be approved by the AO and should provide information necessary to determine facility (including pipeline) design and location. Lessees may submit individual study proposals or they may combine with other lessees in the area to do a single, joint study for the entire Teshekpuk Lake Caribou Habitat Area. Study data may be gathered concurrently with other activities.

K-5 Lease Stipulation - Teshekpuk Lake Caribou Habitat Area

Objective: Minimize disturbance and hindrance of caribou, or alteration of caribou movements through portions the Teshekpuk Lake Caribou Habitat Area that are essential for all season use, including calving and rearing, insect-relief, and migration.

Requirement/Standard: In the Teshekpuk Lake Caribou Habitat Area the following standards will be applied to permitted activities:

- a. Before authorization of construction of permanent facilities (limited as they may be by RSO areas established in other lease stipulations), the lessee shall design and implement and report a study of caribou movement unless an acceptable study(s) specific to the Teshekpuk Lake Caribou Herd (TLCH) has been completed within the last 10 years. The study shall include a minimum of four years of current data on the TLCH movements and the study design shall be approved by the AO in consultation with the appropriate Federal, State, and NSB wildlife and resource agencies. The study should provide information necessary to determine facility (including pipeline) design

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<p>delineation drilling facilities are prohibited in the Teshekpuk Lake Surface Protection Area (specifically, T. 13 N., Rs. 3-7 W., U.M.; Secs. 1-6, 8-16, 21-25, 36, T. 13 N., R. 8 W., U.M.; T. 14 N., Rs. 1-2 E. and Rs. 1-8 W., U.M.; Secs. 1-2, 11-14, T. 14 N., R. 9 W., U.M.; T. 15 N., Rs. 2-8 W., U.M.; Secs. 1-3, 7-30, 35-36, T. 15 N., R. 9 W., U.M.; T. 16 N., Rs. 2-8 W., U.M.; Secs. 1-6, 8-17, 21-27, 34-36, T. 16 N., R. 9 W., U.M.; T. 17 N., Rs. 1-9 W., U.M.; and T. 18 N., Rs. 2-8 W., U.M.). No exceptions will be granted to this stipulation.</p> <p>33. Within the Special Caribou Stipulations Area, lessees shall orient linear corridors when laying out oil field developments to address migration and corralling effects and to avoid loops of road and/or pipeline that connect facilities.</p> <p>49. The following ground-traffic restrictions apply to permanent roads (as authorized in <i>Stipulation 48</i> above) in the Special Caribou Stipulations Area:</p> <p>a. From May 20 through June 20:</p> <ol style="list-style-type: none"> 1. Traffic speed will not exceed 15 miles per hour. 2. Traffic will be minimized (a reasonable target would be four convoy round-trips per day between facilities). Nonessential operations requiring vehicles shall be suspended during this time period. <p>b. From May 20 through August 1:</p> <ol style="list-style-type: none"> 1. Caribou movement will be monitored. 2. Based on this monitoring, traffic will cease when a crossing by 10 or more caribou appears to be imminent. <p>c. From May 20 through August 20:</p> <ol style="list-style-type: none"> 1. Convoying will be used to minimize the number of disturbances due to road traffic. 2. Personnel will be bussed between work 	<p>b. From May 20 through August 20, exploratory drilling will be allowed only from current production pads or platforms sited within a lake body, in compliance with setback requirements set forth in other stipulations.</p> <p>c. Within the Teshekpuk Lake Caribou Habitat Area, lessees shall orient linear corridors when laying out oil field developments to the extent practicable, to address migration and corralling effects and to avoid loops of road and/or pipeline that connect facilities.</p> <p>d. Ramps over pipelines, buried pipelines, or pipelines buried under the road may be required by the AO, after consultation with appropriate federal, state, and NSB regulatory and resource agencies, in the Teshekpuk Lake Caribou Habitat Area where pipelines potentially impede caribou movement.</p> <p>e. The following ground-traffic restrictions shall apply to permanent oil and gas-related roads in the areas and time periods indicated:</p> <ol style="list-style-type: none"> 1. Within the Teshekpuk Lake Caribou Habitat Area, from May 20 through August 20, traffic speed shall not exceed 15 miles per hour when caribou are within ½ mile on the road. Additional strategies may include limiting trips, using convoys, using different vehicle types, etc., to the extent practicable. 2. The lessee or a contractor shall observe caribou movement from May 20 through August 20. Based on these observations, traffic will be stopped temporarily to allow a crossing by 10 or more caribou. Sections of road will be evacuated when migrations of large numbers of caribou appears to be imminent. 3. Major equipment, materials, and supplies to be used at oil and gas work sites in the Teshekpuk Lake Caribou Habitat Area shall 	<p>and location. Lessees may submit individual study proposals or they may combine with other lessees in the area to do a single, joint study for the entire TLCHA. Study data may be gathered concurrently with other activities as approved by the AO and in consultation with the appropriate Federal, State, and NSB wildlife and resource agencies. A final report of the study results will be prepared and submitted. Prior to the permitting of a pipeline in the TLCHA, a workshop will be convened to identify the best corridor for pipeline construction in efforts to minimize impacts to wildlife (specifically the TLCH) and subsistence resources. The workshop participants will include but will not be limited to Federal, State, and NSB representatives. All of these modifications will increase protection for caribou and other wildlife that utilize the TLCHA during all seasons.</p> <p>b. Within the TLCHA, lessees shall orient linear corridors when laying out oil field developments to the extent practicable, to address migration and corralling effects and to avoid loops of road and/or pipeline that connect facilities.</p> <p>c. Ramps over pipelines, buried pipelines, or pipelines buried under the road may be required by the AO, after consultation with appropriate Federal, State, and NSB regulatory and resource agencies, in the TLCHA where pipelines potentially impede caribou movement.</p> <p>d. Major construction activities using heavy equipment (e.g., sand/gravel extraction and transport, pipeline and pad construction, but not drilling from existing production pads) shall be suspended within TLCHA from May 20 through August 20, unless approved by the AO in consultation with the appropriate Federal, State, and NSB regulatory and resource</p>
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sites and other facilities to minimize the number of vehicles on the road.

50. Major stockpiling of equipment, materials, and supplies for oil and gas activities in the Special Caribou Stipulations Area shall occur prior to or after the period May 20 through June 20 to minimize road traffic during that period.

52. Use of aircraft larger than a Twin Otter for authorized activities in the Planning Area, including oil and gas activities, from May 20 through August 20 within the Teshekpuk Lake Caribou LUEA is prohibited, except in cases of emergency.

54. Fixed-wing aircraft traffic takeoffs and landing for BLM-permitted activities in the Planning Area shall be limited to an average of one round-trip flight a day from May 20 through June 20 at aircraft facilities in the Teshekpuk Lake Caribou Habitat LUEA. Within the Goose Molting LUEA, fixed-wing aircraft use for such activities shall be restricted from June 15 to August 20 to flight corridors and frequencies established by BLM in consultation with the appropriate federal, state, and NSB regulatory and resource agencies.

55. Aircraft shall maintain an altitude of at least 1,000 feet above ground level (AGL) (except for takeoffs and landings) over caribou winter ranges from October 1 through May 15 and 2,000 feet AGL over the Teshekpuk Lake Caribou Habitat LUEA from May 16 through July 31, unless doing so would endanger human life or violate safe flying practices.

be stockpiled prior to or after the period of May 20 through August 20 to minimize road traffic during that period.

4. Use of aircraft larger than a Twin Otter by authorized users of the Planning Area, including oil and gas lessees, from May 20 through August 20 within the Teshekpuk Lake Caribou Habitat Area, shall be for emergency purposes only.

5. Fixed-wing aircraft takeoffs and landings by authorized users of the Planning Area shall be limited to an average of one round-trip flight per day from May 20 through June 20, at aircraft facilities within the Teshekpuk Lake Caribou Habitat Areas.

6. Aircraft shall maintain a minimum height of 1,000 feet AGL (except for takeoffs and landings) over caribou winter ranges from October 1 through May 1, and 2,000 feet AGL over the Teshekpuk Lake Caribou Habitat Area from May 20 through August 20, unless doing so would endanger human life or violate safe flying practices.

agencies. The intent of this requirement is to restrict activities that will disturb caribou during calving and insect-relief periods. If caribou arrive on the calving grounds prior to May 20, major construction activities will be suspended. The lessee shall submit with the development proposal a “stop work” plan that considers this and any other mitigation related to caribou early arrival. The intent of this latter requirement is to provide flexibility to adapt to changing climate conditions that may occur during the life of fields in the region.

e. The following ground and air traffic restrictions shall apply to permanent oil and gas-related roads in the areas and time periods indicated:

1. Within the TLCHA, from May 20 through August 20, traffic speed shall not exceed 15 miles per hour when caribou are within ½ mile of the road. Additional strategies may include limiting trips, using convoys, using different vehicle types, etc., to the extent practicable. The lessee shall submit with the development proposal a vehicle use plan that considers these and any other mitigation. The vehicle use plan shall also include a vehicle-use monitoring plan. Adjustments will be required by the AO if resulting disturbance is determined to be unacceptable.

2. The lessee or a contractor shall observe caribou movement from May 20 through August 20, or earlier if caribou are present prior to May 20. Based on these observations, traffic will be stopped temporarily to allow a crossing by 10 or more caribou. Sections of road will be evacuated whenever an attempted crossing by a large number of caribou appears to be imminent. The lessee shall submit with the development proposal a vehicle use plan

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		<p>that considers these and any other mitigation. The vehicle use plan shall also include a vehicle-use monitoring plan. Adjustments will be required by the AO if resulting disturbance is determined to be unacceptable.</p> <p>3. Major equipment, materials, and supplies to be used at oil and gas work sites in the TLCHA shall be stockpiled prior to or after the period of May 20 through August 20 to minimize road traffic during that period.</p> <p>4. Within the TLCHA aircraft use (including fixed wing and helicopter) shall be restricted from May 20 through August 20 unless doing so endangers human life or violates safe flying practices. Restrictions may include prohibiting the use of aircraft larger than a Twin Otter by authorized users of the Planning Area, including oil and gas lessees, from May 20 through August 20 within the TLCHA, except for emergency purposes. The lessee shall submit with the development proposal an aircraft use plan that considers these and other mitigation. The aircraft use plan shall also include an aircraft monitoring plan. Adjustments, including perhaps suspension of all aircraft use, will be required by the AO if resulting disturbance is determined to be unacceptable. This lease stipulation is not intended to restrict flights necessary to survey wildlife to gain information necessary to meet the stated objective of the stipulations and ROPs. However, flights necessary to gain this information will be restricted to the minimum necessary to collect such data.</p> <p>5. Within the TLCHA aircraft use (including fixed wing and helicopter) shall be restricted from May 20 through June 20 unless doing so endangers human life or violates safe flying practices. Restrictions may include limiting</p>
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<p>LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS</p>		
		<p>fixed-wing aircraft takeoffs and landings by authorized users of the Planning Area to an average of one round-trip flight per day from May 20 through June 20, at aircraft facilities within the TLCHAs. The lessee shall submit with the development proposal an aircraft use plan that considers these and other mitigation. The aircraft use plan shall also include an aircraft monitoring plan. Adjustments, including perhaps suspension of all aircraft use, will be required by the AO if resulting disturbance is determined to be unacceptable.</p> <p>6. Aircraft shall maintain a minimum height of 1,000 feet AGL (except for takeoffs and landings) over caribou winter ranges from December 1 through May 1, and 2,000 feet AGL over the TLCHA from May 20 through August 20, unless doing so endangers human life or violates safe flying practices. Caribou wintering ranges will be defined annually by the AO in consultation with the Alaska Department of Fish and Game. This lease stipulation is not intended to restrict flights necessary to survey wildlife to gain information necessary to meet the stated objective of the stipulations and ROPs. However, flights necessary to gain this information will be restricted to the minimum necessary to collect such data.</p>
<p><i>Alternative A – Stipulation 29 and Alternatives B, C, and D – Lease Stipulation K-5(a)</i> provide the same and equal benefit in effectively reducing but not eliminating impacts to terrestrial mammals, specifically TLH caribou and the subsistence use of these animals, in the area covered by the stipulations, by mandating that lessees conduct a study of caribou movement in the project area. The study results would then be utilized to design or place the facility in a manner that minimizes impacts. The presence of facilities and associated human activities would still result in some disturbance impacts to caribou. Caribou distribution can also vary from year to year.</p> <p><i>Alternative A Stipulation 31 and Alternatives B, C, and D Lease Stipulation K-5</i> would greatly reduce but not totally eliminate impacts to terrestrial mammals, specifically TLH caribou. The presence of facilities and associated human activity would still result in disturbance impacts to caribou. Caribou distribution can vary from year to year depending upon many factors. What appears to be the best design and location based on a minimum of three years of data may not hold true over the life of the facility or may be altered as additional infrastructure is constructed in other areas.</p> <p><i>Alternative A Stipulation 33 and Alternatives B and C Stipulation K-5(c) and Alternative D Lease Stipulation K-5b</i> would be equally effective in reducing impacts on terrestrial mammals and subsistence use patterns by providing increased protection to caribou.</p>		

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<p><i>Alternative A Stipulation 49 and Alternatives B, C, and D Lease Stipulation K-5(e)</i> would be equally protective of air quality, water resources and water quality, and vegetation by reducing vehicle travel speeds that can cause dust (PM₁₀) emissions. Deposition of dust and soil deposition into nearby water bodies can affect water quality and water resources. Deposition on vegetation can harm or kill plants. They also would be equally effective in reducing impacts to terrestrial mammals, specifically TLH caribou, from traffic, and to subsistence use patterns by providing increased protection to caribou.</p> <p><i>Alternative A Stipulation 50 and Alternatives B, C, and D Lease Stipulation K-5e(3)</i> would be equally effective in reducing, but not totally eliminating impacts to terrestrial mammals, specifically TLH caribou, by reducing traffic during the summer in areas used by caribou, and equally effective in reducing impacts on subsistence use patterns by providing increased protection to caribou.</p> <p><i>Alternative A – Stipulation 52 and Alternatives B, C and D – Stipulation K-5(e)(4)</i> provide the same and equal benefit in effectively reducing impacts to birds, terrestrial mammals, endangered and threatened species, and subsistence use by limiting the size of the aircraft that can be utilized in the Teshekpuk Lake Caribou Habitat Area to a Twin Otter or smaller during the same critical (caribou calving) time period (May 20 – August 20). Some studies have shown that larger airplanes have a greater disturbance effect than smaller airplanes at the same distance, or cause such an effect at a greater distance. A reduction in the size of the airplane during the caribou calving periods should logically effect a reduction in caribou disturbance. While these stipulations are targeted at reducing impacts to caribou in this important area, they should result in similar reductions in potential impact to other sensitive wildlife species as well as the subsistence activities associated with these wildlife species .</p> <p><i>Alternative A – Stipulation 54 and Alternatives B and C – Stipulation K-5(e)(5)</i> provide the equal benefit in effectively reducing impacts to birds, terrestrial mammals, endangered and threatened species, and subsistence use by limiting the number of fixed wing aircraft landings and take-offs during the same critical periods in the Teshekpuk Lake Caribou Habitat Area (peak caribou calving period). Aircraft flights have been shown in some instances and situations to disturb wildlife. A reduction in the number of flights should provide a concomitant reduction in wildlife disturbance and subsistence activities associated with these wildlife species.</p> <p><i>Alternative A – Stipulation 55 and Alternatives B, C, and D – Stipulation K-5(e)(6)</i> provide the same and equal benefit in effectively reducing impacts to birds, terrestrial mammals, endangered and threatened species, and subsistence use by establishing a minimum altitude that aircraft may be flown over caribou winter range (1,000 ft) during winter and over the Teshekpuk Lake Caribou Habitat Area (2,000 ft) during the calving period. Approximately the same time periods apply in all the above-referenced stipulations and ROPs and are designed to coincide with caribou wintering and peak calving. Studies have shown that wildlife disturbance tends to diminish with altitude, therefore holding aircraft flights to minimum altitudes should reduce impacts. While these stipulations are targeted at reducing impacts to caribou in these important areas, they should result in similar reductions in potential impact to other sensitive wildlife species as well as the subsistence activities associated with these wildlife species.</p>		
<p>31. Permanent oil and gas surface occupancy, including but not limited to permanent oil and gas facilities, pads, rigs, platforms, gravel roads, airstrips, pipelines, gravel or other material extraction sites, and exploration and delineation drilling facilities are prohibited in the Teshekpuk Lake Surface Protection Area (specifically, T. 13 N., Rs. 3-7 W., U.M.; Secs. 1-6, 8-16, 21-25, 36, T. 13 N., R. 8 W., U.M.; T. 14 N., Rs. 1-2 E. and Rs. 1-8 W., U.M.; Secs. 1-2, 11-14, T. 14 N., R. 9 W., U.M.; T. 15 N., Rs. 2-8 W., U.M.; Secs. 1-3, 7-30, 35-36, T. 15 N., R. 9</p>	<p><i>K-6 Stipulation – Coastal Area</i> Objective: Minimize hindrance or alteration of caribou movement within caribou coastal insect-relief areas; to prevent contamination of marine waters; loss of important bird habitat; alteration or disturbance of shoreline marshes; and impacts to subsistence resources activities. Requirement/Standard: In the Coastal Area, permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines established to support exploration and development activities shall be located at least ¾ mile inland</p>	<p><i>K-6 Stipulation - Coastal Area</i> Objective: Minimize hindrance or alteration of caribou movement within caribou coastal insect-relief areas; to prevent contamination of marine waters; loss of important bird habitat; alteration or disturbance of shoreline marshes; and impacts to subsistence resources activities. Requirement/Standard: In the Coastal Area, permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines established to support exploration and development activities shall be located at least ¾ mile inland from the coastline to the extent practicable. Where, as a</p>

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<p>W., U.M.; T. 16 N., Rs. 2-8 W., U.M.; Secs. 1-6, 8-17, 21-27, 34-36, T. 16 N., R. 9 W., U.M.; T. 17 N., Rs. 1-9 W., U.M.; and T. 18 N., Rs. 2-8 W., U.M.). No exceptions will be granted to this stipulation.</p>	<p>from the coastline to the extent practicable. Where, as a result of technological limitations, economics, logistics, or other factors, a facility must be located within ¼ mile inland of the coastline, the practicality of locating the facility at previously occupied sites such as Camp Lonely, various Husky/USGS drill sites, and Distant Early Warning (DEW)-Line sites, shall be considered. Use of existing sites within ¼ mile of the coastline shall also be acceptable where it is demonstrated that use of such sites will reduce impacts to shorelines or otherwise be environmentally preferable. All lessees/permitees involved in activities in the immediate area must coordinate use of these new or existing sites with all other prospective users. Before conducting open water activities, the lessee shall consult with the Alaska Eskimo Whaling Commission, the Nuiqsut Whaling Captains' Association, the Barrow Whaling Captains' Association, and the NSB to minimize impacts to the fall and spring subsistence whaling activities of the communities of the North Slope.</p>	<p>result of technological limitations, economics, logistics, or other factors, a facility must be located within ¼ mile inland of the coastline, the practicality of locating the facility at previously occupied sites such as Camp Lonely, various Husky/USGS drill sites, and Distant Early Warning (DEW)-Line sites, shall be considered. Use of existing sites within ¼ mile of the coastline shall also be acceptable where it is demonstrated that use of such sites will reduce impacts to shorelines or otherwise be environmentally preferable. All lessees/permitees involved in activities in the immediate area must coordinate use of these new or existing sites with all other prospective users. Before conducting open water activities, the lessee shall consult with the Alaska Eskimo Whaling Commission, the Nuiqsut Whaling Captains' Association, the Barrow Whaling Captains' Association, and the NSB to minimize impacts to the fall and spring subsistence whaling activities of the communities of the North Slope.</p>
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Alternative A – Stipulation 31 and Alternatives B, C, and D – Lease Stipulation K-6 provide similar but not equal benefits for resources in the portion of the coastal area encompassed by Stipulation 31. In coastal areas in the eastern part of the planning area, where Stipulation 31 is inapplicable, Lease Stipulation provides greater protection. Where applicable, Alternative A Stipulation 31 would be more effective than Lease Stipulation K-6 in protecting **soils, water, fish, birds, terrestrial mammals, and endangered and threatened species** because no permanent oil and gas facilities would be allowed in the area under Stipulation 31, but permanent oil and gas facilities would be allowed along the coast under Lease Stipulation K-6. However, other elements of each alternative, i.e. Restricted Surface Occupancy restrictions, and/or management decisions that make lands available or unavailable to oil and gas leasing, provide a different means for resource protection. A comparison between the effectiveness of Stipulation K-6 for Alternatives B, C, and D, on the one hand, and Stipulation 31 for Alternative A on the other is misleading without considering the mitigative effects of other stipulations and ROPs in the former set of action alternatives. Please see Table 2.3 for a discussion regarding the comparison of impacts among alternatives.

<p>24. The following restrictions apply to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on unroaded surfaces during the winter season:</p> <p>b. Motorized ground-vehicle use will be</p>	<p><i>K-7 Lease Stipulation - Colville River Special Area</i> <u>Objective:</u> Prevent or minimize loss of raptor foraging habitat. <u>Requirement/Standard:</u> If necessary to construct permanent facilities within the Colville River</p>	<p><i>K-7 Lease Stipulation - Colville River Special Area</i> <u>Objective:</u> Prevent or minimize loss of raptor foraging habitat. (also see Lease Stipulation K-1; Rivers Area)</p>
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<p>minimized within the Colville River Raptor, Passerine, and Moose Area LUEA from April 15 through August 5, with the exception that use will be minimized in the vicinity of gyrfalcon nests beginning March 15. Such use will remain ½ mile away from known raptor-nesting sites, unless authorized by the AO. The BLM shall consult with USFWS to plan travel routes to minimize disturbance to raptors.</p>	<p>Special Area, all reasonable and practicable efforts shall be made to locate permanent facilities as far from raptor nests as feasible. Within 15 miles of raptor nest sites, significant alteration of high quality foraging habitat shall be prohibited unless the lessee can demonstrate on a site-specific basis that impacts would be minimal or it is determined that there is no feasible or prudent alternative. Of particular concern are ponds, lakes, wetlands, and riparian habitats. <u>Note: On a case-by case basis, and in consultation with appropriate Federal and state regulatory and resource agencies, essential pipeline and road crossings will be permitted through these areas where no other feasible or prudent options are available.</u></p> <p>a. The following restrictions apply to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on tundra surfaces during the winter season:</p> <ol style="list-style-type: none"> 1. Motorized ground-vehicle use shall be minimized within the Colville River Raptor, Passerine, and Moose Area from April 15 through August 5, with the exception that use will be minimized in the vicinity of gyrfalcon nests beginning March 15. Such use will remain ½ mile away from known raptor nesting sites, unless authorized by the AO. 	<p><u>Requirement/Standard for Facilities:</u> If necessary to construct permanent facilities within the Colville River Special Area, all reasonable and practicable efforts shall be made to locate permanent facilities as far from raptor nests as feasible. Additionally, within 15 miles of raptor nest sites, significant alteration of high quality foraging habitat shall be prohibited unless the lessee can demonstrate on a site-specific basis that impacts would be minimal or it is determined that there is no feasible or prudent alternative. Of particular concern are ponds, lakes, wetlands, and riparian habitats. <u>Note: On a case-by case basis, and in consultation with appropriate Federal and state regulatory and resource agencies, essential pipeline and road crossings will be permitted through these areas where no other feasible or prudent options are available.</u></p> <p><u>Requirement/Standard for Activities:</u> Restriction applies to overland moves, seismic work, and any similar use of heavy equipment (other than actual excavations as part of construction) on tundra surfaces.</p>
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Alternative A – Stipulation 24b and Alternatives B, C, and D – Stipulation K-7 provide similar benefit in the avoidance and minimization of potential impacts to **vegetation, wetlands, endangered and threatened species, and birds**, particularly raptors, by reducing ground transportation activities in the area where most of the raptor nests occur. Raptors are most sensitive to disturbance when nesting. The lower two thirds of the Colville River support the highest concentration of raptor nests on the North Slope. The protection afforded by Stipulation 24b and Alternatives B and C Stipulation K-7 are identical in prohibiting motorized ground transportation within ½ mile of the nests during the defined nesting period. It is thought that vehicle transport more than ½ mile from raptor nests will not disturb nesting raptors. Alternative D Stipulation K-7 may provide additional protection by applying the requirement to apply “all reasonable and practicable efforts” to conduct overland moves, etc. “as far from raptor nests as feasible.” Stipulation K-7 for all alternatives actually applies to a larger area (Colville River Special Area) and includes all of the area covered under Stipulation 24. Both areas include the high raptor concentration area along the Colville. Stipulation K-7 also mandates (Stipulation 24 does not) that

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permanent oil and gas facilities be located as far as possible from raptor sites and prohibits significant alteration of high value wetlands and foraging habitats within 15 miles of nests, which should be moderately effective in reducing impacts to birds (specifically raptors), endangered and threatened species (eider habitat). The stipulation would have low effectiveness in reducing impacts to vegetation as impacts would be shifted to other areas.

45. No surface structures, except essential transportation crossings, are allowed within the Pik Dunes LUEA.	<p><i>K-8 Lease Stipulation - Pik Dunes</i> <u>Objective:</u> Retain unique qualities of the Pik Dunes, including geologic and scenic uniqueness, insect-relief habitat for caribou, and habitat for several uncommon plant species. <u>Requirement/Standard:</u> Surface structures, except approximately perpendicular pipeline crossings and ice pads, are prohibited within the Pik Dunes.</p>
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Alternative A Stipulation 45 and Alternatives B, C, and D Lease Stipulation K-8 may not be equally effective in protecting **soil, vegetation, terrestrial mammals, and the visual characteristics**. While Stipulation 45 would allow essential pipeline and road crossings, the only permanent structures that Stipulation K-8 would allow would be approximately perpendicular pipeline crossings. Although a road crossing would likely create more impacts than a pipeline, Stipulation K-8 would allow temporary ice pads on the Pik Dunes. Both measures reduce disturbance of or loss of habitat for terrestrial mammals, particularly caribou that use the Pik Dunes as important insect-relief habitat. Impacts to the visual characteristics of the Pik Dunes would be somewhat protected by prohibiting the construction of permanent surface structures other than transportation crossings.

31. Permanent oil and gas surface occupancy, including but not limited to permanent oil and gas facilities, pads, rigs, platforms, gravel roads, airstrips, pipelines, gravel or other material extraction sites, and exploration and delineation drilling facilities are prohibited in the Teshekpuk Lake Surface Protection Area (specifically, T. 13 N., Rs. 3-7 W., U.M.; Secs. 1-6, 8-16, 21-25, 36, T. 13 N., R. 8 W., U.M.; T. 14 N., Rs. 1-2 E. and Rs. 1-8 W., U.M.; Secs. 1-2, 11-14, T. 14 N., R. 9 W., U.M.; T. 15 N., Rs. 2-8 W., U.M.; Secs. 1-3, 7-30, 35-36, T. 15 N., R. 9 W., U.M.; T. 16 N., Rs. 2-8 W., U.M.; Secs. 1-6, 8-17, 21-27, 34-36, T. 16 N., R. 9 W., U.M.; T. 17 N., Rs. 1-9 W., U.M.; and T. 18 N., Rs. 2-8 W., U.M.). No exceptions will be granted to this stipulation.	<p><i>K-9 Lease Stipulation – Caribou Movement Corridor</i> <u>Objective:</u> Minimize disturbance and hindrance of caribou, or alteration of caribou movements (that are essential for all season use, including calving and rearing, insect-relief, and migration) in the area extending from the eastern shore of Teshekpuk Lake to approximately 6 miles eastward towards the Kogru Inlet and 2) the area adjacent to the northwest corner of Teshekpuk Lake. <u>Requirement/Standard:</u> Within the Caribou Movement Corridors, no permanent oil and gas facilities, except for pipelines, will be allowed on the approximately 54,700 (approximately 45,000 acres east of Teshekpuk Lake, and approximately 9,700 acres northwest of Teshekpuk Lake) illustrated on Map 1-1. Prior to the permitting of a pipeline in the Caribou Movement Corridors, a workshop will be convened to identify the best corridor for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources. The workshop participants will include but will not be limited to Federal, State, and NSB representatives. Note: In addition to the general</p>
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1998 Northeast IAP/EIS Stipulations for the No Action Alternative	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative
LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS		
		lease stipulations and ROPs, site-specific lease stipulations, i.e. K-3, K-4, K-5, and K-11 will also apply.
<p><i>Alternative A – Stipulation 31 and Alternative D – Lease Stipulation K-9</i> provide similar but not equal benefits for resources in two areas important for caribou movement. Alternative A Stipulation 31 would be minimally more effective than Lease Stipulation K-9 in protecting soils, water, fish, birds, and endangered and threatened species and potentially somewhat more effective in protecting terrestrial mammals, specifically caribou, and subsistence because pipelines would not be allowed in the area under Stipulation 31, but pipelines would be allowed in these areas under Lease Stipulation K-9. The absence of a comparable stipulation or ROP for Alternatives B and C would result in less protection, particularly for caribou, than the other alternatives. However, other elements of each alternative, i.e. Restricted Surface Occupancy restrictions, and/or management decisions that make lands available or unavailable to oil and gas leasing, provide a different means for resource protection. A comparison between the effectiveness of Stipulation K-9 for Alternative D and Stipulation 31 for Alternative A is misleading without considering the mitigative effects of other stipulations and ROPs in Alternative D. Please see Table 2.3 for a discussion regarding the comparison of impacts among alternatives.</p>		
<p>31. Permanent oil and gas surface occupancy, including but not limited to permanent oil and gas facilities, pads, rigs, platforms, gravel roads, airstrips, pipelines, gravel or other material extraction sites, and exploration and delineation drilling facilities are prohibited in the Teshekpuk Lake Surface Protection Area (specifically, T. 13 N., Rs. 3-7 W., U.M.; Secs. 1-6, 8-16, 21-25, 36, T. 13 N., R. 8 W., U.M.; T. 14 N., Rs. 1-2 E. and Rs. 1-8 W., U.M.; Secs. 1-2, 11-14, T. 14 N., R. 9 W., U.M.; T. 15 N., Rs. 2-8 W., U.M.; Secs. 1-3, 7-30, 35-36, T. 15 N., R. 9 W., U.M.; T. 16 N., Rs. 2-8 W., U.M.; Secs. 1-6, 8-17, 21-27, 34-36, T. 16 N., R. 9 W., U.M.; T. 17 N., Rs. 1-9 W., U.M.; and T. 18 N., Rs. 2-8 W., U.M.). No exceptions will be granted to this stipulation.</p>		<p><i>K-10 Lease Stipulation – Southern Caribou Calving Area</i> <u>Objective:</u> Minimize disturbance and hindrance of caribou, or alteration of caribou movements (that are essential for all season use, including calving and post calving, and insect-relief) in the area south/southeast of Teshekpuk Lake: <u>Requirement/Standard:</u> Within the Southern Caribou Calving Area, no permanent oil and gas facilities, except pipelines, would be allowed on the approximately 240,000 acres illustrated on Map 2-4. Prior to the permitting of a pipeline in the Southern Caribou Calving Area, a workshop will be convened to identify the best corridor for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources. The workshop participants will include but will not be limited to Federal, State, and NSB representatives. Note: In addition to the general stipulations and ROPs, site specific <i>Stipulations K-4, K-5, K-6, and K-11</i> would also apply.</p>
<p><i>Alternative A – Stipulation 31 and Alternative D – Lease Stipulation K-10</i> provide similar but not equal benefits for resources in an area south of Teshekpuk Lake. Alternative A Stipulation 31 would be minimally more effective than Lease Stipulation K-10 in protecting soils, water, fish, birds, and endangered and threatened species and potentially somewhat more effective in protecting terrestrial mammals, specifically caribou, and subsistence because pipelines would not be allowed in the area under Stipulation 31, but pipelines would be allowed in these areas under Lease Stipulation K-10. The absence of a comparable stipulation or ROP for Alternatives B and C would result in less protection, particularly for caribou, than the other alternatives. However, other elements of each alternative, i.e. Restricted Surface Occupancy restrictions, and/or management decisions that</p>		

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LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS

make lands available or unavailable to oil and gas leasing, provide a different means for resource protection. A comparison between the effectiveness of Stipulation K-10 for Alternative D and Stipulation 31 for Alternative A is misleading without considering the mitigative effects of other stipulations and ROPs in Alternative D. Please see Table 2.3 for a discussion regarding the comparison of impacts among alternatives.

		<p><i>K-11 Lease Stipulation: Lease Tracts A-G</i> <u>Objective:</u> To protect key surface resources and subsistence resources/activities resulting from permanent oil and gas development and associated activities. <u>Requirement Standard:</u> Permanent surface disturbance resulting from oil and gas activities is limited to 300 acres within the following described lease tracts (Map 2-4); this does not include surface disturbance activities from pipeline construction. Existing gravel pads within these tracts would not count against the 300-acre limit. A pipeline will be considered after a workshop is convened to identify the best corridor for pipeline construction in efforts to minimize impacts to wildlife and subsistence resources. The workshop participants will include but will not be limited to Federal, State, and NSB representatives. (No alternative procedures will be approved.). (Acreages are based on GIS calculations and are approximate)</p> <p>A. Total Acreage: approximately 52,700:</p> <ul style="list-style-type: none"> • 26,500 acres = RSO for Permanent Oil and Gas facilities excluding pipelines. • 26,200 acres = Area open to development subject to general and site specific lease stipulations and required operating procedures. <p>The total new development footprint cannot exceed 300 acres (0.6 % of total acreage).</p> <p>B. Total Acreage: approximately 55,000:</p> <ul style="list-style-type: none"> • 38,200 acres = RSO for Permanent Oil and Gas facilities, excluding pipelines. • 16,800 acres = Area open to development subject to general and site specific lease
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<p>1998 Northeast IAP/EIS Stipulations for the No Action Alternative</p>	<p>Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C</p>	<p>Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative</p>
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<p>LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS</p>		
		<p>stipulations and required operating procedures.</p> <p>The total new development footprint cannot exceed 300 acres (0.5 % of total acreage).</p> <p>C. Total Acreage: approximately 46,100:</p> <ul style="list-style-type: none"> • 32,500 acres = RSO for Permanent Oil and Gas facilities, excluding pipelines. • 13,600 acres = Area open to development subject to general and site specific lease stipulations and required operating procedures. <p>The total new development footprint cannot exceed 300 acres (0.7 % of total acreage).</p> <p>D. Total Acreage: approximately 54,500:</p> <ul style="list-style-type: none"> • 46,900 acres = RSO for Permanent Oil and Gas facilities excluding pipelines. • 7,700 acres = Area open to development subject to general and site specific lease stipulations and required operating procedures. <p>The total new development footprint cannot exceed 300 acres (0.6% of total acreage).</p> <p>E. Total Acreage: approximately 56,500:</p> <ul style="list-style-type: none"> • 32,200 acres = RSO for Permanent Oil and Gas facilities, excluding pipelines. • 24,300 acres = Area open to development subject to general and site specific lease stipulations and required operating procedures. <p>The total new development footprint cannot exceed 300 acres (0.5% of total acreage).</p> <p>F. Total Acreage: approximately 57,100:</p> <ul style="list-style-type: none"> • 43,200 acres = RSO for Permanent Oil and Gas facilities, excluding pipelines. • 4,900 acres = Restricted area open to development subject to the results of 3 year study requirement to determine appropriate placement of permanent facility(s) (Map 2-5) • 9,000 acres = Area open to development

1998 Northeast IAP/EIS Stipulations for the No Action Alternative	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative
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LEASE STIPULATIONS THAT APPLY IN BIOLOGICALLY SENSITIVE AREAS		
		<p>subject to general and site specific lease stipulations and required operating procedures.</p> <p>The total new development footprint cannot exceed 300 acres (0.5 % of total acreage).</p> <p>G. Total Acreage: approximately 56,800:</p> <ul style="list-style-type: none"> • 48,700 acres = RSO for Permanent Oil and Gas facilities excluding pipelines • 300 acres = Restricted area open to development subject to the results of 3 year study requirement to determine appropriate placement of permanent facility(s) (Map 2-5) • 7,800 acres = Area open to development subject to general and site specific lease stipulations and required operating procedures. <p>The total new development footprint cannot exceed 300 acres (0.5 % of total acreage)</p>

ALTERNATIVE A STIPULATIONS THAT HAVE NO EQUIVALENTS IN ALTERNATIVES B, C, OR D		
51. Chasing wildlife with ground vehicles is prohibited.	Alaska State Statute (5 AAC 92.080)**	Alaska State Statute (5 AAC 92.080)**
<p><i>Alternative A Stipulation 51 and Alaska State Statute (5 AAC 92.080)</i> would be equally effective in protecting birds and terrestrial mammals as chasing of wildlife using vehicles is prohibited under Alaska State Statute, which also applies to the Planning Area and would be applicable to all alternatives.</p>		
57. Hazing of wildlife by aircraft is prohibited.	Alaska State Statute (5 AAC 92.080)**	Alaska State Statute (5 AAC 92.080)**
<p><i>Alternative A Stipulation 57 and Alternatives B, C, and D Alaska State Statute (5 AAC 92.080)</i> would be equally effective in protecting birds and terrestrial mammals as chasing of wildlife using vehicles is prohibited under Alaska State Statute, which also applies to the Planning Area and would be applicable to all alternatives.</p>		
66. The authorized user shall protect all survey monuments and be responsible for survey costs if remuneration is required as a result of the user's actions.	Federal Law (18 USC 1858)**	Federal Law (18 USC 1858)**
<p><i>Stipulation 66 and Federal Law 18 USC 1858</i> would be equally effective in ensuring that survey monuments and bench marks are protected. According to 18 USC 1858, "Whoever willfully destroys, defaces, changes, or removes to another place any section corner, quarter-section corner, or meander post, on any Government line of survey, or willfully cuts down any witness tree or any tree blazed to mark the line of a Government survey, or willfully defaces, changes, or removes any monument or bench mark of any Government survey, shall be fined under this title or imprisoned not more than six months, or both."</p>		

1998 Northeast IAP/EIS Stipulations for the No Action Alternative	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative B and Alternative C	Comparable/Applicable Supplemental IAP/EIS Lease Stipulations and Required Operating Procedures for Alternative D—Preferred Alternative
ALTERNATIVE A STIPULATIONS THAT HAVE NO EQUIVALENTS IN ALTERNATIVES B, C, OR D		
68. The BLM, through the AO, reserves the right to impose closure of any area to operators in periods when fire danger or other dangers to natural resources are severe.	Federal Law (40 CFR 9212.2)**	Federal Law (40 CFR 9212.2)**
<i>Alternative A Stipulation 68 and Federal Law 40 CFR 9212.2 would be equally effective, as 40 CFR 212.2 provides policy for BLM fire management activities and specifically states: “To prevent wildfire or facilitate its suppression, an authorized officer may issue fire prevention orders that close entry to, or restrict uses of, designated public lands.”</i>		
69. The authorized user shall be financially responsible for any damage done by a wildfire caused by its operations.	Federal Law (4 CFR 103-104; 43 CFR 2920.1-2; 43 CFR 9212.1; 43 CFR 9212.4; 43 CFR 9239; BLM Fire Trespass Handbook H-9238)**	Federal Law (4 CFR 103-104; 43 CFR 2920.1-2; 43 CFR 9212.1; 43 CFR 9212.4; 43 CFR 9239; BLM Fire Trespass Handbook H-9238)**
<i>Alternative A Stipulation 69 and Federal Law (4 CFR 103-104; 43 CFR 2920.1-2; 43 CFR 9212.1; 43 CFR 9212.4; 43 CFR 9239; BLM Fire Trespass Handbook H-9238) would be equally effective in ensuring that the responsible party is financially responsible for any damage done by a wildlife. The Federal Laws and BLM Handbook H-9238 identified above would complement Stipulation 69 and would provide procedures for identifying and prosecuting the responsible party.</i>		
71. Use of pesticides without the specific authority of the AO is prohibited.	Federal Law** (unlikely that BLM would use pesticides in Planning Area)	Federal Law** (unlikely that BLM would use pesticides in Planning Area)
<i>Alternative A Stipulation 71 and Federal Law should provide the same benefit in reducing potential effects on fish and fish habitat from the improper use of pesticides.</i>		
78. Permanent structures, other than oil and gas facilities, are prohibited within 100 feet of the highest high water mark of the nearest body of water.	Not within scope of Supplemental IAP/EIS.	Not within scope of Supplemental IAP/EIS.
79. Lessees shall use smokeless flares for handling routine conditions and use auxiliary smokeless flares for planned events that exceed the capacity of routine flares. Lessees shall use flares that meet the Federal New Source Performance design standards listed in 40 CFR 60.18.	Federal (Clean Air Act) and Alaska State Statute**	Federal (Clean Air Act) and Alaska State Statute**
<i>Alternative A Stipulation 79 and Federal (40 CFR 60.18) and State(18 AAC 50) regulations should provide equal benefit in minimizing potential impacts to air quality by requiring the use of flares that meet the stated New Source Performance Standards for visible emissions from flares.</i>		
SUMMER VEHICLE TUNDRA ACCESS		
(The 1998 ROD technically was silent on summer tundra access. Stipulation 24 stated that it applied to activities “during the winter season,” and at subparagraph (i) it restricted travel on unroaded surfaces to periods with sufficient frost	<i>L-1 Required Operating Procedure</i> <u>Objective:</u> Protect stream banks and water quality; minimize compaction and displacement of soils; minimize the breakage, abrasion, compaction, or displacement of vegetation; protect cultural and paleontological resources; maintain populations of, and adequate habitat for birds, fish, and caribou and other terrestrial mammals; and minimize impacts to subsistence activities.	

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SUMMER VEHICLE TUNDRA ACCESS	
<p>and snow cover. The presumption is that to provide for the required pipeline inspection and spill response needs that summer tundra access would provide, the BLM would grant an exception to stipulation 24i with protective provisions similar to those envisioned in the requirement/standard for ROP L-1.)</p>	<p><u>Requirement/Standard:</u> On a case-by-case basis, BLM may permit low-ground-pressure vehicles to travel off of gravel pads and roads during times other than those identified in ROP C-2a. Permission for such use would only be granted after an applicant has:</p> <ul style="list-style-type: none"> a. Submitted studies satisfactory to the AO of the impacts on soils and vegetation of the specific low-ground-pressure vehicles to be used. These studies should reflect use of such vehicles under conditions similar to those of the route proposed for use and should demonstrate that the proposed use would have no more than minimal impacts to soils and vegetation. b. Submitted surveys satisfactory to the AO of subsistence uses of the area as well as of the soils, vegetation, hydrology, wildlife and fish (and their habitats), paleontological and archaeological resources, and other resources as required by the AO. c. Designed and/or modified the use proposal to minimize impacts to the AO's satisfaction. Design steps to achieve the objectives and based upon the studies and surveys may include, but not be limited to, timing restrictions (generally it is considered inadvisable to conduct tundra travel prior to August 1 to protect ground-nesting birds), shifting of work to winter, rerouting, and not proceeding when certain wildlife are present or subsistence activities are occurring. At the discretion of the AO, the plan for summer tundra vehicle access may be included as part of the spill prevention and response contingency plan required by 40 CFR 112 (Oil Pollution Act) and ROP A-4.
<p><i>Alternative A</i> is technically silent on summer tundra access and, therefore, provides neither more nor less protection from the impacts of summer vehicle tundra access to soils, vegetation, water, wildlife, and fish than does <i>Alternatives B, C, and D Lease ROP L-1</i>. Summer vehicle tundra access may be essential to oil and gas development, and consequently leaseholders would likely file for a permit under <i>Alternative A</i>. BLM would determine restrictions on access on a case-by-case basis, but assuming that those protections would be similar to those envisioned in the requirement/standard for ROP L-1, the impacts also would be similar to those that may occur under ROP L-1.</p>	
<p>**Existing laws and regulations that extend across all lands in Alaska and fall under the jurisdiction of the State of Alaska and other Federal agencies. However, if BLM personnel observe that any of these statutes, laws, or regulations are being violated, the violations will be reported and proper actions will be taken to arrest the situation.</p>	

Table 2-3. Summary and Comparison of Effects on Resources by Alternative

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON AIR QUALITY			
<p>General Effects: Exploration, development, and production activities would cause small, local, temporary increases in the concentrations of criteria pollutants. Concentrations would comply with applicable air quality standards. Therefore, no significant impacts would occur.</p>	<p>General Effects: Air pollutant emissions would be 17 – 19 % greater than Alternative A (No Action). However, Concentrations would comply with applicable air quality standards. Therefore, no significant impacts would occur.</p>	<p>General Effects: Air pollutant emissions would be 38 – 40% greater than Alternative A (No Action). However, Concentrations would comply with applicable air quality standards. Therefore, no significant impacts would occur.</p>	<p>General Effects: Air pollutant emissions would be 23 – 26% greater than Alternative A (No Action). However, Concentrations would comply with applicable air quality standards. Therefore, no significant impacts would occur.</p>
<p>Cumulative Effects: The cumulative effects of all projects affecting the North Slope of Alaska in the past have caused minor deterioration in air quality, well within legal limits. Improvements in air pollution control technology would help to reduce emissions from historic levels, which may be offset somewhat by increasing production. Regional air pollutant emissions generated would remain near current levels; approximately 30% less than emission levels in the late 1980s. Arctic haze will continue to be of concern on the North Slope, due primarily to air pollutant emissions originating in northern Europe and Asia (and to a lesser extent, northern Alaska). In the future, each proposed individual facility will be required to disclose its potential air quality impacts thorough site-specific NEPA analyses, and demonstrate its continued compliance with applicable local, state, tribal and Federal air quality requirements. As facilities are shut down, they would no longer contribute to North Slope air emissions. Particulate matter emissions would also be reduced at sites that are re-vegetated.</p>			
EFFECTS ON PALEONTOLOGICAL RESOURCES			
<p>General Effects: Impacts from non-oil and gas activities would be minimal, however, surface disturbance could impact paleontological resources. There is a very low risk that paleontological resources would be encountered and impacted during extraction of materials, surface disturbance, or oil spills associated with oil and gas development. Potential impacts would be minor in part due to surveys conducted prior to surface disturbing activities.</p>	<p>General Effects: Surface disturbance could impact paleontological resources. The risk that paleontological resources would be encountered and impacted would be slightly higher than under the No Action Alternative, but potential impacts would still be minor in part due to surveys conducted prior to surface disturbing activities. Gravel mining near rivers and lakes poses the greatest threat to paleontological resources.</p>	<p>General Effects: Surface disturbance could impact paleontological resources. The risk that paleontological resources would be encountered and impacted could be as much as 20% greater than under Alternative B, and about 30% greater than the level under the No Action Alternative. Potential impacts would still be minor in part due to surveys conducted prior to surface disturbing activities. Gravel mining near rivers and lakes poses the greatest threat to paleontological resources.</p>	<p>General Effects: Surface disturbance could impact paleontological resources. The risk that paleontological resources would be encountered and impacted would be slightly less than under Alternative C, and 15% greater than under the No Action Alternative; potential impacts would still be minor in part due to surveys conducted prior to surface disturbing activities. Gravel mining near rivers and lakes poses the greatest threat to paleontological resources.</p>
<p>Cumulative Effects: Ground-disturbing activities, including non-oil and gas development and oil and gas exploration and development, have impacted paleontological resources to some degree. However, because of their unpredictable location, isolated and rare occurrence, and varying depth of deposit, the level of past and future impacts is difficult to assess. If lease stipulations were to continue to apply to survey and inventory prior to exploration and development activities, the cumulative impact to paleontological resources would be expected to be minor in the Planning Area; similar state and Federal</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON PALEONTOLOGICAL RESOURCES			
<p>regulations would help to limit impact to these resources elsewhere on the North Slope. Paleontological resources are nonrenewable, and once displacement or contamination impacts them, their value may be greatly and irreversibly compromised. Cumulative impacts to paleontological resources across the North Slope and in the Planning Area in the future are expected to be minor, given the small amount of area impacted and implementation of measures to avoid river drainages and other areas with known or likely paleontological resources. In the case being considered here, Alternative A would contribute the least toward cumulative impacts with the potential to directly and indirectly generate adverse affects on on-shore paleontological resources on the North Slope. Alternatives B, C and D have a greater potential for creating cumulative impacts because all of those Alternatives allow more area of high oil and gas probability to be leased (submerged off-shore paleontological resources, if present, would generally not be threatened by off-shore oil and gas exploration/development activities).</p>			
EFFECTS ON SOIL RESOURCES			
<p>General Effects: During exploration and development, seismic activities and construction of ice pads, ice roads, ice runways, and pipelines would cause localized areas of soil compaction and loss of surrounding vegetation; Short-term impacts could occur on approximately 8,100 acres of soil from 2-D seismic surveys and 100,000 acres of soil from 3-D surveys during a 25-year period; A total of 5,200 miles of ice roads could be constructed during the life of the plan creating short-term impacts to approximately 16,000 acres; Approximately 900 acres could be impacted short-term by ice pads for exploration and delineation wells and 20 miles of ice runway could be constructed creating short-term impacts to approximately 220 acres; In addition, approximately 1,200 acres could be impacted short-term by pipeline construction. Oil and gas development and operation would have long-term impacts by compacting and damaging soils under gravel pads, gravel roads, and gravel airstrips; excavating material sites; and constructing well cellars and VSMs. Long-term direct and indirect impacts would occur on an estimated 5,400 acres of soils from field development, and 550 acres from gravel extraction activities. Therefore, these activities could result in long-term impacts to approximately 6,000 (5,400 + 550) acres or 0.13 % of</p>	<p>General Effects: A larger acreage of soil would likely be disturbed than under the Alternative A, and the risk of oil spills would be higher. A greater proportion of impacts could be to soils near Teshekpuk Lake. During exploration and development, seismic activities and construction of ice pads, ice roads, ice runways, and pipelines would cause localized areas of soil compaction and loss of surrounding vegetation; Short-term impacts could occur on approximately 8,100 acres of soil from 2-D seismic surveys and 100,000 acres of soil from 3-D surveys during a 25-year period; A total of 6,200 miles of ice roads could be constructed during the life of the plan creating short-term impacts to approximately 19,000 acres; Approximately 1,020 acres could be impacted short-term by ice pads for exploration and delineation wells and 30 miles of ice runway could be constructed creating short-term impacts to approximately 330 acres; In addition, approximately 1,250 acres could be impacted short-term by pipeline construction. Oil and gas development and operation would have long-term impacts by compacting and damaging soils</p>	<p>General Effects: A larger acreage of soil would likely be disturbed than under the other alternatives, and the risk of oil spills would be higher. The acreage of soil impacted would be slightly greater than under Alternative B. During exploration and development, seismic activities and construction of ice pads, ice roads, ice runways, and pipelines would cause localized areas of soil compaction and loss of surrounding vegetation; Short-term impacts could occur on approximately 8,100 acres of soil from 2-D seismic surveys and 100,000 acres of soil from 3-D surveys during a 25-year period; A total of 7,200 miles of ice roads could be constructed during the life of the plan creating short-term impacts to approximately 22,000 acres; Approximately 1,260 acres could be impacted short-term by ice pads for exploration and delineation wells and 40 miles of ice runway could be constructed creating short-term impacts to approximately 440 acres; In addition, approximately 1,500 acres could be impacted short-term by pipeline construction. Oil and gas development and operation would have long-term impacts by compacting and damaging soils under gravel pads, gravel roads, and gravel airstrips; excavating material sites; and constructing well cellars and VSMs. Long-term direct and indirect impacts would occur on an estimated 7,700 acres</p>	<p>General Effects: Impacts to soil resources and the risk of oil spills would potentially exceed those of Alternatives A and B but would be less than Alternative C. During exploration and development, seismic activities and construction of ice pads, ice roads, ice runways, and pipelines would cause localized areas of soil compaction and loss of surrounding vegetation; Short-term impacts could occur on approximately 8,100 acres of soil from 2-D seismic surveys and 100,000 acres of soil from 3-D surveys during a 25-year period; A total of 6,200 miles of ice roads could be constructed during the life of the plan creating short-term impacts to approximately 19,000 acres; Approximately 1,200 acres could be impacted short-term by ice pads for exploration and delineation wells and 30 miles of ice runway could be constructed creating short-term impacts to approximately 330 acres; In addition, approximately 1,500 acres could be impacted short-term by pipeline construction. Oil and gas development and operation would have long-term impacts by compacting and damaging soils under gravel pads, gravel roads, and gravel airstrips; excavating material sites; and constructing well cellars and VSMs. Long-term direct and indirect impacts would occur on an estimated 7,400 acres of soils from field development, and 700</p>

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON SOIL RESOURCES			
<p>the Planning Area. In terms of scale, the long-term impact to soils in the Planning Area would be minor.</p>	<p>under gravel pads, gravel roads, and gravel airstrips; excavating material sites; and constructing well cellars and VSMs. Long-term direct and indirect impacts would occur on an estimated 6,100 acres of soils from field development, and 650 acres from gravel extraction activities. Therefore, these activities could result in long-term impacts to approximately 6,800 (6,100 + 650) acres or 0.15 % of the Planning Area. In terms of scale, the long-term impact to soils in the Planning Area would be minor.</p>	<p>of soils from field development, and 800 acres from gravel extraction activities. Therefore, these activities could result in long-term impacts to approximately 8,500 (7,700 + 800) acres or 0.18% of the Planning Area. Since the portion of the Planning Area affected would be very small, overall impacts to soils would still be minor.</p>	<p>acres from gravel extraction activities. Therefore, these activities could result in long-term impacts to approximately 8,100 (7,400 + 700) acres or 0.18% of the Planning Area. Since the portion of the Planning Area affected would be very small, overall impacts to soils would still be minor.</p>
<p>Cumulative Effects: Past and Present: Approximately 2,500 acres of direct impacts to soil from non-oil and gas activities persist today on the North Slope. Oil and gas activities have caused approximately 17,500 acres of direct impacts to soil that persist today; another 17,500 acres of indirect impacts have also occurred, some of which persist today. Therefore, a total of approximately 37,500 acres of soil resources on the North Slope still show impacts from all past activities. These impacts to soil are additive to future impacts and are likely to persist for several decades or more. However, the rate at which soil is disturbed by development has slowed substantially in recent years due to advances in technology and a slowing of oil field development on the North Slope.</p> <p>Future: Assuming community infrastructure and footprint grow at roughly the same pace as population, there would be approximately 3,600 acres of community footprint by the time population may level off in the 2040s. In addition, approximately 700 acres of soil impacted by DEW line sites are expected to persist. Therefore the total long term cumulative impact to soil resources on the North Slope from non oil and gas activities (past, present, and foreseeable future) would be approximately 4,300 (3,600 villages + 700 DEW sites) acres. Impacts to soil resources from future oil and gas development on the North Slope include exploration activities and construction of gravel pads, gravel roads, gravel airstrips, gravel staging areas, excavation of material sites, oil pipelines, and possible gas pipelines (both to market outside the North Slope and within the North Slope). The duration of the impacts would range from short term (< 1 to 5 years) if the soil was lightly disturbed (i.e. most seismic activity, ice roads, and ice pads) up to several decades or longer if the soil was covered by gravel, removed, or permafrost was thawed creating thermokarst. Impacts associated with exploration and development activities in the Planning Area would be additive with impacts from activities in other portions of the National Petroleum Reserve – Alaska and across the North Slope. The total area of long term impacts to soils from future development would be approximately 26,000 (22,400 gravel footprint + 2,200 material sites + 1,000 pipelines) acres. Under Alternatives B, C, and D, the northwest portion of Northeast NPR-A is more likely to be developed. Infrastructure such as pipelines and CPFs developed in this portion of the Planning Area would also make marginal discoveries in the adjacent northeast portion of Northwest NPR-A, and offshore areas to the north of Teshekpuk Lake, more likely to be developed in the foreseeable future. This would create a greater area of soil disturbance than under Alternative A. Overall, the area of soils impacted long term by past, present, and foreseeable future oil and gas development would be approximately 61,000 (35,000 past and present + 26,000 future) acres. The North Slope region is approximately 57 million acres. Therefore, compared to the area of the North Slope, this would be a relatively small area of soils impacted (about 0.1%), even with the entire Planning Area open for development (Alternative C). If global climate change persists, the cumulative effects to soil from oil and gas development, and non oil and gas development, on the North Slope could be greater than predicted. Some soil would be restored as sites are abandoned and reclaimed. However, due to the harsh Arctic climate, it could take several hundred years for soil productivity to reach pre-disturbance levels on abandoned pads and roads.</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON WATER RESOURCES			
<p>General Effects: Exploration and development will have the following impacts: water withdrawals from lakes; erosion, scour and sedimentation; temporary impoundments and diversions; and removal of gravel from areas near streams and lakes. Impacts to water resources would be the lowest under Alternative A. Non-oil and gas activities would have minimal (minor and short-term) impacts on water resources for all alternatives. A total of 5,162 miles of ice roads, 151 exploration and delineation ice pads, and 20 ice airstrips could be constructed during the life of the plan, creating short-term impacts to approximately 16,800 acres. In addition, approximately 1,200 acres could be impacted short-term by pipeline construction. Construction of gravel roads, pads, airstrips, CPFs, gravel pits, and pipelines could result in long-term direct impacts to 3,250 (2,700 + 550) acres. Long-term indirect impacts to 2,700 acres could result from this infrastructure due to altered drainage patterns and upslope water impoundments. Therefore, these activities could result in long-term impacts to 5,950 (3,250 + 2,700) acres or 0.13 % of the Planning Area. In terms of scale, the long-term impact to water resources in the Planning Area would be minor.</p>	<p>General Effects: Alternative B will impact more water resources than Alternative A due to more lakes being affected by water withdrawals, impoundments, altered drainages, and oil spills. This alternative would allow drilling on and near Teshekpuk Lake, increasing the likelihood that water resources in this lake would be negatively impacted by an oil spill. Non-oil and gas activities would have minimal (minor and short-term) impacts on water resources for all alternatives. A total of 6,162 miles of ice roads, 170 exploration and delineation ice pads, and 30 ice airstrips could be constructed during the life of the plan, creating short-term impacts to approximately 20,000 acres. In addition, approximately 1,250 acres could be impacted short-term by pipeline construction. Construction of gravel roads, pads, airstrips, CPFs, gravel pits, and pipelines could result in long-term direct impacts to 3,700 (3,050+650) acres. Long-term indirect impacts to 3,050 acres could result from this infrastructure due to altered drainage patterns and upslope water impoundments. Therefore, these activities could result in long-term impacts to 6,750 (3,700 + 3,050) acres or 0.15 % of the Planning Area. In terms of scale, the long-term impact to water resources in the Planning Area would be minor.</p>	<p>General Effects: Impacts to water resources would be greater than all other Alternatives with more lakes potentially impacted by water withdrawals, impoundments, altered drainages, and oil spills. This alternative would allow drilling on and near Teshekpuk Lake, increasing the likelihood that water resources in Teshekpuk Lake and deepwater lakes in this area would be impacted by an oil spill. Non-oil and gas activities would have minimal (minor and short-term) impacts on water resources for all alternatives. A total of 7,182 miles of ice roads, 210 exploration and delineation ice pads, and 40 ice airstrips could be constructed during the life of the plan, creating short-term impacts to approximately 23,500 acres. In addition, approximately 1,500 acres could be impacted short-term by pipeline construction. Construction of gravel roads, pads, airstrips, CPFs, gravel pits, and pipelines could result in long-term direct impacts to 4,650 (3,850 + 800) acres. Long-term indirect impacts to 3,850 acres could result from this infrastructure due to altered drainage patterns and upslope water impoundments. Therefore, these activities could result in long-term impacts to 8,500 (4,650 + 3,850) acres or 0.18 % of the Planning Area. In terms of scale, the long-term impact to water resources in the Planning Area would be minor.</p>	<p>General Effects: Impacts to water resources would be less than under Alternative C and greater than under Alternatives A and B. This alternative would not make Teshekpuk Lake available for oil and gas leasing, and would restrict permanent facilities in Lease Tracts associated with the Goose Molting Area, an area with lakes that are important to molting geese. This would reduce the likelihood of a spill from a production facility impacting lakes in this region. However, pipelines would be allowed in this area, so a spill from a pipeline could affect water bodies. Non-oil and gas activities would have minimal (minor and short-term) impacts on water resources for all alternatives. A total of 6,162 miles of ice roads, 193 exploration and delineation ice pads, and 30 ice airstrips could be constructed during the life of the plan, creating short-term impacts to approximately 20,200 acres. In addition, approximately 1,450 acres could be impacted short-term by pipeline construction. Construction of gravel roads, pads, airstrips, CPFs, gravel pits, and pipelines could result in long-term direct impacts to 4,400 (3,700 + 700) acres. Long-term indirect impacts to 3,700 acres could result from this infrastructure due to altered drainage patterns and upslope water impoundments. Therefore, these activities could result in long-term impacts to 8,100 (4,400 + 3,700) acres or 0.18 % of the Planning Area. In terms of scale, the long-term impact to water resources in the Planning Area would be minor.</p>
<p>Cumulative Effects: See cumulative effects under water quality.</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON WATER QUALITY			
<p>General Effects: Exploration and development will have the following impacts: water quality changes due to withdrawals from lakes, melting ice roads, pads and airstrips and dust deposition from roads; erosion, scour and sedimentation; and oil spills. Impacts to water quality would be the lowest under Alternative A. Non-oil and gas activities would have minimal (minor and short-term) impacts on water resources for all alternatives. There could be short-term impacts to 108,000 acres and long-term impacts to approximately 11 acres as a result of seismic activities during a 25-year period. Construction of gravel roads, pads, airstrips, CPFs, gravel pits and pipelines could result in long-term direct impacts to 3,250 (2,700 + 550) acres. Long-term indirect impacts to 2,700 acres could result from this infrastructure due to increased sedimentation due to thermokarst erosion and water quality changes due to dust deposition adjacent to roads. Oil spills could have short-term effects on water quality in lakes and other large water bodies, but could have lasting toxicity effects in smaller ponds. Therefore, these activities could result in long-term impacts to 5,950 (3,250 + 2,700) acres or 0.13 % of the Planning Area. In terms of scale, the long-term impact to water quality in the Planning Area would be minor.</p>	<p>General Effects: More water quality impacts are likely to occur under Alternative B than under Alternative A, and the risk of oil spills would be higher. This alternative would allow drilling on and near Teshekpuk Lake, increasing the likelihood that water resources in this lake would be negatively impacted by an oil spill. Non-oil and gas activities would have minimal (minor and short-term) impacts on water quality for all alternatives. There would be long-term impacts to water quality on approximately 11 acres as a result of seismic activities due to thermokarst erosion. Construction of gravel roads, pads, airstrips, CPFs, gravel pits, and pipelines could result in long-term direct impacts to 3,700 (3,050 + 650) acres. Long-term indirect impacts to 3,050 acres could result from this infrastructure due to increased sedimentation due to thermokarst erosion and water quality changes due to dust deposition adjacent to roads. Because drilling would be allowed on and near Teshekpuk Lake, the potential for contamination of the lake by an oil spill would also be greater than under the Alternative A. Therefore, these activities could result in long-term impacts to 6,750 (3,700 + 3,050) acres or 0.15 % of the Planning Area. In terms of scale, the long-term impact to water quality in the Planning Area would be minor.</p>	<p>General Effects: More water quality impacts are likely to occur under Alternative C than under the other alternatives, and the risk of oil spills would be highest. Non-oil and gas activities would have minimal (minor and short-term) impacts on water quality for all alternatives. There would be long-term impacts to water quality on approximately 11 acres as a result of seismic activities. Construction of gravel roads, pads, airstrips, CPFs, gravel pits and pipelines could result in long-term direct impacts to 4,650 (3,850 + 800) acres. Long-term indirect impacts to 3,850 acres could result from this infrastructure due to increased sedimentation due to thermokarst erosion and water quality changes due to dust deposition adjacent to roads. Because drilling would be allowed on and near Teshekpuk Lake, the potential for contamination of the lake by an oil spill would also be greater than all other Alternatives. Therefore, these activities could result in long-term impacts to 8,500 (4,650 + 3,850) acres or 0.18 % of the Planning Area. In terms of scale, the long-term impact to water quality in the Planning Area would be minor.</p>	<p>General Effects: More water quality impacts are likely to occur under Alternative D than under Alternatives A and B, and the risk of oil spills would be higher. Non-oil and gas activities would have minimal (minor and short-term) impacts on water quality for all alternatives. There would be long-term impacts to water quality on approximately 11 acres as a result of seismic activities. Construction of gravel roads, pads, airstrips, CPFs, gravel pits, and pipelines could result in long-term direct impacts to 4,400 (3,700 + 700) acres. Long-term indirect impacts to 3,700 acres could result from this infrastructure due to increased sedimentation due to thermokarst erosion and water quality changes due to dust deposition adjacent to roads. Because drilling would be allowed on and near Teshekpuk Lake, the potential for contamination of the lake by an oil spill would also be greater than under the Alternative A. Therefore, these activities could result in long-term impacts to 8,100 (4,400 + 3,700) acres or 0.18 % of the Planning Area. In terms of scale, the long-term impact to water quality in the Planning Area would be minor.</p>
<p>Cumulative Effects: Assuming community infrastructure and footprint grow at roughly the same pace as population, there would be approximately 1,800 additional acres of community footprint by the time population may level off in the 2040s. In addition, approximately 700 acres of soil impacted by DEW line sites are expected to persist. Therefore the total long term cumulative impact to water resources and water quality on the North Slope from non oil and</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON WATER QUALITY

gas activities (past, present, and foreseeable future) would be approximately 4,300 (2,500 past + 1,800 future) acres. Impacts to water resources and water quality from future oil and gas development on the North Slope include exploration activities and construction of gravel pads, gravel roads, gravel airstrips, gravel staging areas, excavation of material sites, water use from lakes, oil pipelines, and possible gas pipelines (both to market outside the North Slope and within the North Slope). The duration of the impacts would range from short term (< 1 to 5 years) if the soil was lightly disturbed (i.e. most seismic activity, ice roads, and ice pads) up to several decades or longer if the soil was covered by gravel, removed, or permafrost was thawed creating thermokarst. Impacts associated with exploration and development activities in the Planning Area would be additive with impacts from activities in other portions of the National Petroleum Reserve – Alaska and across the North Slope. The total area of long term impacts to soils from future development would be approximately 26,000 (22,400 gravel footprint + 2,200 material sites + 1,000 pipelines) acres. Under Alternatives B, C, and D, the northwest portion of Northeast NPR-A is more likely to be developed. Infrastructure such as pipelines and CPFs developed in this portion of the Planning Area would also make marginal discoveries in the adjacent northeast portion of Northwest NPR-A, and offshore areas to the north of Teshekpuk Lake, more likely to be developed in the foreseeable future. This would create a greater area of soil and water disturbance than under Alternative A. Overall, the areas of soil and water impacted long term by past, present, and foreseeable future oil and gas development would be approximately 61,000 (35,000 past and present + 26,000 future) acres. Therefore, compared to the area of the North Slope, this would be a relatively small area of soils impacted (about 0.1%), even with the entire Planning Area open for development (Alternative C). If global climate change persists, the cumulative effects to water resources and water quality from oil and gas development, and non oil and gas development, on the North Slope could be greater than predicted. Because of the abundance of water resources on the North Slope, the overall cumulative impact to water resources on the North Slope and in the Planning Area would probably be small in magnitude and most impacts would be local in nature.

EFFECTS ON VEGETATION

General Effects: Non-oil and gas activities would have negligible effects on vegetation. Oil exploration would disturb vegetation on 8,126 acres from 2-D seismic work and approximately 99,870 acres from 3-D surveys, for a total of 107,996 acres disturbed. About 25% of the disturbance from 2-D or 3-D seismic trails would be medium to high, short-term impacts, with a greater percentage at that level for camp-move trails; there would be long-term impacts on about 150 acres. Construction of ice pads would occur on 906 acres during the life of the plan. Another 15,642 acres would be impacted by construction of ice roads. The construction of exploration well cellars would result in permanent, minor vegetation destruction and alteration. Development activities would cause the loss of vegetation on 3,270 acres

General Effects: Non-oil and gas activities would have negligible effects on vegetation. Impacts from seismic surveys would be the same as under Alternative A. Construction of ice pads would occur on 1,020 acres during the life of the plan. Another 18,672 acres would be impacted by construction of ice roads. Development activities would cause the loss of vegetation on 3,716 acres and the alteration of plant species composition on 10,178 acres, affecting a total of 13,894 acres. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Development impacts would affect about 0.3% of the Planning Area and would not likely adversely affect any plant species or plant communities. Overall, a greater amount of vegetation would

General Effects: Non-oil and gas activities would have negligible effects on vegetation. Impacts from seismic surveys would be the same as under other alternatives. Construction of ice pads would impact vegetation on 1,260 acres during the life of the plan. Another 21,763 acres would be impacted by construction of ice roads. Development activities would cause the loss of vegetation on 4,649 acres and the alteration of plant species composition on 13,001 acres, affecting a total of 17,650 acres. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Development impacts would affect less than 0.4% of the total Planning Area and would not likely adversely affect any plant species or plant communities.

General Effects: Non-oil and gas activities would have negligible effects on vegetation. Impacts from seismic surveys would be the same as under other alternatives. Construction of ice pads would occur on 1,158 acres during the life of the plan. Construction of ice roads would impact vegetation on 18,672 acres over the life of the plan. Development activities would cause the loss of vegetation on 4,378 acres and the alteration of plant species composition on 12,961 acres, affecting a total of 17,339 acres. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Development impacts would affect less than 0.4% of the total Planning Area and would not likely adversely affect any plant species or plant communities.

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON VEGETATION			
<p>and the alteration of plant species composition on 9,343 acres, affecting a total of 12,613 acres. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Development impacts would affect less than 0.3% of the total Planning Area and would not likely adversely affect any plant species or plant communities. Overall, impacts would be minor, provided rare plant populations were avoided through careful siting at the facilities-approval stage.</p>	<p>be impacted than under Alternative A, but impacts would still be minor, provided rare plant populations were avoided through careful siting at the facilities-approval stage.</p>	<p>Overall, a greater amount of vegetation would be impacted than under the other alternatives, but impacts would still be minor, provided rare plant populations were avoided through careful siting at the facilities-approval stage. Increased development in the area around Teshekpuk Lake could disproportionately affect wet vegetation classes.</p>	<p>Overall, a greater amount of vegetation would be impacted than under Alternatives A or B, but slightly less than under Alternative C. Impacts would be minor, provided rare plant populations were avoided through careful siting at the facilities-approval stage. Increased development in the area around Teshekpuk Lake could disproportionately affect wet vegetation classes.</p>
<p>Cumulative Effects: Approximately 2,500 acres of direct impacts and 15,000 acres of indirect impacts to vegetation from non-oil and gas activities persist across the North Slope today and will continue into the future. By 2010, oil and gas activities will have caused approximately 18342 acres of direct impacts and 60,000 acres of indirect impacts to vegetation that will persist long-term. For the most part, these impacts would be additive. However, any large oil developments that occur in the northern part of the Planning Area may make additional oil fields economically viable in the nearby portions of the Northwest NPR-A or the Beaufort Sea offshore. In this case, impacts would be synergistic in the sense that some developments would result in additional developments that might otherwise not have occurred. Although the increase in the amount of area disturbed by oil and gas development has slowed dramatically in recent years, it is estimated that an additional 1,050 acres could be covered by gravel and 210 acres impacted by gravel mines outside of the NPR-A in the next 25 years. Approximately 6,300 acres would be indirectly affected by dust, changes in hydrology, and thermokarst. A similar acreage could be impacted by oil and gas activities in the following 25 years between 2035 and 2060. Additionally, oil/gas development in the Northwest NPR-A could cause direct impacts on 4,151 acres and indirect impacts on 21,000 acres. All these impacts to vegetation are additive to the impacts to vegetation that have accumulated in the past and persist today, but in the context of the ACP and North Slope, these cumulative impacts would be small. Based on direct (33,962 acres) and indirect (132,401 acres) impacts that could still persist in 2060, combined direct and indirect impacts to vegetation from activities on the North Slope would affect approximately 1.3% of the ACP and 0.29% of the North Slope. These estimates do not take into account the quality of the vegetation that would be impacted on the North Slope. If facilities were constructed in an area containing a population of a rare plant species, the impacts to that species could be high. Five rare North Slope plant species are known to occur in the Planning Area, and other rare species are known to occur on the North Slope but have not been documented in the Planning Area. Because of the limited number of plants comprising rare plant populations on the North Slope, loss of one or more plant populations could be a significant cumulative impact to the species. Impacts from ice road construction would occur on another 15,642 to 21,763 acres, while impacts from ice pads and ice airstrips would occur on 1,126 to 1,700 acres during the life of the project; these impacts to vegetation would be short-term and would not accumulate. Long-term impacts to vegetation from seismic surveys in the Planning Area would occur on approximately 150 acres. Development in the Planning Area could directly impact approximately 3,270, 3,716, 4,649, and 4,378 acres, and indirectly impact 9,343, 10,178, 13,001, and 12,961 acres of vegetation for Alternatives A through D, respectively. These impacts would be long-term and would accumulate. Total, long-term, direct and indirect impacts to vegetation from exploration and development combined would occur on 0.3 (Alternative A) to 0.4 (Alternative C) percent of the Planning Area. Global climate change could alter the species composition, increasing deciduous shrubs, and sedges and grasses, at the expense of lichens and mosses.</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON WETLANDS AND FLOODPLAINS

<p>Non-oil and gas activities would have negligible effects on wetlands and floodplains. During exploration and development, seismic activities and construction of pads, roads and airstrips, and pipelines would cause short and long-term impacts by damaging wetlands under pads, roads, and airstrips, excavating material sites, and constructing well cellars and VSMs. Oil exploration would disturb approximately 108,000 acres of wetlands and floodplains from 2-D and 3-D seismic work on a short-term basis during a 25-year period. Long-term seismic impacts would amount to approximately 150 acres. Pipeline construction could impact approximately 1,200 acres on a short-term basis. Ice road, pad, and airstrips could have short-term impacts on approximately 16,800 acres. Construction of gravel roads, pads, airstrips, staging bases, CPFs, and gravel pits, could have direct long-term impacts on approximately 3,300 acres. Indirect long-term alteration of wetlands adjacent to roads and airstrips could amount to approximately 9,300 acres, with a total long-term impact of 12,600 acres or 0.27 % of the Planning Area. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Overall, impacts would be minor.</p>	<p>Non-oil and gas activities would have negligible effects on wetlands and floodplains. During exploration and development, seismic activities and construction of pads, roads and airstrips, and pipelines would cause short and long-term impacts by damaging wetlands under pads, roads, and airstrips, excavating material sites, and constructing well cellars and VSMs. Oil exploration would disturb approximately 108,000 acres of wetlands and floodplains from 2-D and 3-D seismic work on a short-term basis during a 25-year period. Long-term seismic impacts would amount to approximately 150 acres. Pipeline construction could impact approximately 1,250 acres on a short-term basis. Ice road, pad, and airstrips could have short-term impacts on approximately 20,000 acres. Construction of gravel roads, pads, airstrips, staging bases, CPFs, and gravel pits, could have direct long-term impacts on approximately 3,700 acres. Indirect long-term alteration of wetlands adjacent to roads and airstrips could amount to approximately 10,200 acres, with a total long-term impact of 13,900 acres or 0.30 % of the Planning Area. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Overall, Alternative B would impact more wetlands and floodplains than under Alternative A, but impacts would still be minor.</p>	<p>Non-oil and gas activities would have negligible effects on wetlands and floodplains. During exploration and development, seismic activities and construction of pads, roads and airstrips, and pipelines would cause short and long-term impacts by damaging wetlands under pads, roads, airstrips, excavating material sites, and constructing well cellars and VSMs. Oil exploration would disturb approximately 108,000 acres of wetlands and floodplains from 2-D and 3-D seismic work on a short-term basis during a 25-year period. Long-term seismic impacts would amount to approximately 150 acres. Pipeline construction could impact approximately 1,500 acres on a short-term basis. Ice road, pad, and airstrips could have short-term impacts on approximately 23,500 acres. Construction of gravel roads, pads, airstrips, staging bases, CPFs, and gravel pits, could have direct long-term impacts on approximately 4,650 acres. Indirect long-term alteration of wetlands adjacent to roads and airstrips could amount to approximately 13,000 acres, with a total long-term impact of 17,650 acres or 0.38 % of the Planning Area. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Overall, Alternative C would impact more wetlands and floodplains than all other Alternatives, but impacts would still be minor.</p>	<p>Non-oil and gas activities would have negligible effects on wetlands and floodplains. During exploration and development, seismic activities and construction of pads, roads and airstrips, and pipelines would cause short and long-term impacts by damaging wetlands under pads, roads, and airstrips, excavating material sites, and constructing well cellars and VSMs. Oil exploration would disturb approximately 108,000 acres of wetlands and floodplains from 2-D and 3-D seismic work on a short-term basis during a 25-year period. Long-term seismic impacts would amount to approximately 150 acres. Pipeline construction could impact approximately 1,450 acres on a short-term basis. Ice road, pad, and airstrips could have short-term impacts on approximately 20,200 acres. Construction of gravel roads, pads, airstrips, staging bases, CPFs, and gravel pits, could have direct long-term impacts on approximately 4,380 acres. Indirect long-term alteration of wetlands adjacent to roads and airstrips could amount to approximately 13,000 acres, with a total long-term impact of 17,380 acres or 0.38 % of the Planning Area. These impacts would be permanent if gravel pads remained after production ended, although some plant species would be able to grow on the pads. Overall, Alternative D would impact more wetlands and floodplains than Alternatives A and B and slightly less than Alternative C, but impacts would still be minor.</p>
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Cumulative Effects: Past and Present: Approximately 2,500 acres of direct impacts to wetlands and floodplains from non-oil and gas activities (1,800 acres community footprint + 700 acres DEW line sites) persist today on the North Slope. Oil and gas activities have caused approximately 17,500 acres of direct impacts and another 17,500 acres of indirect impacts, some of which persist today. Therefore, a total of approximately 37,500 acres of wetlands on the North Slope still show impacts from all past activities. These impacts are additive to future impacts and are likely to persist for several decades or more.

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON WETLANDS AND FLOODPLAINS

Future: Assuming community infrastructure and footprint grow at roughly the same pace as population, there would be approximately 1,800 additional acres of community footprint by the time population may level off in the 2040s. Therefore the total long term cumulative impact to wetlands and floodplains on the North Slope from non oil and gas activities (past, present, and foreseeable future) would be approximately 4,300 (2,500 past + 1,800 future) acres. Impacts to wetlands from future oil and gas development on the North Slope include exploration activities and construction of gravel pads, gravel roads, gravel airstrips, gravel staging areas, excavation of material sites, oil pipelines, and possible gas pipelines (both to market outside the North Slope and within the North Slope). The duration of the impacts would range from short term (< 1 to 5 years) if the wetland was lightly disturbed or up to several decades or longer if the wetland was covered by gravel, impoundments, removed, or permafrost was thawed creating thermokarst. Impacts associated with exploration and development activities in the Planning Area would be additive with impacts from activities in other portions of the National Petroleum Reserve – Alaska and across the North Slope. The total area of long term impacts to wetlands from future development would be approximately 26,000 (22,400 gravel footprint + 2,200 material sites + 1,000 pipelines) acres. Under Alternatives B, C, and D, the northwest portion of Northeast NPR-A is more likely to be developed. Infrastructure such as pipelines and CPFs developed in this portion of the Planning Area would also make marginal discoveries in the adjacent northeast portion of Northwest NPR-A, and offshore areas to the north of Teshekpuk Lake, more likely to be developed in the foreseeable future. This would create a greater area of wetland disturbance than under Alternative A. Overall, the area of wetlands impacted long term by past, present, and foreseeable future oil and gas development would be approximately 61,000 (35,000 past and present + 26,000 future) acres. Compared to the area of the North Slope, impacts would be a relatively small area of wetlands impacted (about 0.1%), even with the entire Planning Area open for development (Alternative C). If global climate change persists, the cumulative effects to wetland from oil and gas development, and non oil and gas development, on the North Slope could be greater than predicted. Some wetlands would be restored as sites are abandoned and reclaimed. However, due to the harsh Arctic climate, it could take several hundred years for wetland productivity to reach pre-disturbance levels on abandoned pads and roads.

EFFECTS ON FISH

General Effects: A small number of individual fish could be injured or killed, but it is unlikely that there would be a measurable effect on Arctic fish populations. The activities most likely to impact fish are water withdrawals and seismic operations, particularly if airgun arrays are utilized. Stipulations would limit water withdrawals, protect overwintering habitats, and offer other protections to fish. In the absence of numerous large oil spills or a very large oil spill, overall effects should be minor.

General Effects: Fish in Teshekpuk Lake and other deepwater lakes and streams in the area would have a greater potential to be impacted by spills and habitat degradation than under the No Action Alternative. However, stipulations and ROPs would limit winter activities, protect overwintering habitats, and offer other protections to fish. In the absence of numerous large oil spills or a very large oil spill, overall effects should be minor.

General Effects: Fish in Teshekpuk Lake and other deepwater lakes and streams in the area would have a greater potential to be impacted by spills and habitat degradation than under the other alternatives. Stipulations and ROPs would limit winter activities, protect over-wintering habitats, and offer other protections to fish. In the absence of numerous large oil spills or a very large oil spill, overall effects should be minor.

General Effects: Fish in deepwater lakes and streams in the area would have a greater potential to be impacted by spills and habitat degradation than under the No Action Alternative and Alternative B, but less potential than under Alternatives C. Additional protection would be provided by not making Teshekpuk Lake available for oil and gas leasing, and restricting permanent surface occupancy and amount of surface disturbance in portions of the Goose Molting Area and caribou protection areas to the north, northeast, and east of the lake. Stipulations and ROPs would limit winter activities, protect over wintering habitats, and offer other protections to fish. Overall, effects should be minor.

Cumulative Effects: Non-oil and gas activities, including scientific and recreational camps, village development, and subsistence have impacted fish and their habitat, but these

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON FISH

effects have been minor and likely do not persist today. The energy produced by vibration equipment used to acquire seismic data is below the threshold known to affect fish. Results of a recent study that exposed fish to Vibroseis noise observed no mortalities and found no indication of physiological damage. Acute mortality from acoustic energy may be a problem primarily associated with explosive-based sources, a method that has not been used in recent years in the Alaskan Arctic. Approximately 2,500 acres of direct impacts to uplands and wetlands from non-oil and gas activities persist today. Oil and gas activities have caused approximately 12,000 acres of direct impacts to uplands and wetlands that persist today; another 18,000 acres of indirect impacts may have also occurred, some of which persist today and affect water bodies. Although the amount of fish habitat that has been lost is not known, fish-bearing waters often exist in the complex of interconnected streams and lakes associated with wetlands on the Arctic coastal plain. During the early years of development, gravel mining for roads and pads often interrupted both ice sheet flow and stream flows, and hence fish movement. The permitting process and the regulatory environment for protecting fish have improved over time and are generally effective. Proper construction and placement of bridges and culverts have greatly reduced effects, but have not eliminated them; these remaining effects have accumulated. While historical water withdrawal practices harmed or killed fish, recent regulations and practices have significantly improved. Studies over the last few years have documented water level recharge and no detectable changes in water quality under current water withdrawal limitations. Synergistic impacts to fish from disturbance related to oil and gas production under any of the alternatives in this Supplement are not anticipated. Beneficial effects related to material extraction at gravel sites would be possible in certain situations. Past reclamation of deep pits that have been mined has proved beneficial when new habitat for Arctic fish species has been established. If oil and gas activities occurred in areas with high fish populations, or populations of sensitive or important subsistence species, impacts to fish could be greater than impacts predicted based on the amount of area impacted. If global climate change persists, the effects to fish could be much greater than predicted; although, some species are expected to benefit from global climate change.

EFFECTS ON BIRDS

<p>General Effects: Effects from non-oil and gas activities are likely to be minor for most bird populations. Elevated activity and air traffic near large seasonal camps could result in minor impacts on local populations. Population level effects should be minor, except in the case of species that are uncommon, decreasing, or recently declined, where impacts could be greater. Effects from oil and gas leasing and development activities are likely to be minor for most bird populations. Routine summer air traffic, especially over higher bird density areas, would likely result in minor impacts. Development activities would cause the loss of 3,270 acres of habitat and the alteration of 9,343 acres of habitat, impacting a total of 12,613 acres of bird habitat, along with associated disturbance (by personnel, vehicles, air craft, etc), nesting, brood-rearing, staging and molting birds may be displaced but would likely not result in population effects due to the closure to oil and gas leasing areas with very high densities of birds. Raptors nesting along major rivers would experience minor effects from</p>	<p>General Effects: Effects from non-oil and gas activities are likely to be minor for most bird populations. Elevated activity and air traffic near large seasonal camps could result in minor impacts on local populations. Population level effects should be minor, except in the case of species that are uncommon, decreasing, or recently declined, where impacts could increase. Effects from oil and gas leasing and development activities to birds would be greater in extent and magnitude than under Alternative A because an area of high bird use in the Teshekpuk Lake Special Area would be available for leasing. Development activities would cause the loss of habitat on 3,716 acres and the alteration of habitat on 10,178 acres of habitat, impacting a total of 13,894 acres of bird habitat, combined with associated disturbance (by personnel, vehicles, air craft, etc), nesting, brood-rearing, staging and molting birds may be displaced and,</p>	<p>General Effects: Effects from non-oil and gas activities are likely to be minor for most bird populations. Elevated activity and air traffic near large seasonal camps could result in minor impacts on local populations. Population level effects should be minor, except in the case of species that are uncommon, decreasing, or recently declined, where impacts could increase. Effects from oil and gas leasing and development activities would be greatest under this alternative because the amount of area of high bird use in the Teshekpuk Lake Special Area available for leasing would be greatest, and because the projected level of development is highest under this alternative. Development activities would cause the loss of vegetation on 4,649 acres and the alteration of plant species composition on 13,001 acres, impacting a total of 17,650 acres of bird habitat, combined with associated disturbance (by</p>	<p>General Effects: Effects from non-oil and gas activities are likely to be minor for most bird populations. Elevated activity and air traffic near large seasonal camps could result in minor impacts on local populations. Population level effects should be minor, except in the case of species that are uncommon, decreasing, or recently declined, where impacts could increase. Effects from oil and gas leasing and development activities would be higher than under Alternative A, but less than for the other two alternatives. Under this alternative, Teshekpuk Lake would not be made available for oil and gas leasing, providing protection to birds that use this lake. In addition, protection of habitat associated with the Goose Molting Area (Lease Stipulation K-4) and restrictions on the amount of area that can be disturbed within seven lease tracts associated with the Goose Molting Area, and Restricted Surface Occupancy restrictions associated with caribou habitat areas to the east and southeast of the lake, would provide protection on an additional 324,000 acres (although much of this</p>
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Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON BIRDS			
<p>disturbance associated with human activities. Effects from crude oil spills, when confined to terrestrial and freshwater aquatic habitats, would be minor for most species, but could be greater for rare species or those with declining populations. If a spill were to enter a river delta offshore or near shore marine habitats occupied by substantial numbers of birds, minor to moderate effects would be likely for stable/increasing and declining populations, respectively. Stipulations and ROPs are designed to help mitigate effects to birds; overall, impacts would be to individual birds and except in the cases like that stated above, be unlikely to have population level effects.</p>	<p>in the case of a large spill in habitats supporting large numbers of individuals, have the potential to cause population level effects to some species, such as brant, that depend on the Planning Area for molting. Stipulations and ROPs are designed to help mitigate effects to birds; overall, impacts would be to individual birds and except in the cases like that stated above, be unlikely to have population level effects.</p>	<p>personnel, vehicles, air craft, etc), nesting, brood-rearing, staging and molting birds may be displaced and, in the case of a large spill in habitats supporting large numbers of individuals, have the potential to cause population level effects to some species, such as brant, that depend on the Planning Area for molting. Stipulations and ROPs are designed to help mitigate effects to birds; overall, impacts would be to individual birds and except in the cases like that stated above, be unlikely to have population level effects.</p>	<p>area would be closed to leasing under Alternative B). Development activities would cause the loss of vegetation on 4,378 acres and the alteration of plant species composition on 12,961 acres, impacting a total of 17,339 acres of bird habitat, combined with associated disturbance (by personnel, vehicles, air craft, etc), nesting, brood-rearing, staging and molting birds may be displaced and, in the case of a large spill in habitats supporting large numbers of individuals, have the potential to cause population level effects to some species, such as brant, that depend on the Planning Area for molting. Stipulations and ROPs are designed to help mitigate effects to birds; overall, impacts would be to individual birds and except in the cases like that stated above, be unlikely to have population level effects.</p>
<p>Cumulative Effects: Impacts to habitat and disturbance related impacts to birds on the North Slope from future oil and gas exploration and development are expected to be additive with respect to impacts from other past, present, and future non-oil and gas activities, from past and present oil and gas activities, and from impacts sustained along migratory routes, and in wintering areas. The effects of global climate change are difficult to predict, but changes in habitat structure associated with climate change would likely have a cumulative impact on bird populations. The impacts in the Planning Area would increase the total amount of bird habitat and disturbance related impacts by all oil and gas development, and would be additive in nature for the most part. However, depending on oil prices and where and how much oil is ultimately developed in the Planning Area, there could be synergistic effects on acreage of bird habitat and associated disturbance that would take place in the Northwest NPR-A. This would occur if a large discovery in the northwest part of the Planning Area would make economic the development of an oil field in the northeast part of Northwest NPR-A which would not otherwise have been economically developable. This potential scenario is least likely under Alternative A because less acreage in the northwest portion of the Planning Area would be made available to leasing under this than the other three alternatives. Synergism could similarly result if development north of Teshekpuk Lake resulted in offshore development being more economically feasible. Such offshore development would likely result in additional impacts to bird from developments built onshore in support of the activities offshore and from interactions of birds with off shore developments including collisions and oiling. This would most likely affect the northern portion of the Planning Area or the Beaufort Sea coastal portions of the Northwest NPR-A. This scenario is unlikely under Alternative A, because very little coastal area in the Planning Area would be available for lease and even less for surface development. It would be most likely under Alternative C, somewhat less under Alternative D because of development constraints, and less yet under Alternative B because of lands unavailable for lease.</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON TERRESTRIAL MAMMALS			
<p>General Effects: Non-oil and gas activities, seismic work, drilling of exploration wells, and spills would have minor effects on terrestrial mammal populations. Most effects on mammals of oil and gas development activities would be localized and short term, and would not occur at the population level. Some TLH caribou would likely be disturbed and their movements delayed along an elevated pipeline to the Kuparuk oil field during periods of air traffic and construction. Near the oil fields, surface, air, and foot traffic is expected to displace some terrestrial mammals. If field development occurred in critical TLH insect-relief areas, movements of caribou from coastal insect-relief areas to foraging areas could be adversely affected which could result in reduced productivity and ultimately a population level effect. Extensive development could result in the loss of some insect-relief habitat for TLH caribou. Crude oil and fuel spills are expected to result in the loss of small numbers of some terrestrial mammal species. Overall, impacts to terrestrial mammals from oil and gas activities would be expected to be mostly minor and local. This may not be the case for TLH caribou, however, which could experience some population level effects.</p>	<p>General Effects Non-oil and gas activities, seismic work, drilling of exploration wells, and spills would have minor effects on terrestrial mammal populations. Effects of oil and gas development activities would occur over more of the Planning Area than under Alternative A, and a greater number of animals would potentially be disturbed. Impacts to terrestrial mammals in the vicinity of Teshekpuk Lake would be greater than under Alternative A, particularly with respect to caribou calving and insect-relief habitat. Approximately 213,000 acres would be closed to leasing north/northeast of Teshekpuk Lake, but this represents only a portion of the area important to caribou for calving and insect-relief. Also, an important caribou migration corridor to the east of Teshekpuk Lake would not be given protection. Lease stipulations and ROPs would help minimize impacts to terrestrial mammals. Overall, a greater amount of mammal habitat would be affected and more animals would be disturbed than under Alternative A. These increases would still be unlikely to reach a population level effect for species other than caribou. TLH caribou would be at greater risk of a population level effect under Alternative B than under Alternative A.</p>	<p>General Effects: Non-oil and gas activities, seismic work, drilling of exploration wells, and spills would have minor effects on terrestrial mammal populations. Effects of oil and gas development activities would occur over all of the Planning Area, more than under any other alternative, and a greater number of animals and a greater area of habitat would potentially be disturbed. Impacts to terrestrial mammals in the vicinity of Teshekpuk Lake would be greater than under the other alternatives, particularly with respect to caribou calving and insect-relief habitat. Lease stipulations and ROPs would help minimize impacts to terrestrial mammals. Overall, a greater amount of mammal habitat would be affected and more animals would be disturbed than under any of the other alternatives. These increases would still be unlikely to reach a population level effect for species other than caribou. Compared to the other three alternatives, TLH caribou would be at greatest risk of a population level effect under Alternative C.</p>	<p>General Effects: Non-oil and gas activities, seismic work, drilling of exploration wells, and spills would have minor effects on terrestrial mammal populations. Effects of oil and gas development activities would occur over more of the Planning Area than under Alternative A or B, but effects to caribou habitat would be less than for Alternative C due to additional restrictions on surface occupancy. Limits on the amount of disturbance that could occur in the seven lease tracts associated with the Goose Molting Area, and surface occupancy restrictions in the Caribou Movement Corridor and Southern Caribou Calving Area, would provide protections to caribou and other mammals. Impacts to terrestrial mammals in the vicinity of Teshekpuk Lake, particularly with respect to caribou calving and insect-relief habitat, would be greater than under Alternative A, probably greater than Alternative B (depends on where oil is ultimately discovered and developed) and less than Alternative C. Lease stipulations and ROPs would help minimize impacts to terrestrial mammals. Overall, a greater amount of mammal habitat would be affected and more animals would be disturbed than under Alternative A and probably Alternative B, but less than Alternative C. These levels of impacts would be unlikely to reach a population level effect for species other than caribou. Compared to the other three alternatives, TLH caribou would be at greater risk of a population level effect than under Alternative A and perhaps B, but less than under Alternative C.</p>
<p>Cumulative Effects: Approximately 2,500 acres of habitat have been directly impacted by non-oil and gas development, and these impacts continue to persist. Oil and gas activities have caused an additional habitat loss or alteration of over 18,000 acres, and these impacts persist today. Since most of the impacts to habitat are associated with ongoing residential and non-oil and gas commercial development, or oil and gas activities, these impacts to habitat are additive to future impacts and would be likely to persist for several decades or more in the absence of an active reclamation program. Oil and gas development has altered the distribution of female caribou during the calving season and interfered with caribou movements between inland feeding areas</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON TERRESTRIAL MAMMALS

and coastal insect-relief areas. Female caribou may also experience lower parturition rates when in close proximity to oil field development. It has also been suggested that declines in CAH caribou productivity in the early 1990s may have been the result of additive effects of oil field development and high insect activity, although populations of TLH, CAH, and WAH caribou have steadily increased from the mid-1970s to the early 2000s. Thus, disturbance of caribou due to oil field development may adversely affect caribou, but these effects may not be readily apparent based on population trends. Other mammal populations (e.g., fox and grizzly bear) have been little affected, or may even have benefited from development on the North Slope. Subsistence and sport hunting pressures have likely increased from historic levels due to increases in human populations and better access to the North Slope. Still, based on subsistence harvest surveys, subsistence harvest of mammals was relatively stable during the 1980s and early 1990s. Based on population trends of game mammals on the North Slope, hunting does not appear to be adversely affecting mammal populations. Development in the Planning Area could directly impact approximately 3,270, 3,716, 4,649, and 4,378 acres, and indirectly impact 9,343, 10,178, 13,001, and 12,961 acres of mammal habitat for Alternatives A through D, respectively. These habitat losses would account for 3 – 14% of the habitat projected to be lost due to development on the North Slope during the next 50 years. Given that the area most likely to be developed under the action alternatives is located north and northeast of Teshekpuk Lake, an area that provides critical habitat for TLH caribou, impacts to caribou, and perhaps other mammals, and their habitats could be much greater than predicted based solely on the amount of area disturbed. As shown on maps 3-23 to 3-25, the areas to the north, northeast, and east of Teshekpuk Lake and along the coastline provide important caribou calving and insect-relief habitat. Because of the importance of these areas, Lease Stipulations K-9 and K-10 were developed for Alternative D to provide special RSO protection to caribou habitat. Lease Stipulation K-11 would limit development in the Goose Molting Area (which includes important caribou habitat) to the north of the lake. Still, caribou and other wildlife would be exposed to oil and gas disturbance in their calving, summer, and potentially winter, ranges. Depending on the types and locations of facilities, impacts to caribou and other mammals could accumulate, especially where species are concentrated, and could affect the long-term health of local populations (at least in the case of caribou). Offshore development associated with leases in the Beaufort Sea could impact small areas along the coast as a result of staging and storage of materials, but this development is unlikely to impact large areas of habitat. Development in the northwestern portion of the Planning Area could stimulate development in the northeastern portion of Northwest NPR-A above and beyond what might otherwise occur. This could represent a synergistic effect, in terms of caribou insect-relief habitat, of development in the Planning Area. Cumulative effects on caribou distribution and abundance are likely to be long term, lasting as long as the life of the oil fields. Any reduction in calving and summer habitat use by cows and calves as a result of future onshore leasing would represent a functional loss of habitat that accumulates and could result in long-term effects on the caribou herds' productivity and abundance. If global climate change over the next several decades were to result in widespread changes in vegetation and insect abundance, other effects to terrestrial mammals could be exacerbated (additively) and extend beyond the life of the oil fields. If these cumulative effects were to result in reductions in caribou populations, there could also be a reduction in the abundance of predators such as wolves, bears, and wolverines.

EFFECTS ON MARINE MAMMALS

<p>General Effects: Effects from non-oil and gas activities would be short-term and localized. Offshore oil exploration and subsequent development in Harrison Bay could occur within a small area south of Atigaru Point. This could have effects on seals. Seismic surveys near the coast could disturb denning polar bears, but relatively few would be affected. Noise associated with support aircraft could disturb marine mammals and temporarily displace them from preferred resting</p>	<p>General Effects: Because there would likely be more development under this alternative, there would be a greater potential for disturbance to marine mammals from aircraft, overland traffic, and barge traffic. Effects would be localized and short term, and would not substantially affect marine mammal populations. The potential effects of an oil spill would be similar to those under the No Action Alternative, although the likelihood of a spill would be greater.</p>	<p>General Effects: It is expected that there would be greater disturbance potential to marine mammals under Alternative C than under the other alternatives. The larger area opened for development is expected to translate into greater aircraft and vessel traffic than under other alternatives. Effects should be localized and short term, and would not cause significant impacts to marine mammal populations. Stipulation K-6 would minimize the potential for oil development near</p>	<p>General Effects: There would likely be more disturbance to marine mammals under this alternative than under Alternative A, less than would occur under the Alternative C, and generally similar to Alternative B. No alternative is expected to physically impact habitat; therefore potential impacts are expected to come primarily from vehicle disturbance. The estimated difference in barge traffic is about 20% more under Alternative D than A; 20% less than Alternative D and</p>
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Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON MARINE MAMMALS			
<p>and feeding locations. Summer air traffic could disturb ringed, bearded, and spotted seals hauled out on ice or beaches. A small number of ringed seals, spotted seals, or beluga whales could be adversely affected by oil spills reaching Fish Creek, Judy Creek, the Kogru River, the Colville River, or drainages that empty into the Colville River. Losses would be small and would not substantially impact marine mammal populations.</p>	<p>Stipulation K-6 would minimize the potential for oil development near the coast to impact ringed seals, spotted seals, and beluga whales. Physical habitat changes are not expected. Increased barge traffic would increase the potential to affect grey whales and other animals generally restricted to marine waters. Largely due to the expected increase in aircraft and barge traffic, as well as traffic patterns, Alternative B has a greater likelihood of impacting marine mammals than Alternative A, but less than Alternative C. The potential for impacts is relatively similar between Alternative B and D.</p>	<p>the coast to impact ringed seals, spotted seals, and beluga whales.</p>	<p>generally equal between Alternative D and B. Aircraft traffic over marine waters is more likely under Alternatives B, C, and D than under Alternative A because some portion of the area north of Teshekpuk Lake is open. Alternative C would likely result in more traffic over marine waters than B or D, and Alternative D may have slightly more traffic than Alternative B because more area is accessible to development. Effects should be localized and short term, and would not cause major impacts to marine mammal populations. Stipulation K-6 would minimize the potential for oil development near the coast to impact ringed seals, spotted seals, and beluga whales.</p>
<p>Cumulative Effects Industrial activity in marine waters of the Beaufort Sea has been limited and sporadic and has likely not caused substantial cumulative effects on marine mammal populations. However, noise and other disturbances may have displaced whales from preferred habitats in the past; although, these effects are difficult to quantify and to determine if they accumulate. In addition to noise and disturbance from existing oil development, seals, walrus, and beluga and gray whales could be affected by future offshore development in the Beaufort and Chukchi Seas. In addition, marine mammals wintering in the northern Bering Sea could be affected by disturbance from commercial fishing activities. Subsistence hunting of marine mammals by Alaska Natives is not likely to affect marine mammals at the population level. Disturbance could result in temporary displacement from preferred feeding habitats, and some animals could be shot by fishermen. An oil spill could affect marine mammals in offshore or coastal areas, with the impacts to marine mammals depending on the location and amount of oil spilled and the time of year. The effects of future habitat alteration associated with gravel island construction, platforms, or other structures related to oil development would likely be minor. The presence of small amounts of hazardous materials, including hydrocarbons and insecticides, would likely have minor effects on marine mammals. The effects of global climate change on marine mammals are unclear and will affect species differently. While a reduction in the extent of Arctic ice coverage would likely have a dramatic negative impact on ice-dependent seal populations, an increase in the amount of sea ice edge resulting from global warming may be beneficial to whales. North Slope fisheries are small and likely have only a minor impact on marine mammal populations. Impacts to marine mammals from development in the Planning Area would generally be similar under the four proposed alternatives. The increased development scenarios of alternatives B, C and D would contribute additional barge and aircraft traffic impacts and would require a greater number of coastal staging areas than the development scenario under the Alternative A. Alternative C may result in 40% more barge traffic than Alternative A and is expected to require the greatest amount of over-water air traffic; however the relative incremental addition of Alternative C is not substantially different than the other alternatives when viewed cumulatively. If additional staging areas along the Northeast National Petroleum Reserve – Alaska coast led to increased offshore exploration and development activities, the potential for cumulative impacts to marine mammals by noise or other activities would increase.</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON ENDANGERED AND THREATENED SPECIES			
<p>General Effects: Most oil and gas activities would be unlikely to disturb bowhead whales, except vessel traffic under exceptional circumstances. No bowhead habitat alteration is expected. Spectacled and Steller’s eiders could be directly impacted by activities occurring during the summer breeding season, which would primarily be associated with development and production. Vehicle, aircraft, pedestrian, and boat traffic; maintenance activities; heavy equipment use; and spill cleanup activities could all result in temporary displacement of eiders from preferred habitats, decreased nest attendance or nest abandonment; and increased energy expenditures. Gravel mining and placement associated with development could result in permanent habitat loss on up to 3,270 acres. Eider mortality could result from collisions with vehicles and structures associated with oil and gas development. Effects from oil spills would be minor when confined to terrestrial and freshwater aquatic habitats, where eider mortality should be relatively low. Minor to moderate effects would be likely for eider populations if a spill were to enter a river delta or nearshore marine habitat when substantial numbers of brood-rearing, staging, or migrating individuals were present. Stipulations would decrease disturbance and help prevent fuel and oil pollution and degradation of important bird habitats. Seismic surveys and other exploration activities may result in disturbance and abandonment of polar bear dens. Some polar bears could be attracted to oil field camps and development and killed in defense of life or property, but such occurrences would be very rare. Lease stipulations (#75</p>	<p>General Effects: Oil and gas activities would affect a larger portion of the Planning Area, and therefore more animals, than under the Alternative A although types of impacts would be the same. Bowhead whales would still be unlikely to be impacted although an increase in shipping and aircraft traffic would be expected. Gravel mining and placement associated with development could result in permanent eider habitat loss on 3,716 acres, approximately 14% more than Alternative A. Portions of high eider use in the Teshekpuk Lake Special Area would be available for leasing under this alternative, so the likelihood for disturbance to eiders and the number of eiders affected would be greater. Lease Stipulations and Required Operating Procedures (ROP E-11 particularly) would decrease disturbance from most factors for threatened eiders and help prevent fuel and oil pollution and degradation of important bird habitats. Seismic surveys and other exploration activities may result in disturbance and abandonment of polar bear dens. Some polar bears could be attracted to oil field camps and development and killed in defense of life or property, but such occurrences would be very rare. Although the level of seismic exploration is expected to be similar under all alternatives, the greater level of exploration and development anticipated under this alternative</p>	<p>General Effects: Oil and gas activities could affect a larger portion of the Planning Area than under the other alternatives. Although Alternative C is expected to result in more aircraft and shipping traffic than Alternative A or B, the difference between impacts to Bowhead whales would likely not be measurable although short-term displacements may occur. Gravel mining and placement associated with development could result in permanent eider habitat loss on 4,649 acres, approximately 42% more than Alternative A and 25% more than Alternative B. In addition, a larger amount of the areas of high eider use in the Teshekpuk Lake Special Area would be available for leasing under this alternative, so the likelihood for disturbance to eiders and the number of eiders affected would be greatest under this alternative. Lease Stipulations and Required Operating Procedures (ROP E-11 particularly) would decrease disturbance from most factors for threatened eiders and help prevent fuel and oil pollution and degradation of important bird habitats. Similar types of impacts may occur under this Alternative as under the others; however the relatively greater amount of area open for development increases the potential for impacts to occur.</p>	<p>General Effects: Oil and gas activities would affect a similar proportion of the Planning Area as under Alternative B, but may result in different distribution. The potential impacts to bowhead whales would generally be similar to those expected under Alternative B, but less than Alternative C and more than under Alternative A, although it is unlikely that any alternative would result in measurable impacts. Short-term behavioral changes and displacements would be greater under Alternative D than A, slightly greater or equal to Alternative B; and less than expected for Alternative D. Gravel mining and placement associated with development could result 4,378 acres, approximately 34% more than Alternative A; 18% more than Alternative B; and 6% less than Alternative D. Stipulations K-4 (Goose Molting Area) and K-11 (Lease Tracts Area) would limit or prohibit permanent surface facilities (excluding pipelines in some areas) in areas to the north and northeast of Teshekpuk Lake, high density areas for eiders (see maps 3-32 and 3-33). Other stipulations and ROPs would decrease disturbance from most factors for threatened eiders and help prevent fuel and oil pollution and degradation of important bird habitats. The potential impacts to polar bears would be similar as under the other alternatives, although the potential for impacts to occur would be higher than under Alternative A and lower than Alternative C based on the differences in areas open and activity amounts. Impact potential would be similar to Alternative B, but possibly higher because of the greater amount of area available for leasing.</p>

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON ENDANGERED AND THREATENED SPECIES			
<p>particularly) would reduce the potential for disturbance effects and food attractants.</p>	<p>the potential for these impacts to occur is somewhat higher under this Alternative than Alternative B but still expected to be minimal because of MMPA provisions and the Lease stipulations and ROPs (C-1 particularly) which should reduce the potential for disturbance effects and food attractants.</p>		
<p>Cumulative Effects: Hunting and disturbance are the two primary factors that have impacted bowhead whales in the past and have accumulated, although these effects have apparently not significantly altered population growth potential. Noise and disturbance associated with offshore seismic and drilling activities, and boat and barge traffic have effected whales, although their long-term effects, and likelihood of having cumulative impacts to whales, are unknown. A few whales could experience sublethal or lethal effects from entanglement in fishing gear or collisions with ships. Most activities related to oil and gas development onshore on the North Slope and in the Planning Area would not impact bowhead whales. There would be an increase in barge traffic that would contribute to cumulative impacts to bowhead whales from underwater noise and the presence of boat traffic. Bowhead whales could display a cumulative response to activities that produce underwater noise by increasing their distance from such sources by temporarily diverting their route of travel or by temporarily changing their behavior. In general, these impacts would be minor and short term. Should development of the Planning Area stimulate greater interest in oil and gas activity offshore, these impacts could increase proportionally. Bowhead whales that come into contact with freshly-spilled oil could suffer temporary, non-lethal effects, and a few whales could suffer lethal effects. Bowhead whales could also be displaced by oil spill clean-up activities. Cumulative effects are likely to have only a minor impact on the bowhead whale population. Impacts to bowhead whales from development in the Planning Area would generally be similar to that discussed for marine mammals. The increased development scenarios of alternatives B, C and D would contribute additional barge and aircraft traffic impacts and would require a greater number of coastal staging areas than the development scenario under Alternative A. If additional staging areas along the Northeast National Petroleum Reserve – Alaska coast led to increased offshore exploration and development activities, the potential for cumulative impacts to bowhead whales by noise or other activities would increase but not beyond the expected level analyzed in the OCS leasing documents. Should boat and barge traffic along the Beaufort Sea coast increase as a result of offshore leases and development in the National Petroleum Reserve – Alaska, deflection of the bowhead whale migration could occur. It is unlikely that such deflection would have high impacts on individual bowhead whales or the whale population.</p> <p>Approximately 2,500 acres have been disturbed from non-oil and gas development on the North Slope. Although not all of this area would have been used by eiders, much of it has occurred along the coastline and near Barrow, areas where spectacled and Steller’s eiders are often seen (see maps 3-32 and 3-33). Oil and gas activities have directly impacted approximately 13,000 acres of bird habitat, and indirectly impacted additional acres of tundra. Habitat loss and disturbance can add incrementally to the impacts of development on eiders. The cumulative effects from typical activities associated with exploration and development of oil and gas prospects in the Planning Area, lands to the west, and adjacent marine areas, could include small declines in local nesting or loss of small numbers of spectacled eiders, and potentially Steller’s eiders, through effects on survival and productivity, predation pressure enhanced by human activities, and collisions with structures. Development in the Planning Area would directly and indirectly impact 3,270, 3,716, 4,649, and 4,378 acres of potential eider habitat for Alternatives A through D, respectively.</p> <p>The total current and expected acres of tundra conversion to gravel relative to the total amount of area covered by the ACP Eider survey is minimal; the contribution of Alternative A through D to the total expected cumulative tundra impacts ranges from 9.8% to 13.3%, but the total acres of tundra impacted remain less than 1% of the tundra within the northern range of the eiders. Direct habitat impact estimates without location information of development and eiders suggest that cumulative habitat impacts would be very minor and that there is little or no real difference in the incremental contribution of each alternative. Because they each open areas north of Teshekpuk Lake cumulative impact under Alternatives B, D, and C would increase in that order. Facilitation of development in Northwest NPR-A could increase the total impact, but the assessment of acres impacted above and for each alternative includes the Northwest NPR-A development at its full potential.</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON CULTURAL RESOURCES			
<p>General Effects: Impacts from non-oil and gas activities would be minimal. There is a very low risk that cultural resources would be encountered and damaged during seismic surveys, ground-disturbing activities, excavation of materials, or oil spills associated with oil and gas development. Potential impacts would be minor, as surveys would be conducted prior to all ground-disturbing activities.</p>	<p>General Effects: The likelihood that cultural resources would be encountered during surface disturbing activities could be slightly more than 10 % greater than under Alternative A because there would be more development and a greater portion of the Planning Area would be open to leasing. Overall, potential impacts to cultural resources would likely still be minor because surveys would be conducted prior to all ground-disturbing activities. In addition, stipulations that provide setbacks from lakes, streams, and rivers would help prevent impacts because there concentrations of cultural resources are common in these areas.</p>	<p>General Effects: The likelihood that cultural resources would be encountered during surface disturbing activities would be greater than under the other alternatives (A-30%; B-20%; D-5%) because there would be more development and a greater portion of the Planning Area would be open to leasing. Overall, it is likely that potential impacts to cultural resources would still be minor because surveys would be conducted prior to all ground-disturbing activities. In addition, stipulations that provide setbacks from lakes, streams, and rivers would help prevent impacts because concentrations of cultural resources are common in these areas.</p>	<p>General Effects: The likelihood that cultural resources would be encountered during surface disturbing activities would be about 25% greater than under Alternative A, 15% greater than Alternative B, and 5% less than Alternative C due to differences in the portions of the Planning Area would be open to leasing. Overall, it is likely that potential impacts to cultural resources would remain minor because surveys would be conducted prior to all ground-disturbing activities. In addition, stipulations that provide setbacks from lakes, streams, and rivers would help prevent impacts because concentrations of cultural resources are common in these areas.</p>
<p>Cumulative Effects: Cultural resources are nonrenewable, and displacement or contamination of cultural resources could affect the cultural and scientific values of the resource. The cumulative effects of oil and gas exploration and development within the Planning Area and across the North Slope are difficult to estimate given the scattered nature of cultural resource deposits, their surface or near-surface contexts, and difficulty in predicting their location. As long as surveys and inventories were completed prior to exploration and development, the effects on cultural resources would be minimized. The accidental discovery or damage to sites, presently known or unknown, would to some extent damage those sites, but would also require measures to recover or record the remaining material, adding that information to the archaeological record of the North Slope. In this case, Alternative A would contribute the least toward cumulative impacts with the potential to directly and indirectly generate adverse affects on terrestrial cultural resources on the North Slope. Alternatives B, C and D have a greater potential for creating cumulative impacts because all of those Alternatives allow more area of high oil and gas probability to be leased (submerged off-shore cultural resources, if present, would generally not be threatened by off-shore oil and gas exploration/development activities). Federal and state regulation and management policies require agencies, or their permittees, to complete a cultural resources survey before any undertaking occurs (i.e., a ground-disturbing activity, such as well drilling, construction of infrastructure or the construction of buried pipelines) not only on state and Federal lands but on lands that may be affected by the issuance of a federal permit. The BLM's guidelines and policies require that all effects to any cultural resources identified during surveys must be mitigated to the satisfaction of the land manager and the SHPO. Lease stipulations and ROPs developed for the action alternatives would minimize or prohibit exploration and development activities near major rivers, reducing the likelihood of impacts to cultural resources.</p>			
EFFECTS ON SUBSISTENCE-HARVEST PATTERNS			
<p>General Effects: Non-oil and gas activities would have limited effects on subsistence resources, though short-term, localized disturbances to subsistence species and harvest patterns could occur. Subsistence species, such as some caribou, muskox, or moose, may be displaced</p>	<p>General Effects: Effects would be greater in magnitude, extent, and duration than those occurring under the No Action Alternative, as an additional 387,000 acres would be open to oil and gas development. Stipulations would help to minimize the effects on subsistence species</p>	<p>General Effects: Effects would be greater in magnitude, extent, and duration than those occurring under the other alternatives. Additional areas available for leasing under this alternative, which would be closed under the other alternatives, are important caribou harvest areas and</p>	<p>General Effects: Effects would be greater in magnitude, extent, and duration than those occurring under the No Action Alternative, similar to those effects occurring under Alternative B, and much less than those effects occurring under Alternative C. Limits on the amount of disturbance that could occur in the seven</p>

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON SUBSISTENCE-HARVEST PATTERNS			
<p>from areas of oil and gas activity, resulting in long-term localized effects. Fish could also be killed, potentially affecting harvests in localized areas for one to several years. With the movement of subsistence species away from areas of development, they could become more difficult to locate and harvest by hunters. Nuiqsut hunters, in particular, would be affected by the movement of caribou, as development would proceed west from the Nuiqsut vicinity. Waterfowl might also avoid traditional harvest locations. Oil spills that entered water could contaminate, or cause concerns about contamination of, marine mammals and fish.</p>	<p>and harvest patterns.</p>	<p>fishing areas for Barrow, Atqasuk, and Nuiqsut. Development in this area could exclude subsistence users from important traditional harvest areas. Stipulations would help to minimize the effects on subsistence species and harvest patterns.</p>	<p>lease tracts associated with the Goose Molting Area, and Restricted Surface Occupancy additional restrictions in the Caribou Movement Corridors and Southern Caribou Calving Area, would provide protections to TLH caribou on important calving, migration, and insect-relief habitat for caribou (see maps 2-4 and 3-20). Development that is allowed in this area, and in other areas outside of the protection zones, could exclude subsistence users from important traditional harvest areas. Stipulations would help to minimize the effects on subsistence species and harvest patterns.</p>
<p>Cumulative Effects: Prior to sustained contact between the Iñupiat of the North Slope and Euroamericans, the Iñupiat were a highly mobile, geographically widespread, and technologically capable people who lived in dispersed, small communities based on family and social connections. They harvested local resources as needed and as available. Beginning with commercial whaling in the 1850s, and followed by establishment of the Naval Petroleum Reserve and subsequent exploration activity that marked the beginning of resource extraction activity in lands occupied by the Iñupiat of the North Slope, the Iñupiat have had to adapt to the “external pressures impacting their environment and regulatory actions that restrict their subsistence pursuits.” Subsistence is currently, and has been since the mid-19th century, part of a rural economic system, called a “mixed, subsistence-market” economy, wherein families invest money into small-scale, efficient technologies to harvest wild foods. Over time, the Iñupiat experienced a growing reliance on an external market system to purchase introduced technological innovations to support subsistence activities (e.g., traps, boat motors, snowmobiles). Avoidance of formerly utilized harvest areas due to industrial activity was made possible by motorized transportation. During this 150-year period, the Iñupiat have had to continually adapt to the constraints placed upon their subsistence activities and lifestyle by cultures other than their own. The effects of these constraints on the Iñupiat persist today and will accumulate with future effects on their subsistence resources and lifestyle. Development along the north side of Teshekpuk Lake, outside the area closed to leasing, could deflect or divert caribou hunted in and near the area by Nuiqsut, Barrow, and Atqasuk residents in the summer and winter. Numbers of animals available for harvest could be reduced through the slow destruction of species by habitat loss, predation, climate change, and disease. Diverting animals from their usual and accustomed locations, or building facilities in proximity to those locations, could compel resource harvesters to travel further to avoid development areas. Harvest of subsistence resources in areas further from the communities would require increased effort, risk, and cost on the part of subsistence users. Increasing the areas open for leasing and exploration would lead to development in previously closed areas, leading to concentrating subsistence harvest efforts in the undeveloped areas and increasing the potential for conflict over harvest areas within a community. Climate change and the associated effects of anticipated warming of the climate regime in the Arctic could significantly affect subsistence harvests and uses if warming trends continue as predicted. Every community in the Arctic is potentially affected by the anticipated climatic shift and there is no plan in place for communities to adapt to or mitigate these potential effects. The reduction, regulation, and/or loss of subsistence resources would have severe effects on the subsistence way of life for residents of Nuiqsut, Atqasuk, Barrow, Wainwright, and Anaktuvuk Pass. If the loss of permafrost, and conditions beneficial to the maintenance of permafrost, arise as predicted, there could be synergistic cumulative effects on infrastructure, travel, landforms, sea ice, river navigability, habitat, availability of fresh water, and availability of terrestrial mammals, marine mammals, waterfowl and fish, all of which could necessitate relocating communities or their population, shifting the population to places with better subsistence</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON SUBSISTENCE-HARVEST PATTERNS			
<p>hunting and causing a loss or dispersal of community. Allowing leasing and development of all or portions of the area west and north of Teshekpuk Lake under the action alternatives would reduce the amount of undisturbed habitat to caribou, waterfowl, fish, and other subsistence species. These effects to subsistence species would be greatest under Alternative C. Effects to subsistence species would be similar under Alternative B and Alternative D. Teshekpuk Lake would not be made available for leasing under the Alternative D, protecting waterfowl and other subsistence species that use the lake. In addition, RSO restrictions on permanent facilities in caribou habitat protection areas and the Goose Molting Area would limit the amount of surface disturbance that could occur north and east of Teshekpuk Lake; these restrictions would reduce the likelihood of cumulative effects to subsistence resources.</p>			
EFFECTS ON SOCIOCULTURAL SYSTEMS			
<p>General Effects: Oil and gas development in the Planning Area would further the perception that local residents are being surrounded by development, and would increase the difficulty, expense, and risk of traveling to subsistence harvest areas. As a result, the continued use of and access to traditionally used lands could decrease, potentially threatening the subsistence way of life. As Nuiqsut is the community closest to the oil and gas development, effects would likely be greatest for Nuiqsut residents. Atqasuk, Barrow, Wainwright, and Anaktuvuk Pass could also be affected. Oil spills could disrupt subsistence harvests by contaminating resources, or causing the perception that resources were contaminated. Stipulations would provide protections for subsistence resources, cabins, camps, and river corridors, as well as a system of negotiating conflicts between permittees, leaseholders, and subsistence users, and would help to allow cultural values to coexist with development.</p>	<p>General Effects: Effects would be greater in magnitude and extent than those occurring under the No Action Alternative. Development in areas north of Teshekpuk Lake could cause societal stress in Barrow, Nuiqsut, and Atqasuk by discouraging families from using traditional sites and increasing concerns about encroachment and contamination of subsistence resources. This alternative adopts a new approach to protective measures, relying on performance-based stipulations and ROPs rather than prescriptive-based stipulations. Local residents are less familiar with this new approach and have concerns about whether it would be as effective as the previous set of stipulations. Some local residents and organizations perceive the changes to the stipulation package as reversing commitments previously made. This could affect the sense of trust between local communities and the Federal agencies managing the National Petroleum Reserve – Alaska.</p>	<p>General Effects: Effects would be greater in magnitude and extent than under the other alternatives, as the amount of oil exploration and development activity and area of disturbance would be greatest under this alternative than the No Action Alternative, affecting more traditional use sites and increasing the likelihood of conflicts between industry and the subsistence way of life.</p>	<p>General Effects: Effects would be greater in magnitude and extent than those occurring under the No Action Alternative, similar to the effects that would occur under Alternative B, and less than the effects that would occur under Alternative C. Development in areas north of Teshekpuk Lake could cause societal stress in Barrow, Nuiqsut, and Atqasuk by discouraging families from using traditional sites and increasing concerns about encroachment and contamination of subsistence resources. The potential for development north of Teshekpuk Lake would be somewhat greater under this alternative than Alternative B, but restrictions on the amount of surface disturbance allowed in each lease tract and Restricted Surface Occupancy restrictions in important caribou habitats to the east and southeast of the lake should reduce impacts to caribou and other subsistence resources. The likelihood of development occurring in close proximity to Nuiqsut would be similar under all alternatives.</p>
<p>Cumulative Effects: Impacts to the sociocultural systems of the Iñupiat of the North Slope have occurred since the first direct interactions with non-Natives in the first quarter of the 19th century. Since that time, the Iñupiat have adapted to new technologies, new external pressures, and regulatory actions. By the mid-20th century, Iñupiat settlement patterns had changed significantly. The population became centralized into a few communities, when</p>			

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON SOCIOCULTURAL SYSTEMS

they previously had been spread in small family-based units across the North Slope. The cumulative effects of oil and gas development on sociocultural patterns over the last 50 years are hard to establish with quantitative precision given the lack of baseline data. Nonetheless, there is evidence that North Slope sociocultural systems have been subject to ongoing, additive, and synergistic cumulative impacts. Stresses on North Slope sociocultural systems include residents' inability to access traditional use areas, threats to resources/life ways and to spiritual connection with the land, having to deal with multiple environmental impact assessments and other development processes, and being ignored or discounted by agency representatives. Long-term stresses would result in greater impacts to sociocultural systems. The possibility of a major oil spill, and its effects on bowhead whales and other marine mammals, fish, and wildlife, is of great concern to residents, although no such spill has occurred recently on the North Slope. These stresses accumulate because they interact and are repeated with each new lease sale, EIS, development proposal, and facility expansion. These effects would be greatest under Alternative C, not only because it would result in a greater amount of surface disturbance than the other alternatives, but also because the entire Planning Area would be available for oil and gas leasing and development. However, the amount of wealth, including income from royalties, taxes, and jobs, generated by oil and gas activity and available to residents of the North Slope would be anticipated to be greater under this alternative than the other alternatives. The effects on wealth and subsistence resources would be least under Alternative A, while the effects on wealth and subsistence resources under Alternative B and Alternative D would fall between the No Action Alternative and Alternative C.

EFFECTS ON ENVIRONMENTAL JUSTICE

General Effects: Impacts to subsistence species and harvest patterns (as discussed above) would also have disproportional impacts on the minority Inupiat population, which is dependent on subsistence resources. As effects to subsistence species would likely be localized, short term, and minor, environmental justice effects would be minor as well. In the unlikely event that a major oil spill occurred in a key harvest area or near a community, environmental justice effects would be much greater.

General Effects: Effects would be greater in magnitude and extent than those occurring under the No Action Alternative. This alternative adopts a new approach to protective measures, relying on performance-based stipulations and ROPs rather than prescriptive-based stipulations. Local residents are less familiar with this new approach and have concerns about whether it would be as effective as the previous set of stipulations. Some local residents and organizations perceive the changes to the stipulation package as reversing commitments previously made. This could affect the sense of trust between local communities and the Federal agencies managing the National Petroleum Reserve – Alaska.

General Effects: Effects would be greater in magnitude and extent than under the other alternatives, as the amount of oil exploration and development activity and area of disturbance would be greatest under this alternative than all other alternatives.

General Effects: Effects would be greater in magnitude and extent than those occurring under Alternative A, but less than those that would occur under alternatives B and C because less oil and gas development would likely occur and caribou and other subsistence species would be given additional protection in the Lease Tract/Goose Molting Areas, and the Caribou Movement Corridors, and the Southern Caribou Calving Area. This alternative also adopts a new approach to protective measures, relying on performance-based stipulations and ROPs rather than prescriptive-based stipulations. As with alternatives B and C, some local residents and organizations perceive the changes to the stipulation package as reversing commitments previously made. This could affect the sense of trust between local communities and the Federal agencies managing the National Petroleum Reserve – Alaska.

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON ENVIRONMENTAL JUSTICE			
<p>Cumulative Effects: Euro-American presence, commercial whaling, and non-oil and gas development and oil and gas exploration and development have had cumulative impacts to Iñupiat culture and to fish and wildlife used for subsistence. Euro-American presence has impacted the Iñupiat through disease and other ills. Commercial whaling nearly decimated whale stocks in the Chukchi and Beaufort seas; bowhead whale populations, though recovering, remain nearly 80% below their levels in the 1800s. Non-oil and gas development associated with military, residential, and commercial development have directly impacted several thousand acres of fish and wildlife habitat and has also indirectly affected habitat and animal behavior; these impacts have accumulated and persist today. Oil and gas exploration and development conducted by the Federal government and industry have directly impacted the habitat use and behavior of subsistence species, and these impacts persist today. These effects have disrupted subsistence uses, and may, in part, account for some of the social problems seen in the villages today. Under the cumulative case, currently planned development in the Planning Area and winter exploration throughout the entire area would continue. Seismic exploration would occur in winter and would include the drilling of exploratory and delineation wells in areas not excluded by buffers. Exploration and development could originate from Indigo, Point Lonely, and the Umiat vicinity, and could encompass important subsistence harvest areas for moose, fish, caribou, and furbearers, affecting subsistence users in Nuiqsut and to a lesser extent Atqasuk, Barrow, Wainwright and Anaktuvuk Pass. If permanent development is pursued in areas newly opened to exploration and leasing under alternatives B, C, and D, Iñupiat users would be less likely to utilize an area from 5 miles to 25 miles around those facilities for subsistence uses. The areas that would be potentially off-limits could represent a majority of the portion of the subsistence range that is presently undeveloped, and includes areas of great traditional and historic significance and key habitat areas for several crucial subsistence species. Allowing leasing and development of all or portions of the area north and west of Teshekpuk Lake under the action alternatives would reduce the amount of undisturbed habitat to caribou, waterfowl, fish, and other subsistence species. These effects to subsistence species would be greatest under Alternative C. Effects to subsistence species would be similar under Alternatives B and D. Effects to subsistence comprise direct effects to the Iñupiat, a recognized minority population and the primary subsistence harvesters on the North Slope. Impacts to human health and well-being, social systems, and cultural values of the Iñupiat cumulatively lead to disproportionate effects on this minority population.</p>			
EFFECTS ON COASTAL ZONE MANAGEMENT			
<p>General Effects: Conflicts could occur with specific statewide standards and NSB Coastal Management Program policies related to potential user conflicts between development activities and access to subsistence resources. These conflicts would relate to effects resulting from periodic disturbance and oil spills; however, no resource would become unavailable, undesirable for use, or experience substantial overall population reductions. The stipulations in place would reduce conflicts, making this alternative consistent with Alaska Coastal Management Program standards. For all other resources, there are no inherent conflicts between exploration and development activities and</p>	<p>General Effects: Impacts to subsistence resources would be greater than under the No Action Alternative, as additional caribou, waterfowl, and fishing areas would be open to leasing and the expected level of development would be greater.</p>	<p>General Effects: Impacts to subsistence resources would be greater than under the other alternatives, as additional caribou, waterfowl, and fishing areas would be open to leasing and the expected level of development would be greater.</p>	<p>General Effects: Impacts to subsistence resources would be less than under alternatives B and C, as less oil and gas development would likely occur under this alternative, and caribou, waterfowl, and other subsistence species would be given additional protection in the Lease Tract/Goose Molting areas, Caribou Movement Corridor, and Southern Caribou Calving Area.</p>

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON COASTAL ZONE MANAGEMENT

the statewide standards and enforceable policies of the NSB Coastal Management Program. With mitigating measures and regulatory oversight, it would be possible to comply with all of the standards and policies relevant to oil and gas activities that would be likely to have effects on the coastal resources or uses of the coastal zone. Applicable policies would be more precisely addressed when specific proposals were brought forward by lessees.

Cumulative Effects: As most non-oil and gas development, and oil and gas development on the North Slope has occurred near the coastline, conflicts with the NSB and State of Alaska coastal zone management policies have occurred in the past. Specific issues include limits on access to coastal areas by Alaska Natives, disturbance to and deflection of caribou moving to insect-relief areas along the coast, loss of habitat, and loss of historical, cultural, and archaeological resources resulting from exploration and development along the coastline. Through consultation, conflicts between coastal zone management policies and proposed development that could occur in coastal areas have been reduced since implementation of coastal management policies. Most of the coastal area, from Atigaru Point to the boundary with the Northwest National Petroleum Reserve – Alaska, would be closed to leasing under the No Action Alternative. Lease Stipulation K-6, Coastal Areas, requires that permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines established to support exploration and development activities shall be located at least ¼ mile inland from the coastline to the extent practicable. Where, as a result of technological limitations, economics, logistics, or other factors, a facility must be located within ¼ mile inland of the coastline, the practicality of locating the facility at previously occupied sites such as Camp Lonely, various Husky/USGS drill sites, and Distant Early Warning (DEW)-Line sites, shall be considered. Use of existing sites within ¼ mile of the coastline shall also be acceptable where it is demonstrated that use of such sites will reduce impacts to shorelines or otherwise be environmentally preferable. All lessees/permittees involved in activities in the immediate area must coordinate use of these new or existing sites with all other prospective users. Before conducting open water activities, the lessee shall consult with the Alaska Eskimo Whaling Commission, the Nuiqsut Whaling Captains’ Association, and the NSB to minimize impacts to the fall and spring subsistence whaling activities of the communities of the North Slope. Adherence to this stipulation should ensure that coastal resources are adequately protected. All Federal activities and federally-permitted activities must be reviewed for consistency with coastal management programs. Therefore, onshore activities within the Planning Area and some offshore activities identified under the alternatives should be assessed against the Alaska CMP, including the NSB CMP.

EFFECTS ON RECREATIONAL RESOURCES

General Effects: Non-oil and gas activities would cause temporary impacts to recreation values on 2,000 to 3,000 acres. Oil and gas exploration activities would cause short-term impacts on approximately 107,996 acres. The greening of vegetation from ice pads, roads, airstrips, and compacted snow would occur on up to 16,768 acres. The noiseshed and viewshed would receive short-term impacts within ½

General Effects: The area subject to recreation effects would be approximately the same as that affected under Alternative A. Non-oil and gas activities would cause temporary impacts to recreation values on 2,000 to 3,000 acres. Oil and gas exploration activities would cause short-term impacts on approximately 107,996 acres. The greening of vegetation from ice pads, roads, airstrips, and compacted snow

General Effects: The area subject to recreation effects would be approximately 4% greater than that under Alternative A or B, and 2% greater than that under Alternative D. Non-oil and gas activities would cause temporary impacts to recreation values on 2,000 to 3,000 acres. Oil and gas exploration activities would cause short-term impacts on approximately 107,996 acres. The greening of vegetation

General Effects: The area subject to recreation effects would be approximately 2% greater than under Alternative A or B, and 2% less than under Alternative C. Non-oil and gas activities would cause temporary impacts to recreation values on 2,000 to 3,000 acres. Oil and gas exploration activities would cause short-term impacts on approximately 107,996 acres. The greening of vegetation from ice pads,

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON RECREATIONAL RESOURCES			
<p>mile of seismic and exploratory drilling. Short-term impacts would not accumulate. There would be a loss of solitude, naturalness, or primitive and unconfined recreation opportunities over an area of 533,980 acres (approximately 11.6% of the Planning Area) for the life of production fields and pipelines. Long-term impacts would accumulate over time.</p>	<p>would occur on up to 20,022 acres. The noised and viewshed would receive short-term impacts within ½ mile of seismic and exploratory drilling. Short-term impacts would not accumulate. There would be a loss of solitude, naturalness, or primitive and unconfined recreation opportunities over an area of 549,780 acres (approximately 11.9% of the Planning Area) for the life of production fields and pipelines.</p>	<p>from ice pads, roads, airstrips, and compacted snow would occur on up to 23,463 acres. The noised and viewshed would receive short-term impacts within ½ mile of seismic and exploratory drilling. Short-term impacts would not accumulate. There would be a loss of solitude, naturalness, or primitive and unconfined recreation opportunities over an area of 754,380 acres (16.4% of the Planning Area) for the life of production fields and pipelines.</p>	<p>roads, airstrips, and compacted snow would occur on up to 19,974 acres. The noised and viewshed would receive short-term impacts within ½ mile of seismic and exploratory drilling. Short-term impacts would not accumulate. There would be a loss of solitude, naturalness, or primitive and unconfined recreation opportunities over an area of 650,580 acres (14.1% of the Planning Area) for the life of production fields and pipelines.</p>
<p>Opportunities for primitive recreation have and will continue to be reduced by oil and gas activities on the North Slope. Facilities at Deadhorse support recreational opportunities along the Dalton Highway and at Prudhoe Bay. There would technically be no cumulative impacts to Wilderness or Wild and Scenic Rivers because there are currently no such areas designated in the Planning Area. However, the area eligible for future designation would be reduced to the degree that major disturbance occurred. Projected cumulative activities could have local impacts on the free-flowing, unpolluted waters and could affect the outstandingly remarkable values of portions of the eligible Colville River. In such a case, the amount of area potentially suitable for designation would be reduced. Cumulative effects would be similar under all four alternatives.</p>			
EFFECTS ON VISUAL RESOURCES			
<p>General Effects: Impacts on visual resources from activities other than oil and gas would be minimal and short term. During exploration, seismic surveys could result in over 11,650 miles of visible trails. It is estimated that the long-term disturbance associated with 151 new wells with associated ice pads, airstrips, and roads would cause greening and ring effects on up to 16,768 acres. During development, long-term visual effects would occur from support facilities such as staging bases, CPF and pump stations, on up to 650 acres, while impacts from production facilities such as infield pads, roads, gravel pits, and pipelines would affect up to 2,818 acres. Sale oil and main pipelines would impact up to 491 acres. Impacts from spills would occur up to 1,792 times over the life of the facility.</p>	<p>General Effects: Impacts on visual resources from activities other than oil and gas would be minimal and short term. During exploration, seismic surveys could result in over 11,650 miles of visible trails. It is estimated that the long-term disturbance associated with 170 new wells with associated ice pads, airstrips, and roads would cause greening and ring effects on up to 20,022 acres. During development, long-term visual effects would occur from support facilities such as staging bases, CPF and pump stations, on up to 810 acres, while impacts from production facilities such as infield pads, roads, gravel pits, and pipelines would affect up to 3,664 acres. Sale oil and main pipelines would impact up to 491 acres. Impacts from spills would occur up to 2,070 times over the life of the facility.</p>	<p>General Effects: Impacts on visual resources from activities other than oil and gas would be minimal and short term. During exploration, seismic surveys could result in over 11,650 miles of visible trails. It is estimated that the long-term disturbance associated with 210 new wells with associated ice pads, airstrips, and roads would cause greening and ring effects on up to 23,463 acres. During development, long-term visual effects would occur from support facilities such as staging bases, CPF and pump stations, on up to 970 acres, while impacts from production facilities such as infield pads, roads, gravel pits, and pipelines would affect up to 4,649 acres. Sale oil and main pipelines would impact up to 551 acres. Impacts from spills would occur up to 2,503 times over the life of the facility.</p>	<p>General Effects: Impacts on visual resources from activities other than oil and gas would be minimal and short term. During exploration, seismic surveys could result in over 11,650 miles of visible trails. It is estimated that the long-term disturbance associated with 193 new wells with associated ice pads, airstrips, and roads would cause greening and ring effects on up to 20,202 acres. During development, long-term visual effects would occur from support facilities such as staging bases, CPF and pump stations, on up to 810 acres, while impacts from production facilities such as infield pads, roads, gravel pits, and pipelines would affect up to 4,538 acres. Sale oil and main pipelines would impact up to 491 acres. Impacts from spills would occur up to 2,287 times over the life of the facility.</p>

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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There would be a small increase in the short-term impacts to visual resources from non-oil and gas activities. Short-term impacts, such as green trails, and ongoing activities would not accumulate. Impacts from long-term or permanent facilities such as roads, pipelines, and gravel pads and pits would accumulate and would result in the long-term loss of scenic quality. Long-term impacts from production sites, staging areas, and pumping stations with a possible life span of over 30 years would affect visual resources in the North Slope. It is expected, however, that these impacts would be greatest within the Foreground-Middleground Zone, but may be visible in the Background Zone and attract the attention of the viewer. Pipelines could be elevated above ground level and would be visible within the Foreground-Middleground Zone and possibly the Background Zone. Except during construction, maintenance and repair of pipelines, there would be no associated on-the-ground activity. Therefore, long-term impacts to visual resources from pipelines would be expected to not attract the attention of the viewer if located beyond the Foreground-Middleground Zone.

EFFECTS ON THE ECONOMY

<p>General Effects: Oil and gas exploration and development would benefit the economy by creating increased revenues and employment. By 2045, approximately \$225 million would be generated annually in property taxes. There would be an annual royalty of \$596 million for the Federal government, and the same amount for the State of Alaska and the NSB. The number of jobs created by exploration, development, and production would reach 3390 to 7230 during 2045. The number of NSB resident jobs generated would be 175 to 385 at that time. Disruptions to the harvest of subsistence resources could affect the economic well being of NSB residents, primarily through the direct loss of subsistence resources.</p>	<p>General Effects: Employment and some of the revenues generated by oils and gas exploration and development would be greater than under the No Action Alternative. By 2045, approximately \$192 million would be generated annually in property taxes. The annual royalty would be about the same as in Alternative A. The number of jobs created by exploration, development, and production would peak at 3600 to 7400 during 2045. The number of resident jobs generated would be 180 to 395 in the same year. The likelihood for disruptions to the harvest of subsistence resources and associated economic impacts would be greater than under the No Action Alternative.</p>	<p>General Effects: The revenues and employment generated by oil and gas exploration and development would be greater than under the No Action Alternative and slighter greater than under Alternative B and the Alternative D. Approximately \$241 million would be generated in 2045 in property taxes. The annual royalty would be about the same as in Alternative A. The number of jobs created by exploration, development, and production would be 3,800 to 7,600 during 2045. The number of resident jobs generated would be higher than the number generated under Alternative B, 195 to 440 in the same year. The likelihood for disruptions to the harvest of subsistence resources and associated economic impacts would be greater than under the other alternatives.</p>	<p>General Effects: Most revenues and employment generated by oil and gas exploration and development would be greater than under the No Action Alternative and Alternative B and similar to or lower than Alternative C. Approximately \$245 million would be generated annually in property taxes, by 2045. The royalty would be total \$1.3 billion to be shared by the Federal government, and the State of Alaska. The number of jobs created by exploration, development, and production would be similar to Alternative C. The likelihood for disruptions to the harvest of subsistence resources and associated economic impacts would be greater than under the No Action Alternative.</p>
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Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
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EFFECTS ON THE ECONOMY

Cumulative: The Department of Energy estimated that the contribution of North Slope crude to domestically produced oil supplies would decline from 18 % in 2004 to 14% in 2020. This decline could be mitigated, but not offset, by production from Northeast NPR-A, the Beaufort Sea leases, and Northwest NPR-A. Any increase in domestic oil production is expected to reduce U.S. dependency on foreign oil supplies, and, in turn, improve national energy security and the overall balance of trade. Alaska general fund petroleum revenue in estimated at \$4.3 billion, 88% of the total proceeds in 2007. This is expected to decrease to just over \$2 billion in 2016, providing 77% of general fund revenues to the state. A parallel decline in revenue to the NSB is expected. The declining trend in revenues, jobs, and per capita incomes are expected to continue into the future (in the absence of a major economic event such as the natural gas pipeline project that would create a natural gas industry). It seems reasonable to envision a future trend with more North Slope residents participating in oil and gas activities as Borough-related employment opportunities become very limited. This could mean a tradeoff in subsistence activities as jobs in the oil and gas industry would not be able to provide the same level of flexibility as the Borough and construction jobs. Events in the reasonably foreseeable future, such as exploration and development in other areas of the NPR-A could mitigate these declining trends, but are not expected to offset these declines. The development associated with the Northeast NPR-A could also have implications at the national level.

EFFECTS ON PUBLIC HEALTH

General Effects: Displacement of subsistence resources could lead to an increased consumption of store bought food relative to subsistence foods, resulting in increases in diabetes and related metabolic disorders. Food insecurity and hunger could become more prevalent because of impacts to subsistence. Stress resulting from impacts to subsistence, acculturative pressures brought by increasing influx of non-Native workers to Iñupiat communities, and the potential for increases in drug and alcohol trafficking could combine to increase problems of social pathology (including substance abuse, domestic violence, child abuse, and suicide). Injury rates could increase in parallel with longer travel to locate subsistence resources, and increases in social pathology. Infectious disease prevalence could increase as a result of increasing contact between Iñupiat residents and transient non-Native workers from other regions. Airborne pollutants could cause sporadic decreases in air quality and exacerbate respiratory illnesses. Contamination of the environment by emissions in the planning area could contact the human population through air,

General Effects: Effects would be greater in magnitude and extent than under Alternative A, owing to the larger area available for leasing, leasing of areas within critically important subsistence areas, and the greater overall level of activity, emissions, and surface occupancy predicted. Another potential concern is the increased flexibility of the new performance-based stipulations and ROPs. Since BLM has not used this approach in Alaska previously, and since year-to-year funding for the monitoring and performance-based decision-making process required for this approach to achieve its management goals are uncertain, the efficacy of this approach is not certain. Residents have expressed concerns that the increased flexibility offered by this approach will be interpreted in favor of the economic interests of developers as opposed to the subsistence and sociocultural needs of local residents.

General Effects: Because the entire Planning Area would be open for development, the risk of disruptions to subsistence would be substantially higher, increasing the risk of diabetes, metabolic disorders, food insecurity and hunger, social pathology, and injuries. The greater predicted influx of workers and larger magnitude of socioeconomic change would contribute to acculturation stress, social pathology, and physical health problems through the social determinants of health. At the same time, benefits such as employment opportunity and increased revenues might help to offset some of the adverse impacts to public health. Total emissions would increase in rough proportion to the increased production possible under this alternative, and emissions would contact subsistence resources and the human population over a wider range, leading to an increased potential for cancer, neurodevelopmental delay, and endocrine disruption than under the

General Effects: Effects would be similar in magnitude and extent to Alternative B, although some differences are possible because of the potential for leasing north of Teshekpuk Lake under this alternative.

Alternative A (No Action Alternative)	Alternative B	Alternative C	Alternative D (Preferred Alternative)
EFFECTS ON PUBLIC HEALTH			
<p>water, or the food chain and contribute to problems of cancer, neurodevelopmental delay, and endocrine disease. Beneficial impacts on the socioeconomic determinants of health could include increased employment opportunity and income; adverse change could include increased economic disparity and decreased social capital. Stipulations and leasing restrictions would protect some of the most traditionally and practically important subsistence areas, reduce emissions of contaminants, and orient employees to minimizing sociocultural conflicts with Iñupiat communities, all of which would help prevent impacts to public health.</p>		<p>other alternatives.</p>	
<p>Cumulative: Iñupiat health status is evolving rapidly. Chronic diseases, metabolic disorders, and cancer are becoming more common, and social pathology appears to have increased fairly sharply over the last 50 years; social pathology is now considered epidemic, and is a matter of great concern to residents and the public health community. On the other hand, life expectancy has increased, and mortality rates have declined owing in large part to changes in sanitation, infection control, and infrastructure leading to lower rates of infectious diseases. Injury rates, though still markedly higher than the general U.S. population, have declined somewhat (Day et al. 2006, Goldsmith et. Al 2004). Overall, despite substantial improvements in health status, significant disparities in overall mortality rates, as well as rates of specific problems such as cancer, injury, and social pathology. Infectious disease distribution and prevalence will evolve under the combined influences of globalization, climate change, and local influx of workers for oil and gas projects. Because HIV prevalence in this fairly isolated region is currently low, efforts to prevent transmission may be particularly beneficial.</p> <p>As one of the primary drivers of socio-economic conditions, oil and gas activities are important “determinants of health.” In the foreseeable future, development on and offshore will continue to be a major driver of the local economy for decades to come, and the decline in oil revenues will also be a major force shaping socio-economic conditions. Under the cumulative scenario of climate change and expanding oil and gas activity, it is very likely that subsistence resources and hunters will be displaced from currently productive areas. As discussed in section 4.8.13, this could result in profound changes to the social structure in Iñupiat communities; if the cumulative development scenario results in a shift away from subsistence as a way of life, metabolic disorders including diabetes, hunger and food insecurity, social pathology, and injury would likely increase. Social pathology might be ameliorated by employment and economic opportunity, but these benefits could be offset by problems of increasing economic disparity, acculturation, and cultural conflict. Health problems related to contaminants, including cancer and respiratory, neuro-developmental, endocrine, and cardiovascular diseases could increase if contaminants from oil development enter the atmosphere, water, or food chain. The health care and social services available through ASNA, NSB, state, and Federal programs would mitigate some of these impacts through intervention and treatment, but would not prevent these problems from occurring.</p>			

