



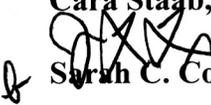
## United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE  
Fairbanks Fish and Wildlife Field Office  
101 12<sup>th</sup> Avenue, Room 110  
Fairbanks, Alaska 99701  
November 22, 2011



### MEMORANDUM

**To:** Cara Staab, Wildlife Program Lead, BLM – Alaska State Office

**From:**  Sarah C. Conn, Field Supervisor, USFWS Fairbanks Field Office

**Subject:** Biological Opinion on BLM's 2011 Lease Sale in the northeast planning area of the National Petroleum Reserve - Alaska

This memo transmits the U.S. Fish and Wildlife Service's Biological Opinion (BO) on the Bureau of Land Management's (BLM) proposed 2010 lease sale and the potential resulting exploration and development activities in the National Petroleum Reserve – Alaska. The BO describes the effects of these actions on designated critical habitat for polar bear (*Ursus maritimus*), pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.).

Based on the information currently available on polar bear critical habitat, its environmental baseline, cumulative effects, and effects of the Action on each PCE, the Service has determined that it is unlikely that the proposed action will violate section 7(a)(2) of the ESA. Section 7(a)(2) of the ESA states that Federal agencies must ensure that their activities are not likely to result in the destruction or adverse modification of critical habitat.

A complete administrative record of this consultation is on file at the Fairbanks Fish and Wildlife Field Office, 101 12<sup>th</sup> Ave., Room 110, Fairbanks, Alaska 99701. If you have any comments or concerns regarding this BO, please contact Ted Swem, Endangered Species Branch Chief, at (907) 456-0441.



## BIOLOGICAL OPINION

### 2011 OIL AND GAS LEASE OFFERING WITHIN THE NATIONAL PETROLEUM RESERVE – ALASKA NORTHERN PLANNING AREAS

Consultation with the  
Bureau of Land Management, Alaska State Office  
Anchorage, Alaska

Prepared by:  
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November 22, 2011

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## 1. INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (BO) in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA), on effects to designated critical habitat for polar bear from the Bureau of Land Management's (BLM) proposed 2011 oil and gas lease offering within the National Petroleum Reserve – Alaska (NPR-A) Northern Planning Areas.

This BO supplements the BO dated July 14, 2008 (2008 BO; USFWS 2008), which assessed the potential impacts from oil and gas leasing, exploration, and development resulting from the implementation of BLM's Northeast National Petroleum Reserve – Alaska (NE NPR-A) Supplemental Integrated Activity Plan/Environmental Impact Statement Record of Decision (BLM 2008a), and the Northwest NPR-A (NW NPR-A) Record of Decision (BLM and MMS 2004), as revised to reflect higher oil prices and greater estimate of economically recoverable oil. The 2008 BO addressed potential impacts to threatened spectacled eider (*Somateria fischeri*), Alaska-breeding Steller's eider (*Polysticta stelleri*), and polar bear (*Ursus maritimus*), and designated critical habitat for the spectacled eider. The Service determined that the activities were not likely to jeopardize the continued existence of listed species, or destroy or adversely modify critical habitat (USFWS 2008).

At the time of the 2008 BO's issuance, critical habitat for the polar bear had not been designated. However, on December 7, 2010 the Service designated 187,157 square miles of polar bear critical habitat (USFWS 2010) that includes areas within NPR-A. As BLM's Alaska State Office proposes to lease tracts for oil and gas exploration and development in the northern planning areas of NPR-A in late 2011, the agency has requested consultation with the Service to evaluate the effects of this lease sale and the potential resulting exploration and development activities (the Action) on polar bear critical habitat. The BLM submitted a Biological Assessment (BA) for the Action and initiated formal consultation for polar bear critical habitat on October 20, 2011. The BLM also requested concurrence that the 2008 BO continues to satisfy ESA requirements for other listed species and critical habitats within the Action area.

The Action evaluated here is consistent with the Action evaluated in the 2008 BO; therefore, the Service concurs with BLM that the 2008 BO satisfies the requirements of the ESA for other species and critical habitats within the Action area, and therefore further consultation is only required for polar bear critical habitat.

This BO was developed using information provided in the 2011 BA (BLM 2011), the 2008 BA (BLM 2008b), the 2008 BO (USFWS 2008), other Service documents, published and unpublished literature and reports. After reviewing the information provided, the status of the species, the environmental baseline, and cumulative effects, the Service concludes the proposed Action may adversely affect, but is not likely to destroy or adversely modify designated critical habitat for polar bears.

## 2. DESCRIPTION OF THE PROPOSED ACTION

### Proposed Action

The Action is the proposed lease sale and potential exploration and development activities that could result from the lease sale. BLM's proposed lease sale would offer approximately 3,030,069 acres in 283 tracts for oil and gas leasing in the northern NPR-A planning areas (Figure 1). While no tracts would be offered for leasing within polar bear critical habitat, the tracts offered in the proposed lease sale range from being located immediately adjacent to critical habitat, to approximately 120 miles away. The purchase of a lease would entitle the lessee to exclusive rights to drill and extract oil and gas resources within the lease area. Areas outside of the lease tracts could be subject to development to support oil exploration and development within lease tracts.

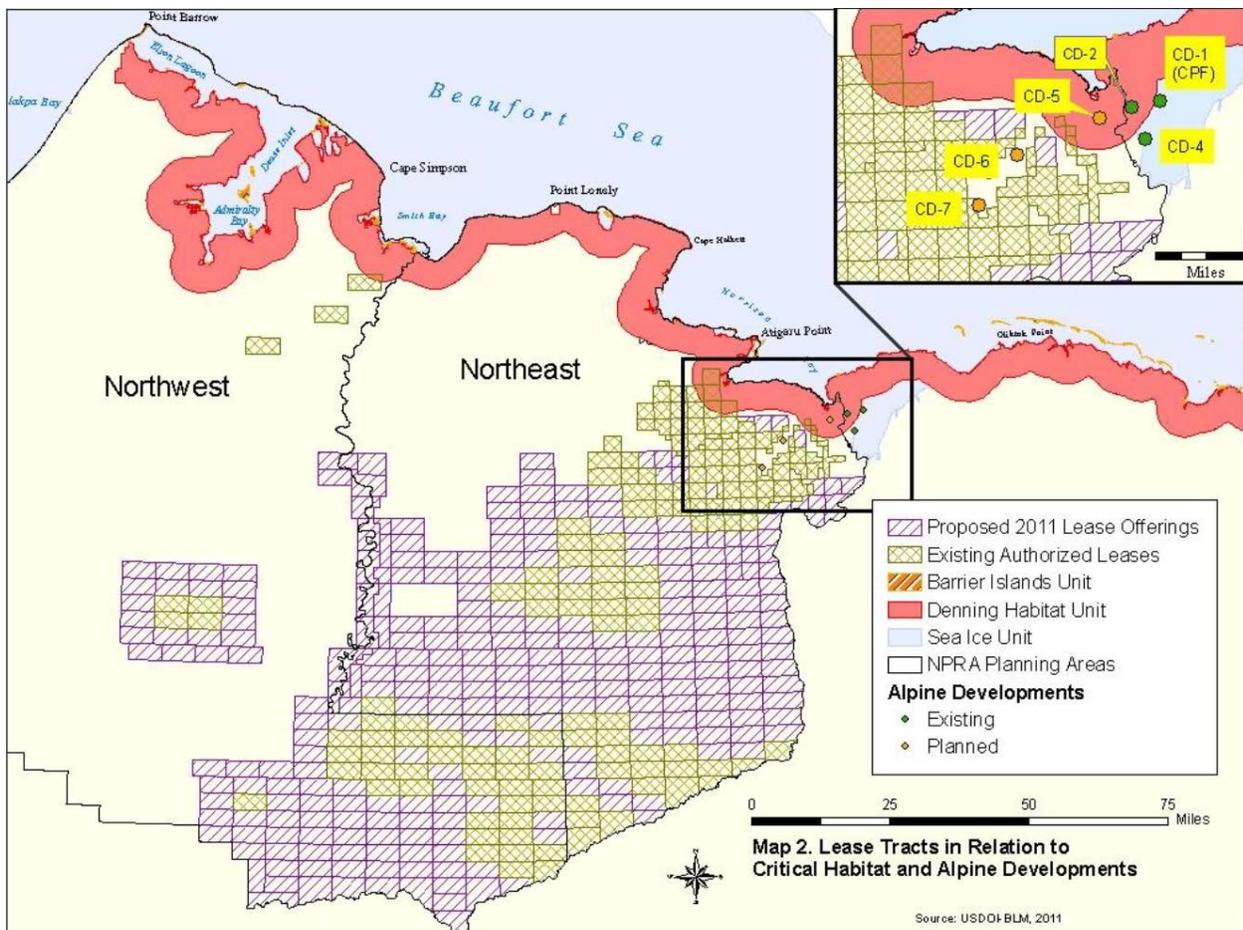


Figure 1. Proposed lease offerings and designated polar bear critical habitat in northern NPR-A planning areas (source: BLM 2011).

The tract offerings are proposed to be officially announced in a Detailed Statement of Sale in November 2011, with sealed bids due in December 2011. The leases would be valid for 10 years and could be renewed at that time unless they are relinquished before the original term expires. Tracts relinquished or not leased from this offering may be offered again in the future. A lease purchase does not authorize exploratory drilling or development activities, but is a prerequisite for subsequent permitting. The BLM will not permit activities on leased tracts until they are evaluated for compliance with the ESA, the Marine Mammal Protection Act (MMPA), and other applicable laws, regulations, and policies. Therefore, no tracts leased in the 2011 offering will result in certain or immediate ground-disturbing activities; nor will such activities occur without further analysis or consultation under the ESA (BLM 2011). While leasing of land for oil and gas development has no direct impacts to polar bear critical habitat, it sets in motion a series of potential activities that may affect polar bear critical habitat.

It is difficult to predict how much future development will actually occur as a result of the proposed 2011 lease sale. It is also difficult to predict where exploration or development within a set of lease tracts will occur, should it actually occur. In the absence of a reasonable and foreseeable development scenario (RFD) developed specifically for this lease sale, BLM relied on revised RFDs for the NE NPR-A and NW NPR-A planning areas described in the 2008 BA (BLM 2008b) to determine the scope of this Action. These RFDs were based on a set of informed assumptions to determine the amount and methodology of exploration and development that may result from all lease sales in light of the considerations described in the 2008 BA. The RFD assumed multiple lease sales and full development of estimated resources; however, we limit our evaluation in this document to potential activities and impacts that are reasonably certain to occur as a result of the proposed 2011 lease sale, as described in the 2011 BA (BLM 2011).

### **Potential Activities Resulting from the Lease Sale**

The BLM identified a sequence of activities that could arise from the proposed leasing, with each stage dependent on results of previous stages. The activity stages, in sequential order, include exploration of oil and gas resources (exploration); construction of infrastructure necessary to support production (development); extraction, processing, and transportation of resources (production); and finally, abandonment of wells, production facilities and other infrastructure (abandonment). Predicted activities that may affect polar bear critical habitat are summarized below. Readers are referred to the 2011 BA (BLM 2011), the 2008 BA (BLM 2008b) and the 2008 BO (USFWS 2008) for more detailed descriptions of these activities and associated RFDs.

#### *Exploration*

The BLM states that seismic (vibration) surveys, which help delineate oil and gas reserves, have been completed in all but the southern foothills region of NPR-A, far south of critical habitat. Because BLM expects new surveys will occur only in previously unsurveyed areas of NPR-A, future seismic surveys in polar bear critical habitat are unlikely.

Although exploratory drilling would occur only within lease tracts, resulting noise and human activity could be reasonably observable within approximately one mile of the activities. Four proposed tracts would be located within one mile of the terrestrial denning unit. Exploratory drilling operations could require up to three winters to complete in a given area.

### *Development*

Upon discovery of economically viable reserves, permanent facilities would be needed to support production, processing, and transport activities. Facilities would be co-located with production wells, and therefore would only occur on lease tracts. Large oil fields would likely require a central processing facility (CPF) and multiple satellite drilling pads similar to those designed for the Alpine Development complex (BLM 2004). The BLM anticipates that full development of the northern planning areas would result in  $\leq 12$  CPFs and  $\leq 63$  satellite pads. Each CPF would occupy approximately 100 acres; satellite pads would typically consist of a 10-acre gravel pad and  $\leq 30$  well heads. Satellites typically occur within 25 miles of CPFs, and are connected to them by gravel roads and pipelines. Four tracts proposed for leasing occur within one mile of the polar bear critical habitat Terrestrial Denning Unit. Due to their close proximity to each other and directional drilling capabilities, it is highly unlikely that more than two of these tracts would host either central or satellite facilities.

Pipelines would be needed for overland transport of oil and gas resources, including gathering pipelines to transport unprocessed fluids from satellite pads to CPFs and a sales (regional) pipeline to transport processed materials. The RFD predicted that oil from all CPFs in NPR-A would be collected into a single sales pipeline before being piped out of the NPR-A to the Alpine CPF. From there, the oil would flow through existing pipeline systems, including the Trans-Alaska Pipeline System (TAPS), to the Port of Valdez. The BLM estimates that five miles of pipeline construction within the Terrestrial Denning Unit and five miles within the Sea Ice Unit<sup>1</sup> would be required to transport oil through a the single sales pipeline connecting NPR-A oil to the Alpine CPF (Figure 1). Up to five miles of additional pipeline in polar bear critical habitat may be needed to connect other NPR-A satellite pads to the planned CD-5 facility.

Pipeline construction would likely occur during winter concurrent with the construction of other facilities. Above ground portions of pipelines would be elevated at least seven feet. Pipeline maintenance would primarily occur during winter, but summer work may also be required.

Gas development facilities would be co-located with oil facilities and would not significantly add to the footprint. The BLM estimates one gas compressor station would be built in each of the northern planning areas, but neither is likely to be built in critical habitat. No pipeline similar to TAPS currently exists for North Slope gas. If gas were developed in the NPR-A, gas pipelines would likely run parallel to oil pipelines in a shared corridor.

### *Production*

Ongoing operations and maintenance of production facilities and pipelines would require staging areas, ice roads, gravel roads, and aircraft. These activities are described below under Construction and operations support.

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<sup>1</sup> The pipeline would traverse the western Colville River delta, portions of which are designated as both sea ice and terrestrial denning habitat.

### *Abandonment*

Disassembling or disabling CPF and satellite facilities would be the focus of abandonment activities. Staging areas, ice roads, gravel roads, and aircraft could be used to support the abandonment of permanent infrastructure. These activities are described below.

### *Construction and operations support*

Ice roads, staging areas, and aircraft support would be needed throughout the exploration, development, production, and abandonment stages. Gravel roads would be constructed during development.

Temporary winter routes such as ice roads and snow trails would connect infrastructure and work sites, and therefore could occur both within and outside lease tracts. Within critical habitat, winter routes would be needed primarily along pipelines and from coastal staging areas to CPFs and satellite pads. These routes would be constructed and operated during the polar bear denning period. Up to 55 miles of winter routes in three segments would potentially be needed within critical habitat, including 1)  $\leq 25$  miles from a potential coastal staging area at Cape Simpson to the tracts south or southwest of the Cape; 2)  $\leq 15$  miles from a potential staging area at Point Lonely to the remaining tracts; and 3)  $\leq 15$  miles along a potential pipeline corridor connecting the NPR-A to the Alpine processing facility east of the NPR-A. While it is not likely that all of these segments would be active in any given year, it is assumed that they would be, so that the effects of these activities are not underestimated.

Gravel roads would be less extensive on the landscape than temporary winter routes, partly due to the scarcity and expense of gravel resources. Gravel roads would be limited to connecting production wells to central processing facilities. The BLM estimates that up to 15 miles of gravel roads could be needed within critical habitat to connect NPR-A oil to the Alpine processing facility east of the NPR-A. No gravel is expected to be extracted from critical habitat.

Staging areas could occur within or outside of lease tracts. The BLM expects a maximum of two 50-acre coastal staging areas with docks for off-loading construction materials may be needed within critical habitat. It is likely that only one of these would be in use at any given time, and that a staging site would be selected based on its distance from the area receiving the materials. Pre-existing staging areas, such as those at Cape Simpson in NW NPR-A or Camp Lonely in NE NPR-A, would probably be used when feasible to reduce costs associated with construction of new staging areas, which would require gravel extraction from local sources.

Marine barges, airboats, fixed-winged aircraft and helicopters could all be used throughout most of NE NPR-A and portions of NW NPR-A, including critical habitat. The RFD predicted that each CPF would require 1–2 sea lifts (20–30 barges each) to deliver construction materials and equipment to coastal staging areas. The vessels would travel in summer when sea ice is either not present or not extensive. Airboats could be used to travel on rivers or lakes during ice-free periods. Aircraft use could occur year-round (see the 2008 BA, p.22–24, for a description of total aircraft needs).

## Minimization Measures

Leases are subject to stipulations and required operating procedures (ROPs) established in each Record of Decision and to the non-discretionary terms and conditions (T&Cs) provided in the 2008 BO. The BLM mitigation measures applied through stipulations and ROPs were designed to minimize impacts to a variety of resources, including listed species, by constraining the manner, location and timing of activities. Because polar bear critical habitat was not proposed until October 2009, the mitigation measures do not specifically address this legal designation. However, several stipulations and ROPs have the effect of protecting the primary constituent elements of polar bear critical habitat, as similar landscape features are important to other resources (Figure 2; BLM 2011). Appendix A in BLM's 2011 BA contains a complete listing of stipulations and ROPs.

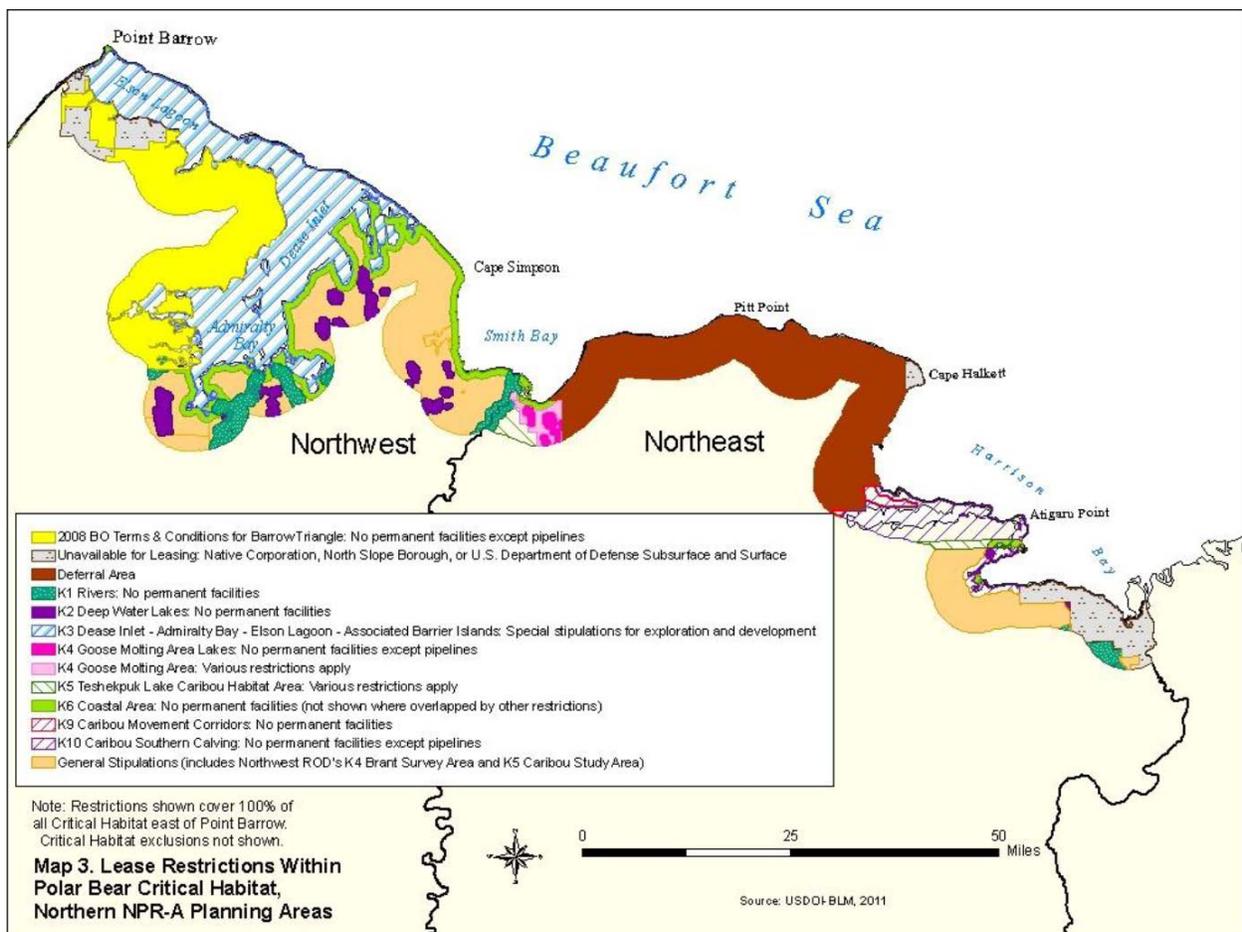


Figure 2. Lease restrictions within polar bear critical habitat, northern NPR-A planning areas (source BLM 2011).

## **Action Area**

The Action Area is the area in which direct and indirect effects of the Action on polar bear critical habitat may occur. The Action Area includes polar bear critical habitat that lies within and adjacent to NPR-A where oil and gas exploration and development may occur as a result of the proposed 2011 lease sale.

### **3. STATUS OF POLAR BEAR CRITICAL HABITAT**

The Service designated polar bear critical habitat on December 7, 2010 (USFWS 2010).

The Primary Constituent Elements (PCEs) of critical habitat for the polar bear are:

- 1) Sea ice habitat used for feeding, breeding, denning, and movement, which is further defined as sea ice over waters 300 m (984.2 ft) or less in depth that occurs over the continental shelf with adequate prey resources (primarily ringed and bearded seals) to support polar bears.
- 2) Terrestrial denning habitat, which includes topographic features, such as coastal bluffs and river banks, with suitable macrohabitat characteristics. Suitable macrohabitat characteristics are:
  - a) Steep, stable slopes (range 15.5–50.0°), with heights ranging from 1.3 to 34 m (4.3 to 111.6 ft), and with water or relatively level ground below the slope and relatively flat terrain above the slope;
  - b) Unobstructed, undisturbed access between den sites and the coast;
  - c) Sea ice in proximity to terrestrial denning habitat prior to the onset of denning during the fall to provide access to terrestrial den sites; and
  - d) The absence of disturbance from humans and human activities that might attract other polar bears.
- 3) Barrier island habitat used for denning, refuge from human disturbance, and movements along the coast to access maternal den and optimal feeding habitat, including all barrier islands along the Alaska coast and their associated spits, within the range of the polar bear in the United States, and the water, ice, and terrestrial habitat within 1.6 km (1 mi) of these islands (no-disturbance zone).

The Service designated three polar bear critical habitat units, which correspond to each of the three PCEs described above. The Sea Ice Unit covers approximately 179,508 mi<sup>2</sup> of primarily marine habitat extending from the mean high tide line of the Alaska coast seaward to the 300 m depth contour, and spans west to the international date line, north to the Exclusive Economic Zone, east to the US–Canada border, and south to the known distribution of the Chukchi/Bering Seas polar bear population. Sea ice is used by polar bears for the majority of their life cycle for activities such as hunting seals, breeding, denning, and traveling (USFWS 2010).

The Terrestrial Denning Unit covers approximately 5,657 mi<sup>2</sup> of land along the northern coast of Alaska from near Point Barrow east to the Canadian border. It encompasses approximately 95% of the known historical terrestrial den sites from the Southern Beaufort Sea (SBS) population

(Durner et al. 2009). The inland extent of denning distinctly varies between two longitudinal zones, with 95% of the dens between the Kavik River and the Canadian border occurring within 20 miles of the mainland coast, and 95% of the dens between the Kavik River and Barrow occurring within 5 miles of the mainland coast.

The Barrier Island Unit covers approximately 4,083 mi<sup>2</sup> of barrier islands and the associated complex of spits, water, ice, and terrestrial habitats within one mile of barrier islands. There is significant overlap between this unit and both the terrestrial denning and sea ice units. The Barrier Island Unit follows a similar coastal extent as the Sea Ice Unit, from near Hooper's Bay in southwestern Alaska to near the Canadian Border.

Critical habitat does not include manmade structures (e.g., houses, gravel roads, generator plants, sewage treatment plants, hotels, docks, seawalls, pipelines) and the land on which they are located existing within the boundaries of designated critical habitat on the effective date of this rule.

Sea ice, including ice designated as critical habitat, is rapidly diminishing. Terrestrial denning locations in Alaska do not appear to be a limiting factor. However, rain-on-snow events may decrease den quality, and later onset of freeze-up in the fall may limit sea ice in proximity and therefore access to terrestrial denning habitat (USFWS 2007). Erosion of barrier islands and the Arctic shoreline, presumably caused by climate change (Mars and Houseknecht 2007), may be changing terrestrial denning habitat by creating or destroying bluffs.

Human activities such as ground-based vehicular traffic and low-flying aircraft occur in polar bear critical habitat. These activities may temporarily create disturbance between den sites and the coast (e.g., disturbance from ice roads), and may temporarily degrade the ability of barrier island habitat from being a refuge from human disturbance. For example, vessels may need to use barrier islands to weather out a storm, and this may interfere with a polar bear's ability to use barrier islands for the same purpose. However, these activities are usually infrequent and have short-term effects.

#### **4. ENVIRONMENTAL BASELINE FOR POLAR BEAR CRITICAL HABITAT**

Regulations implementing the ESA (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private Actions and other human activities in an Action area, the anticipated impacts of all proposed Federal projects in an Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private Actions that are contemporaneous with the consultation in process. This section provides an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or critical habitat within the Action area.

##### **Federal Actions Requiring Section 7 Consultation**

Several ongoing and previously consulted upon Federal Actions that may affect critical habitat in the Action Area have been considered. These include research on polar bears by USGS and FWS, summer activities and research in NPR-A, contaminated site remediation and restoration, and development projects in and close to North Slope villages. While some of the activities in these projects may have

small scale, short term, localized impacts to critical habitat PCEs, none of these projects, when considered individually or cumulatively, were determined likely to have significant adverse effects to critical habitat.

### **Habitat Loss and Disturbance from Oil and Gas Development**

With the exception of state lands subject to non-federal oil and gas leases near Prudhoe Bay, most of the polar bear critical habitat has not been subject to oil and gas development. Approximately 1,161,305 acres are currently leased for oil and gas development (Figure 1). This estimate represents a substantial decrease from leases held in 2010 because leaseholders have relinquished many tracts back to the BLM. Approximately 40,008 acres of the currently leased area are within polar bear critical habitat (BLM 2011). Although there is potential for future development, and some exploratory activities have been conducted, no development activities or construction of permanent structures has occurred in NPR-A to date and any future permitted activities would require section 7 consultation at the time of permitting.

The Action Area extends a few miles east of the NPR-A to the existing Alpine oilfield development. Alpine's existing CPF (CD-1) and satellite production pads (CD-2, CD-3, and CD-4) occur within critical habitat. Manmade structures existing on the effective date of the final critical habitat rule, January 6, 2011, and the land on which they are located are excluded from critical habitat. However, human activities (e.g., noise produced by equipment and visual stimuli) at these facilities may interfere with the capability of critical habitat adjacent to facilities to provide their intended function. For example, polar bears may alter travel routes to avoid contact with these facilities, and avoid denning, hunting, and resting near existing structures. Interactions and adverse effects to polar bears from these existing oil and gas activities have been minimized by implementation of Incidental Take Regulations for the Beaufort Sea (USFWS 2006, 2011) promulgated under the MMPA. We expect that measures implemented to minimize incidental take of polar bears have also minimized effects to the conservation role of polar bear critical habitat in this area.

### **Habitat Loss and Disturbance from Villages**

Villages occur in terrestrial denning and barrier island units, but as villages are typically discrete boundaries, effects to polar bear critical habitat are likely to be localized. The features of the PCEs most likely to be negatively affected by the presence of villages are those related to human disturbance. Residential development is not thought to be a significant threat to critical habitat (USFWS 2009); accordingly, villages have probably had a limited effect on the environmental baseline of polar bear critical habitat. There are no villages within the Action area. The closest community is Nuiqsut, which is located several miles south the Action area.

### **Environmental Contaminants**

Exposure to environmental contaminants may affect polar bear survival or reproduction. Thus, the presence of contaminants within polar bear critical habitat could affect the conservation value of the habitat. Three main types of contaminants in the Arctic are thought to pose the greatest potential threat to polar bears: petroleum hydrocarbons, persistent organic pollutants (POPs), and heavy metals.

To date, no major oil spills have occurred in the Beaufort or Chukchi Seas; therefore, petroleum hydrocarbon contamination from oil and gas development has not degraded the environmental baseline of the sea ice and barrier island units of polar bear critical habitat. Spills have occurred

in terrestrial areas, but have affected a limited area, and are not thought to have compromised the conservation function of the terrestrial denning unit.

Contamination of the Arctic and sub-Arctic regions through long-range transport of pollutants has been recognized for over 30 years (Bowes and Jonkel 1975, Proshutinsky and Johnson 2001, Lie et al. 2003). Arctic ecosystems are particularly sensitive to environmental contamination due to the slower rate of breakdown of POPs, including organochlorine compounds (OCs), relatively simple food chains, and the presence of long-lived organisms with low rates of reproduction and high lipid levels that favor bioaccumulation and biomagnification. Consistent patterns between OC and mercury contamination and trophic status have been documented in Arctic marine food webs (Braune et al. 2005). Presumably, these characteristics have affected the capacity of polar bear critical habitat to support polar bears, although it is difficult to estimate the extent of impairment.

### **Climate Change**

Climate change is contributing to the rapid decline of sea ice throughout the arctic, and some of the largest declines are predicted to occur in the Chukchi and southern Beaufort Seas (Durner et al. 2009 *in* USFWS 2009). This directly affects the sea ice PCE, which provides feeding, breeding, denning, and traveling habitat for polar bears. The decrease in the quality and quantity of sea ice may increase the importance of barrier island and terrestrial habitat for foraging, denning, and resting. For example, Schliebe et al. (2006) demonstrated an increasing trend in the number of observed polar bears using terrestrial habitats in the fall. Additionally, Fischbach et al. (2007) hypothesized that reduced availability of older, more stable sea ice is contributing to the observed decrease in the proportion of female polar bears denning on sea ice in northern Alaska.

Climate change may also affect the availability and quality of denning habitat on land. Durner et al. (2006) found that 65% of terrestrial dens found in Alaska between 1981 and 2005 were on coastal or island bluffs. These areas are suffering rapid erosion and slope failure as permafrost melts and wave action increases in duration and magnitude. In all areas, dens are constructed in autumn snowdrifts (Durner et al. 2003). Changes in autumn and winter precipitation or wind patterns (Hinzman et al. 2005) could significantly alter the availability and quality of snow drifts for denning.

### **Summary of the Status of Polar Bear Critical Habitat in the Action Area**

Localized effects to critical habitat in the Action Area have been small in scale, including potential disturbance from existing oil infrastructure on the Colville River Delta and the effects of small oil spills. At a larger spatial scale, globally distributed pollutants and climate change have diminished the quality of polar bear critical habitat; however, estimating the magnitude of these effects within the Action Area is difficult.

## **5. EFFECTS OF THE ACTION ON POLAR BEAR CRITICAL HABITAT**

In our effects analysis, we analyzed how the PCEs are likely to be affected and how that is likely to influence the function and conservation role of each PCE at the unit scale. We assumed if the

function of any one PCE at the individual critical habitat unit scale was not likely to be appreciably reduced, then it follows that adverse modification for the total polar bear critical habitat would not likely occur.

### **Effects on sea ice habitat**

Exploration and development activities will primarily occur on land, with the exception of the single sales pipeline that may be constructed on the Colville River delta to the east of NPR-A.

We anticipate the only risk to the sea ice PCE would be oil product spills that reach the marine environment directly or indirectly via rivers. Appendix D of the 2008 BA offers discussions on the probability, behavior and potential impacts of oil spills; the following information is obtained primarily from this source. The fate and behavior of spills into marine waters would depend on several factors, including the amount of open water, and the direction and velocity of ocean currents. Spills in open water during summer months would spread more than spills on or under ice. Spills in the arctic may be more difficult to respond to than spills in other environments. The amount of sea ice affected would be determined largely by the amount of material spilled, conditions at the time of spill, and the effectiveness of response. If oil contaminates sea ice, it could preclude its use for feeding or movement because of the toxicity of oil to polar bears (St. Aubin 1990, Stirling 1990). However, as explained in the 2008 BO, (USFWS 2008) and the 2008 BA (BLM 2008b) the likelihood of a large oil spill reaching the ocean as a result of the Action is low because oil produced in NPR-A would be piped overland to TAPS, not to the arctic coast for shipment on tankers, and several stipulations and ROPs protect coastline and river areas from permanent development (see Appendix A in BLM 2011).

Moreover, all tracts offered in the proposed lease sale are at least five miles from the ocean, further minimizing the probability that oil would reach the marine environment. Only a small proportion of the Sea Ice Unit is adjacent to or within NPR-A, and the temporary nature of sea ice (as it melts and reforms annually), precludes long term effects to sea ice itself from an isolated event such as an oil spill. Potential effects to the local availability of adequate prey resources (primarily ringed and bearded seals) are difficult to assess. However, spill prevention and response measures are provided in ROPs A-4 through A-7, and E-4. These ROPs are designed to reduce the potential for a spill and in the event that a spill occurs, reduce contact of oil with wildlife and provide effective cleanup response. Additionally, stipulation K-1 and ROP D-1 provide restrictions on activities in and near rivers, which minimizes the potential a spill reaching sea ice via rivers.

While the conservation role of polar bear critical habitat could be affected by a large spill, the likelihood that a large spill will occur is very low and cannot be considered reasonably certain to occur, and thus, are not considered indirect effects of the Action under the ESA. Additional information on the potential effects of a large oil spill on polar bear critical habitat is provided in the BO on polar bears (*Ursus maritimus*) and polar bear critical habitat for the Beaufort Sea Incidental Take Regulations (USFWS 2011a) and in the Large Oil Spill Analysis included in the Incidental Take Regulations<sup>2</sup> (USFWS 2011b) authorizing the non-lethal, incidental take of small numbers of polar bears and Pacific walruses during year-round oil and gas operations in the Beaufort Sea and adjacent northern coast of Alaska. Further, oil spill prevention and

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<sup>2</sup> Both documents can be accessed online at <http://alaska.fws.gov/fisheries/mmm/itr.htm>

response measures would be implemented in compliance with State and Federal regulations to reduce risks to sea ice habitat associated with the operation of a sales pipeline.

Small spills are more likely to occur and could result in adverse effects to critical habitat. Localized areas of critical habitat may be temporarily unsuitable for polar bears due to disturbance from cleanup activities and the presence of contaminants. However, effects to the conservation role of critical habitat resulting from a small spill are expected to be minor due to the temporary nature and small scale of potential impacts. Because we evaluate potential adverse effects to critical habitat at the unit scale, the area conceivably affected by a small spill would likely represent a very small portion of the 179,508 mi<sup>2</sup> of sea ice habitat designated as the Sea Ice Unit.

#### *Summary of potential effects to the Sea Ice Unit*

In summary, adverse effects of the Action are not likely to substantially impact the conservation role of the Sea Ice Unit because 1) in the event that an oil spill occurs over land, oil is unlikely to reach sea ice habitat; 2) annual sea ice melt and formation of new sea ice near shore precludes long term effects to the physical features of sea ice habitat from any single event; 3) large oils spills cannot be considered reasonably certain to occur; and 4) the scale of the area potentially affected by small spills would be small relative to the extent of the sea ice unit such that the integrity of the unit as a whole would not be compromised.

#### **Effects on terrestrial denning habitat**

The proposed Action may alter the physical features of terrestrial denning habitat through the construction and operation of ≤15 miles of gravel roads, ≤10 miles of pipeline, and ≤50 acres of fill for each of two coastal staging areas. Temporary effects to terrestrial denning habitat could result from ≤55 miles of ice/snow roads. Additionally, activities that may occur in the Action area, including those in the four proposed tracts located within one mile of terrestrial denning habitat, could be a source for disturbances that may affect the conservation role of terrestrial denning habitat.

#### *Topographic features*

The terrestrial denning PCE is characterized by steep, stable slopes that accumulate snow. Certain areas such as barrier island, river banks, and coastal bluffs that occur at the interface of mainland and marine habitat receive proportionally greater use for denning (Durner et al. 2004, 2006), with coastal bluffs providing the most preferred topographic relief. For example, of 35 terrestrial dens found on the Arctic Coastal Plain of Alaska in 2001, >80% were along coastal bluffs (Durner et al. 2003).

It is possible that potential development activities as set forth in the RFDs, such as road, pipeline, and staging area construction, could result in modifications of some slopes and limit their capability to catch snow. At the leasing stage, BLM does not have exact information on where roads, pipelines or staging areas would be constructed. While the maximum amount of ice roads predicted to be constructed in terrestrial denning habitat is 55 miles annually, we expect that alteration of slopes during road and pipeline construction is likely to be minimal, and, in fact, largely avoided because construction and use of steep terrain is more difficult than flat areas. Additionally, ice roads would likely be constructed in the same general areas annually.

Therefore, we expect only a small area containing suitable topographic features for denning could be affected.

If potential construction of two new staging areas at undisturbed sites occurred, it would eliminate a maximum of 100 acres (0.4 km<sup>2</sup>) of available denning habitat by altering its topographic features. However, we consider it more likely that existing staging areas at Cape Simpson or Point Lonely would be used or possibly expanded, as high construction costs make the construction of new staging areas unlikely.

Further, it is important to note that several restrictions limit development in places most likely to provide the topographic features that characterize terrestrial denning habitat, such as coastal, lake, and river bluffs. For example, stipulation K-6 precludes the construction of oil and gas facilities within ¾ mile (1.2 km) of the coast, and stipulations K-1 and K-2 preclude facilities within ¼ mile (0.4 km) of many lakes and ½ mile (0.8 km) of many rivers (see BLM 2011). In all, approximately 75% of the terrestrial denning unit that falls within the NPR-A has restricted development potential. This includes the areas most likely to provide suitable topographic features, such as coastal, river and lake bluffs. Ice roads, pipelines, and staging areas are more likely to be constructed in the remaining 25%, where only general stipulations would apply. Because we expect steep, stable slopes are less common in areas with general stipulations than in areas with restrictions, potential adverse effects to the topographic features of terrestrial denning habitat from the anticipated activities would be reduced in these areas.

Given that most of the area developed for ice roads or pipelines are not likely to contain steep, stable slopes due to BLM restrictions and engineering constraints and potential new staging areas would only affect a small proportion of the overall unit, we consider it unlikely that the Action would substantially alter the topographic features of terrestrial denning habitat.

#### *Features related to polar bear movement and absence of disturbance*

A disturbance may affect critical habitat if it persists and affects the critical habitat's conservation role. Features of the terrestrial denning habitat PCE that relate to disturbance include 1) unobstructed, undisturbed access between den sites and the coast and 2) the absence of disturbance from humans and human activities that might attract other polar bears (i.e., non-denning polar bears which may kill females and cubs in dens).

Several BLM stipulations and ROPs minimize obstructions and disturbance by incorporating buffers and other development restrictions in travel corridors, such as coast and rivers, and minimize human disturbance related to development and travel (BLM 2008b and 2011). Given the limited extent of development anticipated in polar bear critical habitat, and the existing restrictions in place, it is unlikely the Action will significantly hinder movement between den sites and the coast through physical obstructions or disturbance.

Human activity could also reduce the quality of terrestrial denning habitat by providing attractants (such as food and scents) that could attract adult male bears, which may kill females and cubs, to nearby dens. Disturbance and attractants resulting from the Action would be most likely to occur where human presence is concentrated or prolonged, such as drilling sites, CPFs, and staging areas. However, most permanent development will not occur near optimal denning habitat, such as river and coastal bluffs, due to BLM stipulations and ROPs. Additionally,

several ROPs minimize human disturbance and attractants by addressing proper waste and contaminant disposal and training for personnel (see BLM 2011 for a list of applicable ROPs). Thus, implementation of the stipulations and ROPs is expected to reduce both the level of human activity within preferred denning habitat and the presence of attractants to non-denning polar bears.

#### *Summary of potential effects to the Terrestrial Denning Unit*

In summary, adverse effects of the Action are not expected to substantially impact the conservation role of the Terrestrial Denning Unit because 1) stipulations and ROPs limit the potential for development in areas where topographic relief produces optimal denning habitat, such as river and coastal bluffs; 2) stipulations and ROPs also minimize the level of persistent disturbance that may result from the Action; and 3) the scale of the potentially affected area would be small relative to the extent of the Terrestrial Denning Unit such that the function of the unit as a whole would not be compromised.

#### **Effects on barrier island habitat**

No proposed lease tracts occur within several miles of the Barrier Island Unit and the BLM does not anticipate that pipelines will be necessary in barrier island habitat to support facilities elsewhere, because product will presumably be transported overland to existing facilities. While the eventual locations of two potential staging areas are unknown, permanent structures are prohibited on barrier islands pursuant to lease stipulations and ROPs (stipulation K-6 in particular); therefore, we assume for the purposes of this analysis that new staging areas and their supporting ice roads would not be constructed within barrier island habitat. Existing coastal staging areas (Cape Simpson and Camp Lonely) are not within barrier island habitat. Because activities resulting from the lease sale are unlikely to occur in barrier island habitat, we do not anticipate adverse effects to the Barrier Island Unit.

## **6. CUMULATIVE EFFECTS**

Under the ESA, cumulative effects are the effects of future State, tribal, local, or private activities not involving Federal actions that are reasonably certain to occur in the Action Area considered in this BO. Future Federal actions that are unrelated to the proposed Action are not considered in this section because they will require separate consultation under the ESA. The vast majority of the land in the Action Area is under federal management, and nearly all lands in the Action Area are classified as wetlands. Therefore, nearly all activities that may occur in the future in the Action Area would require separate consultation and are not considered cumulative effects under the ESA. The activities considered in this analysis that will require future consultation include, but are not limited to: further oil and gas development (both on and offshore), natural gas line construction, community growth, commercial fishing, increased shipping traffic, increased scientific research, and tourism within NPR-A. The Federal nexus for each of these activities is explained in detail in the 2008 BO (USFWS 2008).

## 7. CONCLUSION

While BLM has projected the amount and methodology of exploration and development that may result from the Action based on RFS, informed assumptions and mitigation measures (BLM 2008b), considerable uncertainty exists regarding the specific nature and extent of exploration and development activities that may occur in the leased tracts; therefore, it is difficult to precisely quantify the effects of the Action at the leasing stage. However, because BLM ensures that “no tracts leased in the 2011 offering would result in certain or immediate ground-disturbing activities; nor would such activities occur without site-specific analysis or ESA consultation” (BLM 2011), we have additional assurance that future Action beyond the lease sale will result in re-initiation of consultation. These future consultations prior to exploration and development will analyze Actions that are defined more precisely in specific exploration and development proposals, and the Service’s analysis will improve with more information and better understanding of the biology and sensitivity of listed species and designated critical habitats. Nonetheless, we used a conservative approach to evaluating the potential effects of the Action on polar bear critical habitat at this time, by assuming the maximum amount of impact that may reasonably occur based on the available information.

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 C.F.R. 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete our analysis with respect to critical habitat. After considering the status of polar bear critical habitat, the environmental baseline, cumulative effects, and effects of the proposed Action on each PCE, we conclude the proposed Action may adversely affect but *is not likely to destroy or adversely modify polar bear critical habitat*. This conclusion was based on the following factors:

- 1) Lease stipulations and ROPs, and the 2008 BO terms and conditions, will limit development and potential effects to polar bear critical habitat in coastal areas, rivers, and barrier islands.
- 2) Disturbance will be reduced by these protections as well as the requirements for oil and gas activities under the MMPA.
- 3) The BLM has indicated that re-initiation will occur prior to exploration or development resulting from the lease sale.
- 4) The scale of potentially affected sea ice and terrestrial denning habitat within the Action Area is small relative to the spatial extent of the Sea Ice Unit and the Terrestrial Denning Unit such that the conservation roles of those critical habitat units, in their entirety, would not be compromised.
- 5) Activities resulting from the lease sale are not expected to occur in the Barrier Island Unit.

## 8. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and

threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed Action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We recommend the following Actions be implemented:

- 1) BLM is encouraged to contribute to research on polar bear distribution and habitat use, particularly the Service's efforts to analyze bear distribution, movement, and sighting data. Results will allow the Service and BLM to better evaluate the effects of development on polar bear critical habitat, and can be used to inform efforts to prevent destruction or adverse modification of polar bear critical habitat.
- 2) BLM should continue to report polar bear sightings and possible den locations to the Service by contacting Craig Perham at (907) 786-3810 or Shannon Torrence at (907) 455-1871. Please provide GPS locations and behavioral observations when possible.

In order for the Service to be kept informed of Actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

## **9. REINITIATION NOTICE**

This concludes formal consultation on the Action as described in this document. The BLM shall request reinitiation of consultation if

- 1) The amount or extent of incidental take authorized in the 2008 BO is exceeded;
- 2) New information reveals effects of the Action agency that may affect listed species or polar bear critical habitat in a manner or to an extent not considered in this BO or the 2008 BO;
- 3) The proposed Action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in the 2008 BO or this BO; or
- 4) A new species is listed or critical habitat designated that may be affected by the proposed Action.

The analysis, and hence conclusions in this BO, rely on a series of assumptions about the type, location, and amount of development as described in the Proposed Action section above. If these assumptions prove to be inaccurate, consultation should be reinitiated in accordance with 50 CFR §402.14. For example, an increase in the amount of development anticipated to result from the lease sale would require discussion with the Service to determine if an increase in effects of the proposed Action on critical habitat are likely to result.

Thank you for your cooperation in the development of this Biological Opinion. If you have any comments or require additional information, please contact Ted Swem, Endangered Species Branch Chief, Fairbanks Fish and Wildlife Field Office, 101 12<sup>th</sup> Ave., Fairbanks, Alaska, 99701.

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