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VIA ELECTRONIC MAIL

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September 29, 2016

Re: Comments on the Notice of Intent To Prepare a Supplemental Environmental Impact Statement for the Alpine Satellite Development Plan for the Proposed Greater Moose's Tooth 2 Development Project, Alaska

Dear Ms. Rice,

Thank you for the opportunity to provide scoping comments on the Supplemental Environmental Impact Statement (SEIS) for the Greater Moose's Tooth 2 (GMT2) Development Project. The National Audubon Society has been involved in the conservation of Alaska's Arctic for decades, and, through Audubon Alaska, is deeply engaged in issues involving the Western Arctic and the National Petroleum Reserve – Alaska (NPRA). In 2011, Audubon revised its Western Arctic Synthesis¹ to develop a Habitat Conservation Strategy² for the NPRA, and participated in the planning process for the 2013 Integrated Activity Plan (IAP) for the NPRA by contributing maps, spatial analyses, and ecological data. Audubon collaborated with the Ocean Conservancy on the May 2016 publication of *The Arctic Ahead: Conservation and Management in Arctic Alaska*,³ contributing data, original spatial analyses, and a series of maps highlighting conservation issues and development scenarios in the context of integrated management. Most recently, Audubon integrated the best available science into the entirely updated and revised *Ecological Atlas of Alaska's Western Arctic*, published in July 2016.⁴

¹ Audubon Alaska. 2003. Alaska's Western Arctic: A resource synthesis and conservation strategy. Audubon Alaska, Anchorage, Alaska.

² Audubon Alaska. 2011. Habitat Conservation Strategy for the National Petroleum Reserve – Alaska. Audubon Alaska, Anchorage, Alaska.

³ Hartsig, A. 2016. The Arctic Ahead: Conservation and Management in Arctic Alaska. Ocean Conservancy, Washington, D.C. 94 pp. Available online at <http://www.oceanconservancy.org/places/arctic/2016-scenarios-report.pdf>.

⁴ Sullender, B.K. and M.A. Smith. 2016. Ecological Atlas of Alaska's Western Arctic. Audubon Alaska, Anchorage, AK. 71 pp. Available online at: https://ak.audubon.org/sites/g/files/amh551/f/w_arctic_atlas_lr.pdf.

Audubon urges the agency to pay close attention to issues related to: conservation areas and species of concern; riparian buffers and reducing human activity and pollution on wildlife; applying research and monitoring and increasing appropriate access to public data; opportunities for roadless development; cumulative impacts; application of mitigation strategies; and acknowledgment of carbon emissions and climate change. Below we expand on the issues and areas of concern that Audubon believes merit consideration as the agency develops its range of alternatives for the GMT2 SEIS.

Develop alternatives with attention paid to conservation areas

All alternatives should place the GMT2 infrastructure outside the Colville River Special Area and the Teshekpuk Lake Special Area, and generally respect special area boundaries. As the agency develops its alternatives for the GMT2 SEIS, it must balance its conservation mandate with development management.⁵ Adhering to the special area boundaries as described in the IAP will help ensure lasting protection for these valuable ecological areas.

The GMT2 project, as proposed, will overlap with the Colville River Delta Important Bird Area (IBA)⁶. More than 1% of the global population of Black Scoters, Steller's Eiders, and Yellow-Billed Loons utilize habitat within the Colville River Delta IBA. This IBA also contains more than 1% of the North American population of American Golden-Plovers, Brant, Greater White-fronted Geese, Spectacled Eiders, and Tundra Swans, in addition to significant numbers of Glaucous Gulls, Golden Eagles, Long-Tailed Ducks, Pacific Loons, Red-throated Loons, and Sabine's Gulls.

Of these 14 species, seven are on Audubon Alaska's WatchList,⁷ indicating that these birds are of particular conservation concern. These seven species (American Golden-Plover, Black Scoter, Brant, Spectacled Eider, Steller's Eider, Red-throated Loon, and Yellow-billed Loon⁸) are at risk due to various combinations of small range size, dependence on Alaskan habitats, and population size and trend. Audubon finds that these species merit explicit consideration within the GMT2 SEIS, as loss or degradation of their habitats, disruption of their movement patterns or habitat use, and/or diminished food sources could increase their vulnerability and result in harm at the population level.

We encourage particular attention paid to how alternatives will impact Yellow-billed Loons. The 2006 Conservation Agreement for the Yellow-billed Loon (*Gavia adamsii*)⁹ is a written agreement between local, state, and federal agencies. This document expressly includes an objective to ensure land management practices do not contribute to the species becoming threatened or endangered.¹⁰ The Yellow-billed Loon is a species that is especially sensitive to habitat alteration, oil spills,

⁵ National Petroleum Reserves Production Act, Pub. L. 94-258 (Apr. 5, 1976), Sec. 104; *see also* IAP ROD at 15 (“The plan adopted in this ROD balances BLM’s legislatively mandated goals of developing oil and gas and protecting surface values . . .”).

⁶ Sullender and Smith, 2016, at p. 19.

⁷ Kirchhoff, M. and V. Padula. 2010. Alaska WatchList: Highlighting Declining and Vulnerable Bird Species in Alaska. Audubon Alaska, Anchorage, AK.

⁸ See Conservation Agreement for the Yellow-billed Loon (*Gavia adamsii*) (September 30, 2006), attached to these comments below.

⁹ *Id.*

¹⁰ Conservation Agreement at 8.

incidental and direct take, and increased predator density¹¹ all of which could increase through GMT2 development; each of these impacts should be explicitly addressed within the GMT2 SEIS.

Abide by Best Management Practices as described in the IAP

The recommended lease stipulations and best management practices (BMPs) that appear in the IAP are important tools for maintaining the balanced approach as development takes place in the NPRA. The GMT2 project should adhere as closely as possible to the BMPs in the IAP.

For example, the IAP explicitly establishes riparian buffers in order to minimize the disruption of hydrological flow, decreases in water quality, loss of raptor and fish habitat, and disruption of subsistence activities. However, during the planning process for GMT1, BLM ultimately granted exemptions at the Record of Decision stage for setbacks in both Fish Creek and Tijmiaqsigvik (Ublutuoch) River,¹² reversing its decision at the Final EIS stage. The process leading up to the Record of Decision was confusing and did not allow for adequate public involvement. The agency should make full use of the BMPs in the IAP. Where the agency does grant an exemption for GMT2, this should only occur after an adequate opportunity for full public participation and should be accompanied by a complete explanation.

Consider buffers for deep-water lake fish habitat

As development moves west from the Colville River, infrastructure will enter a landscape with a higher number of deep water lakes.¹³ These lakes provide important habitat for overwintering fish such as Arctic grayling, broad whitefish, and char.¹⁴ Given site fidelity and the limited extent of suitable habitats,¹⁵ protection of both overwintering sites and connectivity are essential in maintaining fish populations in the Arctic. The lakes and contained fish constitute important habitat resources for Yellow-billed Loons.¹⁶ Presently, the IAP prohibits permanent facilities from occurring within a quarter mile of the ordinary high water mark of any deep lake; but on a case-by-case basis a permittee may be allowed an exemption.¹⁷ Similarly, the IAP establishes BMPs to protect fish and invertebrate habitat by restricting water withdrawal, particularly in deep-water lakes.¹⁸ We urge the agency to adhere to the requirement of BMPs K-2, B-1, and B-2 without granting exemptions to protect valuable fish resources.

Consider effects of waste on wildlife

All alternatives should include strong waste management and reduction practices.¹⁹ Human and industrial waste from development facilities and activities attract and subsidize predators, likely

¹¹ Conservation Agreement at 6-7.

¹² See IAP at 74 (BMP K-1(e)).

¹³ See Sullendar and Smith, 2016, at 18.

¹⁴ Hershey, A. E., S. Beaty, K. Fortino, M. Keyse, P. Mou, W. O'BRIEN, A. Ulseth, G. Gettel, P. Lienesch, and C. Luecke. 2006. Effect of landscape factors on fish distribution in arctic Alaskan lakes. Freshwater Biology 51:39-55. Laske, S. M., T. B. Haynes, A. E. Rosenberger, J. C. Koch, M. S. Wipfli, M. Whitman, and C. E. Zimmerman. 2016. Surface water connectivity drives richness and composition of Arctic lake fish assemblages. Freshwater Biology 61:1090-1104.

¹⁵ West, R. L., M. W. Smith, W. E. Barber, J. B. Reynolds, and H. Hop. 1992. Autumn migration and overwintering of Arctic grayling in coastal streams of the Arctic National Wildlife Refuge, Alaska. Transactions of the American Fisheries Society 121:709-715.

¹⁶ Conservation Agreement, at 5-6.

¹⁷ IAP ROD, at 77 (BMP K-2).

¹⁸ IAP ROD, at 52-52 (BMPs B-1 and B-2).

¹⁹ IAP ROD, at 44-45 (BMPs A-1 and A-2).

supporting greater densities of predators around developed areas.²⁰ Although recent management practices have been revised to reduce the impact of human waste, a 2012 study found that more than 50% of the Arctic fox diet at Prudhoe Bay comprises anthropogenic foods.²¹ Because predation is a key factor in mortality of wildlife such as waterbirds,²² waste management practices and the potential ecological impacts of anthropogenic food subsidies should be carefully addressed in the GMT2 SEIS.

Research, monitoring, and data availability

Apply research and monitoring requirements

Research and monitoring is a critical component of any development activity in the Arctic before, during, and after development. Studies and monitoring are required by the 2013 IAP (section 1-1) to ensure compliance, assess effectiveness, and increase data and knowledge. GMT2 should include careful adherence to research and monitoring BMPs, including requirements to survey for Yellow-billed Loons even prior to development activities, and modify construction to minimize disturbance.²³

Data availability

As development proceeds on public lands, valuable baseline and monitoring data are collected as part of publicly-driven environmental impact statements. These data are useful for the scientific community and public discourse and will fill a gap with site-specific, fine-scale data. Furthermore, providing open access to scientific data will reduce redundancy. Aircraft overflights may have ecological impacts, particularly with regard to subsistence resources; allowing access to assessment and monitoring data will help to eliminate redundant aerial study effort and allow a wide range of researchers to leverage the same fieldwork. Therefore, to reduce the overall impact of research, we encourage public distribution of scientific data collected as part of oil and gas development on public lands. The BLM currently recommends that spatial data documenting permanent infrastructure be collected and shared (BMP E-19).²⁴ We suggest that BLM extend these recommendations to ecological assessment and monitoring data and that BLM includes such descriptions in all alternatives.

Consider a roadless alternative

In developing alternatives for GMT2, the agency should analyze the effects of roads on caribou movements, particularly in key migration and calving areas. Although the impacts of general infrastructure on caribou distribution, habitat use, and population trends are not well understood,²⁵

²⁰ Stickney, A. A., T. Obritschkewitsch, R. M. Burgess, and N. Giguère. 2014. Shifts in fox den occupancy in the greater Prudhoe Bay Area, Alaska. *Arctic*:196-202.

²¹ Lehner, N. S. 2012. Arctic fox winter movement and diet in relation to industrial development on Alaska's North Slope.thesis, University of Alaska Fairbanks.

²² LIEBEZEIT, J. R., J. KENDALL, S. BROWN, C. B. JOHNSON, P. MARTIN, T. L. MCDONALD, D. C. PAYER, C. L. REA, B. STREEVER, A. M. WILDMAN, and S. ZACK. 2009. Influence of human development and predators on nest survival of tundra birds, Arctic Coastal Plain, Alaska. *Ecological Applications* 19(6):1628-1644.

²³ See Conservation Agreement, at 9, 11.

²⁴ IAP ROD, at 65 (BMP E-19).

²⁵ Joly, K., C. Nellemann, and I. Vistnes. 2006. A reevaluation of caribou distribution near an oilfield road on Alaska's North Slope. *Wildlife Society Bulletin* 34:4.

Noel, L. E., Keith R. Parker, and Matthew A. Cronin. 2004. Caribou distribution near an oilfield road on Alaska's North Slope, 1978–2001. *Wildlife Society Bulletin* 32:757-771.

recent scientific studies conclude that roads are of central importance in assessing potential impact of development on caribou migration and should be directly assessed.²⁶

One question that consistently arises in considering development with roads versus roadless is what are the effects of aircraft versus roads on wildlife and the landscape under different conditions and at different spatial scales. The agency needs to continue to analyze roadless development alternatives, especially in the context of regional development scenarios. Audubon Alaska is undertaking an analysis of the best available science to help answer this question. Upon completion of our report, we will submit those findings to the agency, as a supplement to these comments, or as part of our substantive comments at a later stage in the public process on this project.

In light of the science indicating negative caribou reactions to roads, Audubon encourages the BLM to consider a roadless option as one of the project alternatives. While there are economic, safety, and practical factors to take into account, roadless development on the North Slope is both technically and economically viable. It is the agency's responsibility to take a hard look at this type of alternative. Strategically limiting and isolating roaded development is also important to keep on the table as NPRA development moves beyond GMT2.

Consider cumulative impacts

What may seem like a small effect at the project level can incrementally add up to a magnified effect over the greater landscape of the North Slope of Alaska and beyond. An additional mile of road, a mild negative response observed in caribou, and slightly increased access for hunting all may seem to have small individual-level impacts. However, these small effects can accumulate to greater effect over time and space, especially when exacerbated by other factors such as climate change. The agency should analyze impacts on a cumulative basis by considering existing and reasonably foreseeable future development projects.²⁷ At a minimum, these should include established Alpine sites, future Bear Tooth development, and neighboring State and private activities (e.g., development of oil and gas leases in state waters at Smith Bay, and Nanushuk). Direct impacts from the GMT2 project that we view as especially important in terms of cumulative impacts are: impediments to caribou movement, disturbance of breeding birds like Yellow-billed Loons, and air quality for local communities.

Apply mitigation concepts to the GMT2 project

Even as the Regional Mitigation Strategy (RMS) is being developed, the agency should continue mitigating the unavoidable impacts of development that will stem from GMT2. Impacts to wetlands should be mitigated under Section 404 of the Clean Water Act. Impacts to communities may, at least in part, be addressed under the NPRA Impact Mitigation Program.²⁸ Additionally, BLM should require mitigation under the GMT2 SEIS and any forthcoming Regional Mitigation Strategy for any

²⁶ Wilson, R. R., Lincoln S. Parrett, Kyle Joly, Jim R. Dau. 2016. Effects of roads on individual caribou movements during migration. *Biological Conservation* 195:2-8.

²⁷ 40 C.F.R. 1508.7 ("Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.").

²⁸ 42 U.S.C. § 6506a(l); Department of Commerce, Community, and Economic Development, January 2015, National Petroleum Reserve – Alaska (NPR-A) Impact Mitigation Grant Program Report to the First Session of the Twenty-Ninth Alaska, available at <https://www.commerce.alaska.gov/web/Portals/4/pub/2015%20Report%20to%20the%20Legislature.pdf>.

remaining impacts that are not covered either in law or in practice. While we expect to comment in detail on the forthcoming Draft RMS, we offer the following ideas to help shape the mitigation associated with GMT2 at this stage when the RMS is not yet available as a guidance document.

The traditional mitigation hierarchy requires avoidance, minimization, and finally compensation for unavoidable impacts. Avoidance should occur by eliminating the possibility of developing occurring within designated special areas. Minimization should occur through the application of BMPs, lease stipulations, and careful planning within areas of the NPRA where development and infrastructure may occur under the IAP. For unavoidable impacts that remain after minimization, BLM should require compensatory mitigation to offset unavoidable impacts that remain even after minimization.

One type of unavoidable impact arising from GMT2 would be exemptions to BMPs (and then, only after full public involvement, consideration of, and explanation why the project is granted an exemption). Mitigation fees would then go toward mitigating the impacts from not adhering to the BMP.

Another type of impact that is not addressed using current mitigation mechanisms is the contribution from individual projects to the cumulative impacts that occur on a landscape scale. GMT2 will have numerous small effects that will likely not appear impactful on a project scale. But when combined across the NPRA and the North Slope, these effects are magnified. We are unaware of any mitigation occurring to combat this landscape scale impact. One way to address this oversight is to require each project to contribute to a cumulative effects mitigation fund, which would compensate on an equally large scale.

At least part of the compensation for cumulative effects could take the form of robust research and monitoring for landscape-scale effects, including wildlife population and movement dynamics. This effort would help address the interests outlined in the Memorandum of Agreement on Integrated Arctic Management.²⁹ Obtaining baseline data, and understanding how that baseline is changing in coming years, will serve as compensation for present-day impacts by providing a foundation for modifying harmful behavior in the future.

Other ways to compensate for cumulative effects that manifest on a landscape scale is acquisition and protection of important habitats for migratory birds (throughout their ranges), and funding the purchase of conservation easements, as appropriate under the law. We expect to clarify and expand upon these suggestions in future responses to a Draft RMS conceptual document, as well as in comments at future points in this NEPA process.³⁰

Consider carbon emissions in the alternatives

Climate change, fairly traceable to anthropogenic carbon emissions, and thus including the oil and gas that will result from the GMT2 project, already has an enormous effect on the NPRA. The Arctic is undergoing extraordinary changes to climate, coastlines, and the migratory patterns of wildlife. We think it is critical that the agency think hard about these changes, which will likely need

²⁹ Memorandum of Understanding For the Implementation of Integrated Arctic Management, Among U.S. Federal Agencies in Alaska And State of Alaska Agencies Engaged in The Stewardship of U.S. Arctic Natural Resources (May 18, 2016).

³⁰ See also Audubon Alaska's comments on the Conceptual Regional Mitigation Strategy Document for the Northeastern Region of the National Petroleum Reserve in Alaska (June 15, 2016).

to be addressed in future projects and future Plans. It behooves the agency and the developer to consider these changes now.

The GMT2 project will implicate carbon emissions in two ways. Council on Environmental Quality guidance³¹ and Environmental Protection Agency regulation³² require quantification and consideration of production sources of GHGs. First, the project itself will generate emissions through exploration and production activities (e.g. fuel used in development transportation, facility leaks, flaring). When developing alternatives, the agency should look into those alternatives that minimize emissions from GMT2 sources.

Second, the oil produced from the project will generate supply-side emissions (e.g. the Social Cost of Carbon,³³ fuel combustion by consumers). There is a persuasive argument that BLM should also consider these emissions. Recent court decisions signal that agencies may be required to assess the effect on climate change of ultimate greenhouse gas contributions by end-source activities.³⁴ The agency should at least explain its rationale on how it calculates the carbon emissions it compares between its different alternatives.

Thank you for the opportunity to participate in developing the alternatives during this scoping period for the GMT2 SEIS. We look forward to seeing these suggestions incorporated into the Draft SEIS. We plan to submit more substantive comments at that stage, as well as on future agency actions including the Draft Regional Mitigation Strategy.

Sincerely,



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³¹ https://www.whitehouse.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf

³² <https://www.federalregister.gov/articles/2016/06/03/2016-11971/oil-and-natural-gas-sector-emission-standards-for-new-reconstructed-and-modified-sources#h-182>

³³ See Interagency Working Group on Social Cost of Carbon, United States Government, Technical Support Document Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (revised July 2015), available at <https://www.whitehouse.gov/omb/oira/social-cost-of-carbon>.

³⁴ See *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1197-98 (D. Colo. 2014).

Attachment:

Conservation Agreement for the Yellow-billed Loon (*Gavia adamsii*) (September 30, 2006).

Conservation Agreement for the Yellow-billed Loon (*Gavia adamsii*)



Ted Swem / USFWS

September 30, 2006

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I. Introduction

The Conservation Agreement (Agreement) for the yellow-billed loon (YBLO) *Gavia adamsii*, has been developed as a cooperative effort among local, state and federal resource agencies in northern and western Alaska in order to take measures necessary for the conservation of the species. Implementation of this Agreement will contribute significantly to reducing or eliminating current, potential, or future threats to the YBLO and its habitat.

In northern Alaska, YBLO breed within the National Petroleum Reserve–Alaska (NPR-A) on lands managed by the Bureau of Land Management (BLM), and on State of Alaska lands between the Colville and the Canning rivers, and on Alaska Native-owned Lands within the North Slope Borough (Fig. 1). In western Alaska YBLO are found breeding primarily along the coastal fringe of the Seward Peninsula on Selawik National Wildlife Refuge (NWR), administered by the U.S. Fish and Wildlife Service (USFWS); Cape Krusenstern National Monument and Bering Land Bridge National Preserve, administered by the National Park Service (NPS); and on scattered small parcels of BLM and Alaska Native-owned lands. Small numbers of YBLO have also been found nesting on Alaska Native-owned lands located on St. Lawrence Island.

The greatest YBLO breeding concentrations in Alaska are found on the North Slope, with highest densities between the Meade and Ikpikpuk rivers, on the Colville River Delta, and in areas west, southwest and east of Teshekpuk Lake. These are all areas which have been or will be open to petroleum exploration and development, with accompanying conservation concerns such as loss of habitat and disturbance. Currently, BLM is leasing lands for oil and gas exploration within the Northeast (NE) and Northwest (NW) areas of the NPR-A on the North Slope. The Alpine Satellite Development Project Environmental Impact Statement (ASDP EIS) was signed in September 2004 and allows for development of the first oil and gas facilities within the NPR-A near the Colville River Delta. State and Alaska Native lands on the Colville River Delta, under jurisdiction of the Alaska Departments of Natural Resources (ADNR) and Fish and Game (ADFG), have been leased, and oil and gas development will expand from the currently active Alpine project. Other State lands, with relatively low YBLO density, have been developed for oil and gas extraction and production, including the Kuparuk and Prudhoe Bay oil fields.

Conservation concerns in western Alaska include gravel extraction, road construction, proposed natural gas extraction with accompanying power infrastructure on the Kobuk River Delta, and oil spills, subsistence harvest, and climate-induced water level changes (Smith et al. 2005). However, the overall concern is lower than on the North Slope because land ownership patterns include federal lands that are not subject to broad-scale extractive industry or infrastructure (e.g., NPS lands), and because YBLO occur at lower densities in western Alaska.

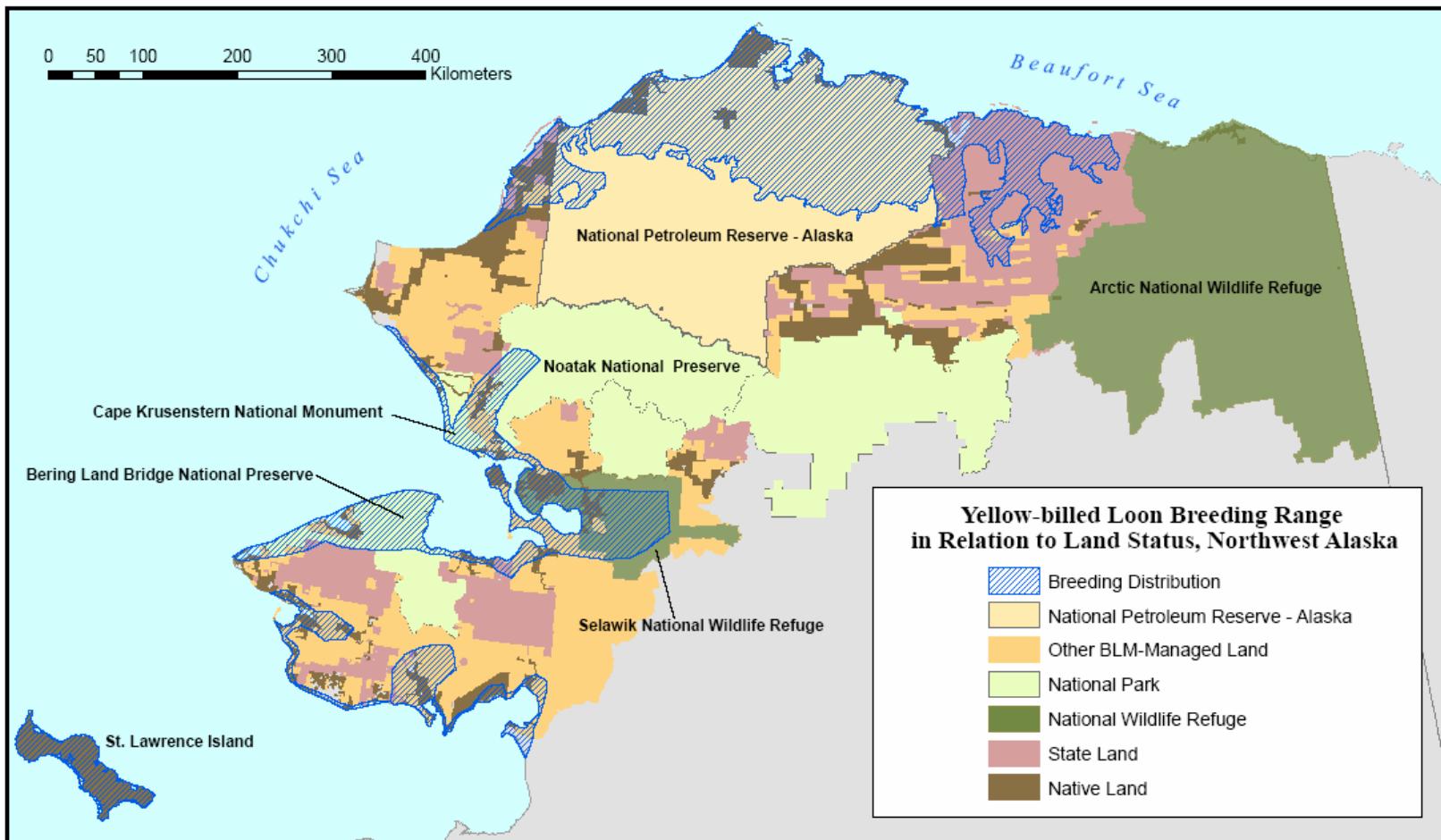


Figure 1. Yellow-billed loon breeding distribution in Alaska.

II. Goal

The goal of this Agreement is to protect YBLO and their breeding, brood-rearing, and migrating habitats in Alaska, such that current or potential threats in these areas are avoided, eliminated or reduced to the degree that they do not cause the species to become threatened or endangered from these threats within the foreseeable future.

III. Strategies and Objectives

Strategy 1: Implement specific actions to protect YBLO and their habitats from potential impacts of land uses and management activities, including oil and gas exploration and development.

Objective A: Ensure that land management practices in NPR-A do not contribute to YBLO becoming threatened or endangered with extinction.

Objective B: Ensure that land management practices on the Colville River Delta do not contribute to YBLO becoming threatened or endangered with extinction.

Strategy 2: Inventory and monitor YBLO populations.

Objective A: Continue and improve inventories and monitoring of YBLO in primary breeding areas.

Objective B: Inventory and monitor YBLO in western Alaska.

Objective C: Annually evaluate the effectiveness of monitoring surveys to detect population changes and assess priority survey needs.

Strategy 3: Determine and reduce, if significant, the impact of subsistence activities on YBLO.

Objective A: Measure and reduce the number of YBLO incidentally caught in subsistence fisheries.

Objective B: Measure and reduce the number of YBLO taken by subsistence hunters.

Strategy 4: Conduct biological research on YBLO, including response to management actions and use of control or reference sites.

Objective A: Annually evaluate YBLO research and monitoring priorities.

Objective B: Cooperatively work toward funding YBLO research and monitoring priorities.

IV. Additional Benefits

Protecting and mitigating YBLO from the impacts of land management activities may also result in habitat protections for a variety of other tundra-nesting birds, including some of conservation concern. Information gained from research and monitoring efforts may be applied to other loon species, including Pacific (*G. pacifica*), red-throated (*G. stellata*), and common (*G. immer*) loons. Two species classified as threatened under the Endangered Species Act, the spectacled eider (*Somateria fischeri*) and the Alaska-breeding population of Steller's eider (*Polysticta stelleri*), nest within areas and habitats used by YBLO and will benefit from management prescriptions to protect YBLO. Other species that may benefit from YBLO habitat protections,

including BLM Sensitive Species and USFWS Species of Management Concern, are northern pintail (*Anas acuta*), greater white-fronted goose (*Anser albifrons*), brant (*Branta bernicla*), cackling goose (*Branta hutchinsii*), lesser snow goose (*Chen caerulescens*), long-tailed duck (*Clangula hyemalis*), tundra swan (*Cygnus columbianus*), king eider (*Somateria spectabilis*), Arctic tern (*Sterna paradisaea*), and shorebirds including red phalarope (*Phalaropus fulicarius*) and red-necked phalarope (*Phalaropus lobatus*).

V. Parties

The listed parties will implement and coordinate conservation actions of this Agreement, as set forth in Section X below.

Alaska Department of Fish and Game
Alaska Department of Natural Resources

North Slope Borough

U.S. Department of the Interior
Bureau of Land Management
Fish and Wildlife Service
National Park Service

VI. Authorities

The signatory parties enter into this Agreement under Federal, State, and Borough laws, regulations, and policies.

The Alaska Department of Natural Resources enters into this agreement under the authority of Alaska Statutes AS 38.05.020 pertaining to land management and AS 38.05.180 as it applies to oil and gas leasing and placing conditions on drilling or development contracts. The Alaska Department of Fish and Game enters into this agreement under the authority of AS 16.05.050. Both ADNR and ADFG enter into this agreement in accordance with AS 36.30.850(c).

North Slope Borough enters into this agreement because a large proportion of YBLO breed within its jurisdictional borders and borough residents use YBLO for subsistence and cultural purposes. The NSB has zoning authority in accordance with AS 29.40.010 and AS 29.40.040(a). The NSB also has a Coastal Zone Management Program through the Alaska Coastal Management Act of 1977 (AS 44.19.891-894 and 46.40). Further the NSB is the Alaska Migratory Bird Co-management Council's (AMBCC) partner for the North Slope. The AMBCC helps manage the spring and summer subsistence harvest and conservation of migratory birds, including YBLO.

As part of the Dept. of the Interior, BLM enters into this agreement because a large proportion of YBLO breed within NPR-A. The Naval Petroleum Reserves Production Act (NPRPA) is

applicable, which directs the Secretary of the Interior to “assume all responsibilities for any activities related to the protection of environmental fish and wildlife, and historical or scenic values” (42USC § 6503(b)) in NPR-A. Also, BLM Sensitive Species in Alaska are designated by the state director and are protected, at a minimum, by the policy described for candidate species under the Endangered Species Act. This policy states that BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of the species as threatened or endangered (BLM Manual Section 6840.06 C).

The USFWS enters into this agreement under the Migratory Bird Treaty Act, which makes it unlawful to take migratory birds, their nests, and eggs except under regulations promulgated by the USFWS to accommodate legitimate use (16USC § 703-711).

The NPS enters into this agreement because the 1980 Alaska National Interest Lands Conservation Act (ANILCA) contains enabling legislation and mandates relevant to YBLO conservation for the Western Arctic National Parklands, including Bering Land Bridge National Preserve and Cape Krusenstern National Monument. Management purposes include protection of “habitat for internationally significant populations of migratory birds” in Bering Land Bridge National Preserve (ANILCA § 201(2)); and protection of “habitat for, and populations of, birds” in Cape Krusenstern National Monument (ANILCA § 201(3)).

The Endangered Species Act (Act) may be relevant to this Agreement in the future. Section 2(c)(1) of the Endangered Species Act (Act), (16 U.S.C. § 1531 (c)(1)) states “the policy of Congress is that all Federal departments and agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes” of the Act.

VII. Yellow-billed Loon Status and Distribution

There are an estimated 16,000 YBLO worldwide (Earnst 2004). Approximately 3,300 YBLO breed in the freshwater treeless tundra of Alaska, on the North Slope, and in western Alaska north of Unalakleet and the foothills of the Brooks Range (Earnst 2004). A petition filed to list YBLO under the Federal Endangered Species Act (pending), their current status as a BLM Sensitive Species and a FWS Species of Special Concern, and a YBLO-specific Conservation Plan within the State of Alaska’s Comprehensive Wildlife Conservation Strategy (ADFG 2006) reflect agency and public concern for the status of this species. Several reviews of population status, vulnerabilities, and recommended actions have highlighted the need for YBLO conservation (North 1994, Fair 2002, Earnst 2004).

Yellow-billed loons nest exclusively in coastal and inland low-lying tundra from 62-74° N latitude, in association with permanent, fish-bearing lakes. Breeding is thought to be limited primarily by availability of breeding habitat, specifically nesting and brood-rearing lakes (North 1994). Lakes that support breeding loons are large (at least 13.4 ha [33 acres]) (North & Ryan 1988); have abundant fish populations, clear water, depths greater than 2 m (6.5 feet), and water under the ice during winter; are connected to streams which may supply fish; are highly

convoluted, vegetated, and have low-lying shorelines; and have dependable water levels (Earnst et al. 2005, North 1994). Breeding lakes may be near but not connected to major rivers, possibly because fluctuating river water levels can flood nests or cause turbidity that compromises foraging success.

Because breeding habitats are patchily and sparsely distributed across the YBLO's range, breeding birds are found in clumped and concentrated distributions. Based on data from the 1998-2001 USFWS Alaska Coastal Plain (ACP) and North Slope Eider (NSE) aerial surveys, most of the Alaskan breeding population occurred within six concentration areas (i.e., areas with > 11 individuals/10,000 ha or 25,000 acres). These concentrations areas encompassed 84 percent of sightings in only 15 percent of the surveyed area. The largest concentration area was between the Meade and Ikpikpuk Rivers and encompassed 30 percent of YBLO sightings in only 5 percent of the surveyed area; other notable concentrations were on the Colville River Delta and west, southwest, and east of Teshekpuk Lake (Earnst 2004).

Marine habitats in Alaska are important for non-breeding, migrating and wintering YBLO. Non-breeders (e.g., young or inexperienced adults) may migrate to breeding areas, but spend time foraging in large rivers and the nearshore marine environment. Yellow-billed loon migration routes are thought to be primarily marine, with distance from shore depending upon ice conditions (North 1994). The YBLO winters in marine waters around the North Pacific from Puget Sound to the Yellow Sea. Specific characteristics of wintering habitats are not well known, but the species normally occurs in protected nearshore marine waters.

VIII. Conservation Concerns

Yellow-billed loons are long-lived, with low reproductive potential, and Alaska's breeding population of YBLO is small, with probably fewer than 1000 pairs attempting to breed in any given year. These inherent population characteristics likely make Alaska's YBLOs vulnerable to and slow to recover from population perturbations (Earnst 2004). Further, population growth and maintenance in YBLO or similar species are most sensitive to factors that affect adult survival, such as oil spills, contaminants, subsistence harvest, fisheries bycatch, or disease. However, population declines due to reduced reproduction or recruitment from habitat loss on the breeding ground and predation of young due to an increase in predators associated with resource development (NRC 2003) could also occur (Earnst 2004). There are few specific data on these threats for any loon species, especially YBLO. However, given loon ecology and current and projected development, especially in breeding habitats on the North Slope, these threats are occurring or expected to occur and may have substantial effects on YBLO in Alaska.

Adult mortality, to which YBLO populations are sensitive, can occur through bycatch in subsistence fisheries and through subsistence harvest. Gillnets are widely used in rural Alaska fisheries, particularly for whitefish (Coregonids), char (*Salvelinus spp.*) and other fish that occur in YBLO habitats. Loons, including YBLO, forage in large rivers including the Meade, Ikpikpuk, and Colville that support important subsistence fisheries, and an unknown number are caught incidentally every year. Yellow-billed loons are customary and traditional subsistence resources, and used for food and ceremonies. Some YBLO of unknown breeding origin are

harvested annually throughout Alaska. However, the magnitude and impact of subsistence harvest on Alaska-breeding YBLOs are unknown because harvest surveys may not clearly distinguish species and have not been done consistently over time in all relevant areas of YBLO range.

Habitat loss on the breeding grounds can result from industrial infrastructure development such as pads, gravel and ice roads, pipelines, and airstrips. These may make breeding habitat unsuitable for YBLO directly by placing fill in wetlands or indirectly through disturbance, hydrology alterations, or thermokarst action. Additionally, oil spills associated with petroleum development, village fuel supplies, and vessel traffic could impact breeding and brood-rearing lakes, and rivers or coastal areas where non-breeders forage. There are no laws that specifically protect YBLO habitats, although numerous Federal and State laws and regulations that govern land uses and development serve to directly or indirectly benefit loons and their habitat. Further, project-specific prescriptions to protect specific resources (e.g., YBLO) or habitat types (e.g., deep water lakes) are called for in the management prescriptions that facilitate development in NPR-A, and implementation of these prescriptions are legal requirements.

Although this Agreement principally concerns management of terrestrial breeding habitats, we acknowledge that migration and wintering habitat quality are also important to YBLO conservation, especially adequate food fish populations and low pollution levels. Satellite telemetry data (J. Schmutz, USGS, unpubl. data) indicate that YBLOs breeding in NPR-A migrate down the northwest coast of Alaska, briefly stay at various locations enroute, including the St. Lawrence Island area, and then continue along the Asian coastline to winter in coastal waters of southeastern Russia, northern Japan, the Korean peninsula, and northern China. For healthy YBLO populations, wintering areas should have adequate forage fish communities and low bycatch levels, but forage fish status and bycatch rates are unknown in these heavily fished Asian waters, and climatically induced shifts in forage fish communities may also be relevant (Anderson and Piatt 1999, Kitaysky and Golubova 2000). Red-throated Loons (RTLOs) that breed on NPR-A winter in coastal Asian waters of Asia (J. Schmutz, USGS, unpubl. data), and show toxic exposure to PCBs at levels great enough to potentially impair breeding success (Trust et al. in review). Sympatric YBLOs are likely to incur similar exposure to contaminants (or greater, due to potentially a higher trophic level and longer lives), but comparable information does not yet exist for YBLOs.

IX. Conservation Strategies and Actions

The conservation strategies in this agreement address land management activities stemming from resource development, population monitoring, reducing significant impacts of subsistence harvesting or bycatch, and basic and applied research to both supplement knowledge and determine efficacy of protective management actions. They are similar to Alaska breeding ground strategies identified in Earnst (2004) and in the state Comprehensive Wildlife Conservation Strategy (ADFG 2006).

Land management in northern Alaska, particularly NPR-A and the Colville River Delta, may affect significant numbers of YBLO through broad-scale development and significant overlap

between oil and gas potential and YBLO breeding distribution. Objectives under Strategy 1 focus on long-term nesting habitat protection and reducing disturbance to nesting birds through adoption and enforcement of protective lease stipulations, required operating procedures, and management practices. Objectives under Strategy 2 will track YBLO populations, and allow evaluation of management actions, including in western Alaska with comparatively stable and protective land management, and between non-developed and developed areas. Objectives under Strategy 3 will evaluate the potential impact of subsistence harvest and incidental bycatch, including accurate assessment of current harvest levels, hunter education, and cooperation with subsistence users to develop and employ methods to reduce harvest and incidental bycatch in fishing nets. Finally, each of these strategies includes actions that may be described as research or monitoring. So little is known about YBLO, or about how management actions may affect them, that additional listing of research and monitoring needs is warranted and is addressed under Strategy 4, which includes these needs and agreement to periodically assess and work towards funding them. Finally, annual re-evaluation of the entire agreement by the involved parties will help to assess data gaps, efficacy of management actions, and emerging threats.

Strategy 1: Implement specific actions to protect YBLO and their habitats from potential impacts of land uses and management activities, including oil and gas exploration and development.

Objective A: Ensure that land management practices in NPR-A do not contribute to YBLO becoming threatened or endangered with extinction.

The NPR-A was initially created in 1923 by President Harding as the Naval Petroleum Reserve Number 4. For more than 50 years following the designation, the Navy and the U.S. Geological Survey conducted petroleum exploration in the region, with 136 known wells drilled. In 1976 the NPRPA, authorizing development of the reserve, was signed. In addition, the NPRPA transferred management of the reserve to the Secretary of the Interior and renamed it the National Petroleum Reserve-Alaska.

In 1982 the first lease sales for NPR-A were offered. Leasing has continued at irregular intervals since. A series of Environmental Impact Statements (EISs) and Integrated Activity Plans (IAPs) have been completed to evaluate and guide leasing and resulting development. To date, 17 exploration wells have been completed, and although no permanent oil or gas development has occurred to date within NPR-A, the Alpine Satellite Development EIS conducted under the 1998 NE NPR-A EIS/IAP (USDOI/BLM 2005) authorizes three satellite developments west of the Colville River, with initiation of these projects expected in 2006.

Early exploration included summer drilling and overland moves with detrimental and, in some cases, lasting impacts on the environment. The impact to loons from this early exploration is unknown. Subsequent exploration was conducted in winter, from temporary ice pads and ice roads. Ice roads and pads are located away from rivers and lakes, except for perpendicular crossings of rivers and access roads for water withdrawal.

Activities associated with exploration and proposed and potential development of petroleum resources within the reserve could have a variety of effects on loons. BLM will implement

Required Operating Procedures (ROPs) and Stipulations from the NE NPR-A Amended IAP and NW NPR-A Records of Decision (RODs). Specific habitat protection for nesting loons is provided by ROP E-11 in both RODs. In the NE (most recent) ROD, E-11 was changed to provide additional specificity, and reads:

Objective: Minimize the take of species listed under the Endangered Species Act and minimize the disturbance of other species of interest¹ from direct or indirect interaction with oil and gas facilities.

Requirement/Standard: 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.

then, under Special Conditions in Yellow-billed Loon Habitats:

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 mile² of a lake 25 acres (10 ha) 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.

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-foot³ buffer around the remainder of the shoreline. Development will generally be prohibited within buffers unless no other option exists.

BLM will implement E-11 in NW ROD consistent with the language in the NE ROD. Other ROPs and Stipulations that would provide potential habitat protection, although not specific to YBLO, through application of buffers, within which development activity would be prohibited or limited, include A-5, E-2, K-1, K-2, K-3, K-4, K-5, and K-6 (Appendix 1).

No IAP has been developed for the South Planning Area of NPR-A and few loons are known to occur in the South Planning Area; however, BLM will apply E-11 and other applicable ROPs and Stipulations to individual activities that would occur in areas potentially occupied by loons.

The NE and NW RODs require monitoring of ROP and Stipulation implementation. During preparation of specific development plans and the accompanying National Environmental Policy Act (NEPA) documents, monitoring plans specific to the site conditions will be developed and implemented. Monitoring activities will also be defined and determined at that time. Monitoring will be used to determine if ROPs/Stipulations are performing as intended and inform decision-

¹ Yellow-billed loons were identified as a “species of interest” in both the NW and NE NPR-A EISs and thus are included in this ROP.

² 1 mile = 1.6 kilometers (km)

³ 1,625 feet = 495 m

makers of any changes to BLM ROPs and Stipulations necessary to provide the intended benefits to loons.

The ROPs and Stipulations described in the NE and NW NPR-A RODs are “performance-based” rather than prescriptive. Prescriptive ROPs and Stipulations only define a strict requirement that must be met, while performance-based also include an Objective that may be met through a variety of means as long as they provide equal or greater protection to the resource. For example (although there is no prescriptive equivalent from the 1998 NE NPR-A EIS), the objective for ROP E-11 addresses YBLO by directing the lessees and management authorities to “...minimize the disturbance of other species of interest from direct or indirect interaction with oil and gas facilities.” This is in addition to the Requirements/Standards addressing survey requirements and minimum buffer distances (which would be the only wording in a prescriptive ROP or Stipulation).

Performance is measured against the objective. The Requirement or Standard describes the minimum action(s) necessary to meet the Objective and provides a yardstick against which alternative approaches are measured. Assessing the efficacy of alternative approach(es), and granting exceptions to the ROPs and Stipulations, will be done by interdisciplinary teams with the final decision being the responsibility of the Authorized Officer (AO), who may be the State Director, Manager of the Northern Field Office in Fairbanks, or Deputy State Director of the Division of Energy and Solid Minerals. The rationale for the performance approach, the process for evaluation of the efficacy of the Requirement/Standard and alternative approaches, and the Exception Processes, are described in further detail in Appendix B of the NE NPR-A ROD (USDOI/BLM 2006).

A minimum of 3 years of pre-development surveys are required by ROP E-11 and monitoring required in development specific permits and associated NEPA documents will result in intensive surveys and data collection. BLM will work with FWS to ensure that survey methodology and data collection are as compatible as possible with the larger population level survey efforts.

BLM will assess methods for pre-development surveys required by ROP E-11 and any subsequent post-development monitoring required by development permits for efficacy and refine them as information becomes available either through actual development surveys or other research efforts.

BLM will continue its program of research and monitoring related to water withdrawal for ice road and pad construction. Specific facets include water chemistry change and recharge. The current program is conducted in conjunction with Alaska Department of Natural Resources.

Strategy 1 (cont.): Implement specific actions to protect YBLO and their habitats from potential impacts of land uses and management activities, including oil and gas exploration and development.

Objective B: Ensure that land management practices on the Colville River Delta do not contribute to YBLO becoming threatened or endangered with extinction.

In contrast to NPR-A where habitats used by YBLO are managed primarily by BLM, lands on the Colville River Delta are owned and managed primarily by the State of Alaska and Alaska Native corporations. Thus, conservation needs for YBLO on the delta are addressed separately in this Agreement.

The Colville River Delta has been recognized as a breeding area for YBLO (Derksen et al. 1981; North and Ryan 1988) that hosts relatively high densities compared to elsewhere on the North Slope (Rothe et al. 1983; Field et al. 1993). The number of breeding pairs in the Delta was estimated in the range of 34-46 (North 1986; North 1993). Intensive ground surveys located 19 nests in 1983 and 20 nests in 1984 (North 1986). More recent aerial surveys of the Delta located 23 nests in 1998 and 24 nests in 2003 (Johnson et al. 2004). In 2003, 16 of 24 nests and 10 of 14 broods were found north of the Alpine facility, with the rest to the south (Johnson et al. 2004).

The Delta is composed of diverse wetland types, including river distributaries, tapped lakes, deep clear-water lakes, and a variety of pond types that meet the needs of YBLO for breeding, broodrearing, and staging (North and Ryan 1989; Earnst et al. 2005).

Since 1964, most of the Colville Delta has been leased for oil and gas development in a series of state lease sales. Additional leases may be offered through 2008 and beyond as part of the North Slope Areawide Sale. Other than exploration activity, the first major petroleum development in the Delta began with the discovery of the Alpine oilfield in winter of 1994. The initial infrastructure included two pads (CD-1, CD-2) with wells, a production facility, and an airfield. Production at Alpine began in 2000 and, by November, ConocoPhillips Alaska Inc. began the process to develop two satellite developments on the Colville Delta, north (CD-3 Fjord) and south (CD-4 Nanuq) of the Alpine base. These satellite developments are currently under construction.

Conservation strategies for YBLO on the Colville Delta will need to be implemented in the context of extensive oil and gas leases that are in effect and the approved infrastructure of Alpine. Current and near-future developments will be planned and regulated under the terms and conditions of the North Slope Areawide Lease Sale. Further mitigation and protection may be implemented through permitting processes for specific facilities and through review and approval of plans of operation.

The Alaska Departments of Natural Resources and Fish and Game will promote measures to protect habitat and avoid impacts to YBLO primarily by implementing Mitigation Measures and Lessee Advisories for the North Slope and Beaufort Sea Areawide Lease Sales (Appendix B).

Strategy 2: Inventory and monitor YBLO populations, including areas that do not have development concerns.

Objective A: Continue and improve inventory and monitoring efforts in primary YBLO breeding areas.

The USFWS will continue to count YBLO during annual North Slope waterfowl surveys (the ACP and NSE surveys). All parties will work toward YBLO-specific range-wide surveys which can be used to estimate the total Alaska population and track changes through time. The USFWS, BLM, and State will work cooperatively with other partners to fund YBLO-specific surveys in high-density breeding areas with development potential, as well as comparative surveys in undisturbed control areas. Pre- and post-development surveys should be flown, as required, by project applicants.

The goals of standardized surveys should be to: 1) Produce annual estimates of breeding pair abundance and a sound basis for assessing trends over time over a significant portion of the primary range; and 2) define, by the presence of loons or their nests, lakes that support breeding loons. At a minimum, aerial surveys shall be conducted June 10-25, coinciding with nest initiation, using helicopter or fixed-wing with two experienced observers, one of whom may be the pilot. Within the pre-defined survey area, shorelines of all lakes > 7 ha (approx. 17 acres) will be intensively searched while avoiding flushing of birds. Presence of a single or pair of adults on the shoreline, or presence of a nest, will indicate that the lake supports breeding loons and is therefore an active YBLO lake. Additional surveys, such as August brood surveys, may also be done.

Objective B: Inventory and monitor YBLO in western Alaska.

Yellow-billed loons that nest in western Alaska occur primarily in areas that are not subject to significant industrial development, such as NPS and NWR lands. Short-term conservation needs for YBLO in this region, therefore, focus on refining understanding of the species' distribution and abundance, and monitoring trends in status and threats.

Western Arctic National Parklands – The National Parks of Western Alaska may have the largest number of YBLO on lands that are not open to development. Conservation efforts to date have included cooperative investigations and surveys with other agencies such as USFWS and USGS. However, YBLO may be monitored as part of the National Park Service's Inventory and Monitoring program in the Arctic Network, which includes Bering Land Bridge National Preserve and Cape Krusenstern National Monument. In spring of 2005, the NPS supported YBLO surveys on Western Arctic National Park lands; results of this survey are pending.

Selawik National Wildlife Refuge - Although few YBLO have been documented on Selawik National Wildlife Refuge in northwestern Alaska, the species is occasionally observed there. Selawik NWR staff has and will continue to report all sightings of YBLO observed during aerial surveys for other species, including a periodic scoter breeding survey in late June. Selawik NWR partners with USFWS Migratory Bird Management (MBM) to survey the Seward Peninsula, lower Noatak River, and Selawik NWR.

Objective C: Annually evaluate the effectiveness of monitoring surveys to detect population changes and assess priority survey needs.

The ACP and other aerial surveys should be evaluated and improved to provide accurate indices of breeding YBLO and reliable data to describe trends over time. When resources are available for dedicated YBLO surveys, robust designs and methods to relate new to old survey data should be developed.

Strategy 3: Determine and reduce, if significant, the impact of subsistence activities on YBLO.

Objective A: Measure and reduce the number of YBLO incidentally caught in subsistence fisheries.

Observations indicate that YBLO are caught inadvertently in subsistence fishing nets, but the extent of mortality and its geographic distribution remain poorly documented. For example, YBLO are routinely and unavoidably caught in subsistence nets in the Ikpikpuk River (C. Roberts, USFWS, pers. comm.), as well as other rivers with gillnet subsistence fisheries. Possession of inadvertently caught YBLO was permitted by federal hunting regulations, beginning in 2005. These regulations allow up to 20 YBLO inadvertently caught in subsistence fishing nets in the North Slope Region to be kept for subsistence use, and require that fisherman report their catch of YBLO to the North Slope Borough, Dept. of Wildlife Management (NSB-DWM) by the end of the season (50 CFR 92.33).

The NSB's reports will improve our understanding of the extent and distribution of YBLO by-catch. USFWS, ADFG, and NSB-DWM will work with subsistence fisherman in affected areas to conduct outreach efforts on avoiding and reducing YBLO bycatch. At this time, the primary task is to notify North Slope fishermen that accurate reporting of by-catch of YBLO in subsistence nets is important and carries no penalties.

Objective B: Measure and reduce the number of YBLO taken by subsistence hunters.

Spring/summer subsistence hunting of migratory birds in Alaska is now managed under federal regulations (50 CFR 92) developed through the AMBCC, which includes representatives from rural subsistence regions, ADFG, and USFWS as equal partners. Twelve regional management bodies were created to provide crucial local input to the Council in developing the open-season bird list, regional hunting season dates, methods and means, and other regulatory recommendations. During establishment of the first spring and summer subsistence regulations in 2003, the USFWS recognized special conservation concerns for YBLO (small population and potential threats) and did not open a hunting season on the species (68 FR 43023). The species has not been on the open-season list in subsequent years (69 FR 17328, 70 FR 18249).

The most recent available subsistence harvest surveys indicate that approximately 350 YBLO are taken every year throughout Alaska (C. Wentworth, USFWS, pers. comm.), although the accuracy of this estimate is compromised by incomplete surveys across the breeding range and inconsistent species-level data collection. Further, much of the available information may be out

of date; villages along the northwest Alaska coast, where YBLO are taken in marine waters during migration, were last surveyed in 1997. Additionally, some YBLO taken in western Alaska during migration may be from populations that nest in Russia or Canada. At this time, therefore, we cannot accurately assess the impacts of subsistence hunting to YBLO in northern and western Alaska.

Actions necessary to reduce subsistence hunting of YBLO will consist of two components. First, an accurate assessment of harvest patterns must be developed to evaluate potential impacts of subsistence harvest to YBLO, and to identify areas where harvest continues. Second, outreach efforts are needed to establish a common understanding among northern and western Alaska residents about the status of YBLO, the basis for conservation concerns, and that hunting the species is not allowed. General, broad-scale outreach efforts will be started concurrently with harvest survey efforts, and outreach strategies will be refined and geographically focused as necessary. Throughout, understanding the cultural and historical significance of the YBLO to the Inupiat is imperative; outreach efforts to reduce harvest (and fisheries bycatch) should proceed in a culturally-sensitive fashion, recognizing that reductions in harvest may impact the traditional cultural practices of the Inupiat.

An assessment of current harvest patterns will require a thorough harvest survey of subsistence hunters in northern and western Alaska. This survey was started in 2005, when the NSB surveyed hunters on the North Slope and Kawerak, Inc. surveyed hunters in the Bering Straits region of western Alaska. This will be followed by surveys in the Northwest Arctic Region in 2006. Data from these regional surveys will be synthesized and evaluated by the AMBCC Harvest Survey Committee and shared among all interested parties.

In addition to surveying hunters about current harvest of YBLO, outreach efforts to reduce subsistence harvest of YBLO will require the development and dissemination of materials explaining the status of YBLO, eliciting local knowledge, discussing factors affecting YBLO conservation, and encouraging cooperative efforts with regional and village organizations. This will require cooperative efforts by USFWS, ADFG, and NSB in conjunction with the AMBCC.

Strategy 4: Conduct biological research on YBLO.

Objective A: Annually review and evaluate YBLO research and monitoring priorities.

In January of 2004, the FWS and BLM convened a meeting of loon experts to provide guidance on how to conserve YBLO on BLM lands in arctic Alaska, particularly NPR-A, and to provide additional information for this Agreement. Experts were asked to list research and monitoring needs for YBLO, particularly in the face of oil and gas development in NPR-A. Many were reflective of those listed in the YBLO Status Assessment (Earnst 2004), but others provide additional insight, including (in no priority order):

Monitoring:

1. Monitor fish passage through stream crossings of roads

2. Conduct aerial surveys over proposed ice road corridors for 3 years and in high-density loon areas in advance of leasing and development
3. Add all known nest locations to existing habitat models
4. Maintain, improve, and institutionalize the existing YBLO registry (an electronic database of occurrence and survey data)

Research:

1. Examine YBLO prey fish composition and recruitment in North Slope lakes
2. Test whether water withdrawals affect YBLO prey fish populations
3. Test whether water withdrawals affect *Arctophila* beds and other emergent vegetation, important for brood-rearing habitat
4. Test for relationships between adult mortality and road density
5. Determine YBLO survival rates, fidelity, within-season dispersal using marked birds
6. Study factors affecting productivity across multiple geographic areas, focusing on areas to be developed plus control areas; include predation
7. Study effects of disturbance; include effectiveness of buffers and different buffer widths
8. Determine whether there are discrete populations through telemetry or genetic marking
9. Determine contaminant loads and pathways
10. Study food habits and diet
11. Obtain information on sub-adult population distribution
12. Investigate relationship between roads and invasive species (e.g. pike, plants) that could affect YBLO
13. Obtain disease baseline, specifically for retroviruses that affect other Alaska-breeding waterfowl

The Status Assessment and Conservation Plan for the Yellow-billed Loon (Earnst 2004) provides a detailed listing of monitoring and research needs, including some of the above and the following:

1. Continue current breeding surveys; add YBLO-specific surveys such as lake-circling pair and brood surveys to monitor productivity;
2. Marine surveys in southern and northern Alaska during breeding season to measure the non-breeding population;
3. Monitor subsistence harvest and bycatch;
4. Research on breeding ecology and demography, including refining population models;
5. Conduct ground-based habitat research, e.g. determine fish species and abundance in breeding lakes;
6. Conduct research on effects of anthropogenic disturbance, e.g. habitat avoidance, foraging efficiency, or productivity in face of infrastructure development.

Annual meetings will provide an opportunity for signatories and others to evaluate and prioritize these needs. The first meeting shall be held no later than March 31, 2007.

Objective B: Cooperatively work toward funding YBLO research and monitoring priorities.

The FWS, BLM, ADFG, and NSB will work with the North Slope Science Initiative, the oil industry, and other partners to provide and acquire adequate funding for YBLO research and monitoring priorities.

X. Conservation Schedule

Strategy 1: Implement specific actions to protect YBLO and their habitats from potential impacts of land uses and management activities, including oil and gas exploration and development.

Conservation in NPR-A: The ROD for NW NPR-A IAP/EIS (USDOI/BLM 2003) was signed 22 January 2004. The ROD for the amended NE NPR-A IAP/EIS was signed January 11, 2006. All permitted actions within NPR-A will comply with the applicable ROPs and stipulations.

Conservation on the Colville River Delta: Mitigation measures, advice to lessees, and planning procedures are in place through the North Slope Areawide Lease Sale (initiated in 1999) and Beaufort Sea Areawide Lease Sale (initiated in 2000).

Strategy 2: Inventory and monitor YBLO populations.

Inventory and monitoring in primary YBLO breeding areas: Continue counts of YBLO during FWS aerial waterfowl surveys, and work towards implementing YBLO-specific surveys.

Conservation in Western Alaska: Aerial surveys on Selawik NWR will be conducted for the foreseeable future. The Western Alaska Parklands YBLO-specific survey was conducted in spring, 2005. Those data will be available in 2006, as will evaluation of the potential for future surveys.

Strategy 3: Determine the impact, if significant, of subsistence activities on YBLO.

Incidental Bycatch in Fishing Nets: Outreach and education materials to reduce bycatch in fishing nets will be developed and delivered by Spring, 2006.

Subsistence Harvest: Data from harvest surveys conducted in 2005 will be synthesized and evaluated in 2006. Outreach and education materials for hunters will be developed in 2006 and delivered by spring, 2007.

Strategy 4: Conduct biological research on YBLO.

Signatory agencies will provide research funding as possible, and meet annually to assess research and monitoring needs.

XI. Duration and Amendment of Agreement

Long-term protection and management, as outlined in this Agreement, are necessary for the conservation of the YBLO. The initial term of this Agreement shall be ten (10) years, and shall be extended for additional five (5) year increments upon agreement by the parties until long-term habitat protection and conservation of the YBLO is assured. This agreement may be amended at any time by mutual consent of all parties.

XII. National Environmental Policy Act (NEPA) Compliance

Signing of this Agreement is covered under the authorities outlined in Section VI, above. We anticipate that any monitoring or research activities initiated for implementation and maintenance of this Agreement will not entail significant Federal actions under the NEPA and will be given a categorical exclusion designation. All actions will be evaluated prior to implementation and will comply with NEPA regulations.

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XIV. Responsibilities of the Parties

To meet the goals and objectives of this Yellow-billed Loon Conservation Agreement, the parties agree to undertake their respective responsibilities and conservation measures set forth herein. Where responsibility for undertaking specific future action has not been assigned or become apparent during scheduled reviews, the parties agree to implement such measures through addendums or revisions to this agreement.

IN WITNESS HEREOF, THE PARTIES HERETO have, as of the last signature date below, executed this Conservation Agreement.

Tony Mc 10/2/06

Mc Kie Campbell, Commissioner, Alaska Dept. of Fish and Game
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Edward Itta 9/20/06

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Julia Bisson 11/2/06

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Thomas O. Melius 9/12/2006

Thomas O. Melius, Regional Director, U.S. Fish and Wildlife Service
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Marcia Blaszak 10/12/06

Marcia Blaszak, Regional Director, National Park Service
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APPENDIX A. Required operating procedures and lease stipulations from NPR-A RODs that, while not specific to yellow-billed loons, may provide protection during the course of oil and gas exploration and development.

A-5 (Required Operating Procedure)

Objective: Minimize the impact of contaminants from refueling operations on fish, wildlife, and the environment.

Requirement/Standard: Refueling of equipment within 500 feet of the active flood plain of any fish-bearing water body and 100 feet from non-fish-bearing water bodies is prohibited. Small caches (up to 210 gallons) for motorboats, 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 areas closer than the stated distances if properly designed to account for local hydrologic conditions.

B-2 (Required Operating Procedure)

Objective: Maintain natural hydrologic regimes in soils surrounding lakes and ponds. 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 lake size, water volume, and depth, and fish population and species diversification. Water withdrawal requirements specify:

- a. Lakes that are ≥ 7 ft 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 ft. Lakes that are between 5 and 7 ft with sensitive fish: water available for withdrawal will be calculated on a case-by-case basis.
- b. Lakes that are ≥ 5 ft with only non-sensitive fish (i.e., ninespine stickleback or Alaska blackfish): Water available for withdrawal is limited to 30% of calculated volume deeper than 5 ft.
- c. Any lake with no fish present, regardless of depth: Water available for withdrawal is up to 100% 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 percent or 30 percent 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.

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 waterbodies 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 are 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).

K-1 (Lease Stipulation – Rivers Area)

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 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.

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. 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 $\frac{1}{2}$ mile (from the bank's highest high water mark) and increased to $\frac{3}{4}$ 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. 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 (unless noted otherwise) 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.

- a. Colville River: a 1-mile setback from the northern bluff (or bank if there is no bluff) Colville River extending the length of that portion of the river located within the Planning Area for the purposes of Raptor Protection. Note: The Planning Area excludes conveyed Native lands along the lower reaches of the Colville River. 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. 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.
- b. Ikpikpuk River: (those portions of the river within the Northeast Planning Area and east of the river centerline)
 - A $\frac{3}{4}$ -mile setback, as measured from the river centerline east, is required from the mouth of the Ikpikpuk River extending south to northern limit of Section 19,

- Township 7 North, Range 11 West, U.M. (Umiat Meridian). This is to protect numerous subsistence cabins and campsites.
- A 1-mile setback, as measured from the river centerline east, is required from the northern boundary of Section 19, Township 7 North, Range 11 West, U.M., extending south to the northern limit of Section 4, Township 3 North, Range 12 West, U.M. This setback is for the purposes of protecting Raptors.
 - c. Miguakiak River: A $\frac{1}{2}$ mile setback, as measured from the bank's highest high water mark is required along its entire length.
 - d. Kikiakrorak and Kogosukruk Rivers: Note: The following discussion refers only to portions of the Kikiakrorak River downstream from the north line of Township 2 North, Range 4 West, U.M. and the Kogosukruk River (including the four tributaries off the southern bank) downstream from the north line of Township 2 North, Range 3 West, U.M. No permanent oil and gas surface facilities, except essential transportation crossings, will be allowed within 1 mile of the top of the bluff (or highest high water mark on the bank if there is no bluff) on either side of the rivers and the four identified tributaries of the Kogosukruk River.
 - e. Fish Creek: A 3 mile setback, as measured from the bank's highest high watermark, is required along that portion of the creek extending downstream from the east line of Section 31, Township 11 North, Range 1 East, U.M. and a $\frac{1}{2}$ mile setback, as measured from the bank's highest high water mark, is required along that portion of the creek extending farther upstream. The purpose of this setback is to preclude location of permanent oil and gas surface facilities with the exception of essential transportation crossings.
 - f. Judy Creek (in the Planning Area): No permanent oil and gas surface facilities, except essential transportation crossings, will be allowed within $\frac{1}{2}$ mile (from the bank's highest high water mark) of these waterbodies.
 - g. Tingmiaksiqvik River (identified as the Ublutuoch River on USGS quadrangle maps): No permanent oil and gas surface facilities, except essential transportation crossings, will be allowed within $\frac{1}{2}$ mile (from the bank's highest high water mark) of this river from the eastern edge of Section 22, Township 8 North, Range 1 East U.M. (the western boundary of the CRSA) downstream to the confluence with Fish Creek

K-2 (Lease Stipulation - Deep Water Lakes)

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 deep water lakes; the loss of spawning, rearing or over wintering habitat for fish; the loss of cultural and paleontological resources; impacts to subsistence cabins and campsites; and the disruption of subsistence activities.

Requirement/Standard: Generally, permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited on the lake or lakebed and within $\frac{1}{4}$ 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 considered through the permitting process 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. Please see discussion regarding BLM's permitting/authorization process, Section 2.6.2.

K-3 (Lease Stipulation - Teshekpuk Lake Shoreline)

(Note: Under the Proposed Action Teshekpuk Lake would be deferred from additional oil and gas leasing for a period of 10 years).

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.

Requirement/Standard: Permanent oil and gas facilities, including gravel pads, roads, airstrips, and pipelines, are prohibited within $\frac{1}{4}$ mile of the ordinary high water mark of Teshekpuk Lake – No Exceptions.

K-4 (Lease Stipulation - Goose Molting Area)

Objective: Minimize disturbance to molting geese and loss of goose molting habitat in and around lakes in the Goose Molting Area.

Requirement/Standard (General): Within the Goose Molting Area no permanent oil and gas facilities, except for pipelines and publicly-funded community roads, would be allowed on the approximately 217,000 acres illustrated on Map 2-4. No exceptions will be considered.

Requirement/Standard (Exploration): In goose molting habitat area exploratory drilling shall be limited to temporary facilities such as ice pads, ice roads, ice airstrips, and temporary platforms, unless the lessee demonstrates that construction of permanent facilities (outside the identified Goose Molting No 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 May 20 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.

- d. Aircraft use (including fixed wing and helicopter) by oil and gas lessees and all other users shall be minimized, and possibly suspended, in and around Goose Molting Area lakes from May 20 through August 20 unless doing so would endanger human life or violate safe flying practices.

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

- a. 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 Goose Molting Area from May 20 through August 20, unless approved by the AO in consultation with the appropriate federal, state, and NSB regulatory and resource agencies. The intent of this rule is to restrict activities that would disturb molting geese during the period when geese are present.
- 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.
- 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).
- d. Permanent oil and gas facilities (including gravel roads, pads, and airstrips, but excluding pipelines) and material sites will be sited outside the identified NSO areas. Additional limits on development footprint apply, see Lease Stipulation K-11.
- e. Between May 20 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.
- f. 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.
- g. Aircraft use (including fixed wing and helicopter) within the Goose Molting Area ,by authorized users shall be restricted from May 20 to August 20 unless doing so would endanger human life or violate safe flying practices. 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.

K-5 (Lease Stipulation - Teshekpuk Lake Caribou Habitat Area - identified in Section 2.2.1.5; 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 (outside NSO areas established in other stipulations), 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.
- b. 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 corraling effects and to avoid loops of road and/or pipeline that connect facilities.
- 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 Teshekpuk Lake Caribou Habitat Area where pipelines potentially impede caribou movement.
- d. The following ground-traffic restrictions shall apply to permanent oil and gas-related roads in the areas and time periods indicated:
 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 imminent.

3. Major equipment, materials, and supplies to be used at oil and gas work sites in the Teshekpuk Lake Caribou Habitat Area shall 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.

K-6 (Lease Stipulation - Coastal Area)

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 $\frac{3}{4}$ 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 $\frac{3}{4}$ 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 $\frac{3}{4}$ 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 Association, 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.

APPENDIX B: State of Alaska North Slope and Beaufort Sea Areawide 2004 Competitive Oil and Gas Lease Sales, Mitigation Measures and Lessee Advisories

The following provisions, excerpted from lease sale mitigation measures, are only those that are specifically relevant to conservation of yellow-billed loons. The full documents contain many more general requirements and procedures of the state that apply to planning and approval of petroleum developments on the North Slope.

General Measures (Water Removal)

3. a. Removal of water from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by DMWM and ADF&G.

b. Removal of snow cover from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by ADF&G. Compaction of snow cover overlying fishbearing waterbodies will be prohibited except for approved crossings. If ice thickness is not sufficient to facilitate a crossing, ice and/or snow bridges may be required.
4. Water intake pipes used to remove water from fishbearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement. Screen mesh size shall not exceed 0.04 inches unless another size has been approved by ADF&G. The maximum water velocity at the surface of the screen enclosure may be no greater than 0.1 foot per second.

Specific Measures

19. Birds: Permanent, staffed facilities must be sited to the extent feasible and prudent outside identified brant, white-fronted goose, snow goose, tundra swan, king eider, common eider, Steller's eider, spectacled eider, and yellow-billed loon nesting and brood rearing areas.
21. Waterbody Buffers:
 - a. To the extent feasible and prudent, onshore facilities, docks, or road and pipeline crossings, will not be sited within 500 feet of fishbearing streams. Additionally, to the extent feasible and prudent, facilities will not be sited within one-half mile of the banks of the main channel of the Colville, Canning and Sagavanirktoq, Kavik, Shaviovik, Kadleroshilik, Ehooka, Ivishak, Kuparuk, Toolik, Anaktuvuk and Chandler Rivers. Facilities will not be sited within 500 feet of all other fishbearing waterbodies. Essential facility siting will be allowed in buffer areas in those instances where no other suitable sites are available. Facilities will not be sited within buffers unless the Director, after consulting ADF&G, determines that such facility restrictions are not feasible or prudent. Road and pipeline crossings must be aligned perpendicular or near perpendicular to watercourses.
 - b. No facilities will be sited within one-half mile of identified Dolly Varden overwintering and/or spawning areas on the Canning, Shaviovik, and Kavik rivers. Notwithstanding the previous sentence, road and pipeline crossings may only be sited within these buffers if the lessee demonstrates to the satisfaction of the Director of Oil & Gas, ADNR, and the Director of Habitat, ADF&G, in the course of obtaining their respective permits, that either (1) the

scientific data indicate the proposed crossing is not within an overwintering and/or spawning area; or (2) the proposed road or pipeline crossing will have no significant adverse impact to Dolly Varden overwintering and/or spawning habitat.

Lessee Advisories

5. Bird, Fish, and Marine Mammal Protection:
 - a. Lessees shall comply with the Recommended Protection Measures for Spectacled Eiders developed by the USF&WS to ensure adequate protection of spectacled eiders during the nesting and brood rearing periods. Lessees shall comply with the Recommended Protection Measures for Steller's eider once they are developed by the USFWS.
 - c. To minimize impacts on Dolly Varden (arctic char) overwintering areas, permanent, staffed facilities must be sited to the extent feasible and prudent outside identified Dolly Varden (arctic char) overwintering areas.
6. Aircraft Restrictions: In order to protect species that are sensitive to noise or movement, horizontal and vertical buffers will be required, consistent with aircraft, vehicle and vessel operations regulated by NSB Code B19.70.050(I)(1) which codifies NSBCMP policy 2.4.4.(a). Lessees are encouraged to apply the following provisions governing aircraft operations in and near the sale area:
 - a. From June 1 to August 31, aircraft overflights must avoid identified brant, white fronted goose, tundra swan, king eider, common eider, and yellow-billed loon nesting and brood rearing habitat, and from August 15 to September 15, the fall staging areas for geese, tundra swans, and shorebirds, by an altitude of 1,500 feet, or a lateral distance of one mile.
 - b. To the extent feasible and prudent, all aircraft should maintain an altitude greater than 1,500 feet or a lateral distance of one mile, excluding takeoffs and landings, from caribou and muskoxen concentrations. A concentration means numbers of animals in excess of the general density of those animals found in the area.
 - c. Human safety will take precedence over flight restrictions.
9. Sensitive Areas: Lessees are advised that certain areas are especially valuable for their concentrations of marine birds, marine mammals, fishes, or other biological resources; cultural resources; and for their importance to subsistence harvest activities. The following areas must be considered when developing plans of operation. Identified areas and time periods of special biological and cultural sensitivity include....(b) the Colville River Delta, January – December.