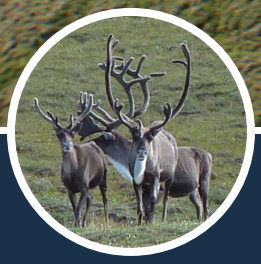
BLM



SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT for the Alpine Satellite Development Plan for the Proposed Greater Mooses Tooth One Development Project

Record of Decision

February 2015

Alaska

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Cooperating Agencies:
U.S. Bureau of Ocean Energy Management • U.S. Environmental Protection Agency • U.S. Fish and Wildlife Service
U.S. Army Corps of Engineers, Alaska District • State of Alaska •North Slope Borough • Native Village of Nuiqsut

Table of Contents

SUMMARY

This Record of Decision (ROD) documents the Department of the Interior's (DOI) decision regarding the Greater Mooses Tooth One (GMT1) Development Project proposed by ConocoPhillips Alaska, Inc. (CPAI or permittee). The decision will allow development of Federal oil and gas leases on Bureau of Land Management (BLM) managed land in the National Petroleum Reserve in Alaska (NPR-A). This decision adopts Alternative A described in the October 2014 Final Supplemental Environmental Impact Statement (SEIS) for the Alpine Satellite Development Plan (ASDP) for the Proposed GMT1 Development Project, with minor modifications explained in Appendix B.

The Final SEIS analyzed CPAI's proposal to develop oil accumulations from the proposed GMT1 drill pad on BLM managed lands. The decision in this ROD are limited to Federal lands, and only address authorizations under the jurisdiction of the BLM. Access to non-Federal lands is subject to landowner approval, and other Federal and State agencies will process applications for authorizations under their respective jurisdictions.

The Final SEIS analyzed a full range of alternatives. They are:

- Alternative A: CPAI's proposed project, involving a multi-well drill pad located on BLM managed lands accessed by a gravel road and pipeline routed through the southern portion of the Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks and connecting through CD5 to the Alpine Central Processing Facility (CPF).
- Alternative B: an alternative similar to Alternative A, but which would locate the road and pipeline right-of-way completely outside of the Fish Creek setback.
- Alternative C: an alternative that would use the Nuiqsut Spur Road and airport to focus on the use of Nuiqsut as a hub of industrial activity.
- Alternative D (sub-alternatives D-1 and D-2): an alternative which would not include gravel road access to GMT1, but would rely on ice roads and airstrips (this alternative also included a seasonal drilling restriction as a sub-alternative in the Final SEIS).
- Alternative E: the "No Action Alternative," which would reflect disapproval of CPAI's applications.

Each action alternative offered a different approach to development while protecting surface resources from unnecessary and undue degradation, as required by the Federal Land Policy and Management Act (FLPMA).

All available information related to surface and subsurface resources and impacts was presented in the SEIS. Environmental modeling was conducted to predict specific impacts associated with proposed infrastructure, particularly potential impacts to air quality. The analysis utilized knowledge of impacts of past North Slope oil development, and benefited from studies and monitoring gained as a result of requirements from the 2004 ASDP Environmental Impact Statement (EIS) ROD. The findings in the Final SEIS are based on an open and collaborative process that benefited from close coordination among the scientists and other

resource specialists of the BLM, cooperating agencies, DOI/Environmental Protection Agency (EPA)/U.S. Department of Agriculture Forest Service Air Quality Working Group, the National Environmental Policy Act (NEPA) contractor, and by an ongoing dialogue with North Slope residents, particularly those of the Native Villiage of Nuiqsut (the closest community to the project), the NPR-A Subsistence Advisory Panel and the NPR-A Working Group. The evaluation resulted in a Final SEIS that provides sufficient detailed analysis to adequately inform the decision maker for purposes of this ROD.

In the Final SEIS, BLM identified Alternative B as its Preferred Alternative, prior to the U.S. Army Corps of Engineers (Corps or USACE) determining the Least Environmentally Damaging Practicable Alternative (LEDPA) for its Clean Water Act §404 permit decision. The BLM based its preference primarily on the fact that Alternative B would require strict compliance with Best Management Practice (BMP)/Lease Stipulation K-1(e), which provides a 3-mile setback along Fish Creek within which facilities cannot be located without a BLM-approved deviation from the restriction. The 3-mile Fish Creek setback was established in the 1998 Northeast NPR-A Integrated Activity Plan/Environmental Impact Statement (IAP/EIS) ROD after consultation with residents of Nuiqsut and the North Slope Borough (NSB) to protect important subsistence activities and resources. This decision was carried forward in the 2013 NPR-A IAP/EIS ROD.

In light of the fact that, under the Clean Water Act, the Corps may not issue a Section 404 permit for an alternative other than the LEDPA, BLM's Final SEIS recognized that the Corps' ultimate LEDPA determination would need to be considered by BLM in making a final decision on this project, and which could result in the modification or change in the alternative selected in this ROD. Following publication of the Final SEIS, and after considering input from BLM, other agencies and the public, the Corps evaluated the action alternatives and determined that Alternative A is the LEDPA in a decision dated January 16, 2015. Given the similarities between Alternatives A and B with respect to certain resource impacts, the fact that the Corps has determined that Alternative A is the LEDPA, and the fact that mitigation measures have been developed to reduce the additional impacts associated with Alternative A to acceptable levels, BLM is adopting Alternative A in this ROD in order to coordinate the BLM's and the Corps' decisions. The selection of Alternative A avoids conflicting Federal permitting decisions, in accordance with Executive Order (EO) 13580 - *Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska*, 76 *Fed. Reg.* 41989 (July 15, 2011).

As part of the decision to adopt Alternative A in this ROD, BLM is adopting a robust package of mitigation measures to add to the pre-existing protective measures applicable to projects in theNPR-A, including the GMT1 project. In addition to reducing impacts to the project area as a whole, and in recognition of the importance of the land use authorizations, stipulations, and BMPs established by the 2013 NPR-A IAP decision, the mitigation package will serve to compensate for additional adverse impacts to subsistence resources and uses due to routing the road and pipeline through the Fish Creek setback. In developing this mitigation package, BLM considered existing protective measures required by BLM, including previously identified BMPs, existing lease stipulations, and mitigation incorporated via project design. The GMT1 project is subject to the BMPs adopted in the 2004 ASDP EIS ROD, as well as the lease

stipulations adopted in the 2008 Northeast NPR-A ROD and the BMPs adopted in the 2013 NPR-A IAP/EIS ROD. In addition to the BMPs already applicable to the project, in this decision BLM is adopting new measures as Supplemental BMPs and compensatory mitigation designed to further avoid, reduce or compensate for impacts from the proposed action.

The decision made in this ROD emphasizes balanced and environmentally responsible development, and includes protections for physical and biological resources. The decision also addresses local residents' concerns regarding protection of their subsistence way of life and the subsistence resources on which they depend, through inclusion of new mitigation measures developed specifically for the GMT1 project. At the same time, the decision enables leaseholders to reasonably develop the petroleum resources from Federal and Alaska Native Corporation-owned lands, providing an economic benefit to the mineral subsurface estate managers, Arctic Slope Regional Corporation (ASRC) and the Federal Government, while helping to meet America's energy needs. The GMT1 development project will also lead to increased revenues to NSB, the Native Village Nuiqsut and the State of Alaska resulting from shared royalties, State and local taxes, NPR-A grants, and other fees. Local residents and communities will benefit indirectly from revenues associated with the development on Federal land that would accrue to the State of Alaska. Royalties received by ASRC will also result in revenues to Alaska Native corporations from shared royalties.

DECISION

Introduction

On July 22, 2013, CPAI submitted applications to BLM for issuance of a right-of-way grant and related authorizations to construct, operate, and maintain a drill site, access road, pipelines, and ancillary facilities to support development of petroleum resources in the Greater Mooses Tooth Unit. The proposed GMT1 drill site location and a majority of the infield road and pipeline route are on BLM managed lands in the NPR-A. The project is located on the North Slope of Alaska, immediately west of the Colville River Delta, approximately 11 miles northwest of the village of Nuiqsut. In order to process the applications, BLM analyzed the environmental impacts of the proposed project and a reasonable range of alternatives in accordance with NEPA, the Council on Environmental Quality (CEQ) NEPA regulations, DOI NEPA regulations, and other applicable authorities.

Background and History of the Proposed Project

In 1980, Congress authorized petroleum production in the NPR-A and directed DOI to undertake "an expeditious program of competitive leasing of oil and gas" in the Reserve (P.L. 96-514). Since 1998, BLM's management of the NPR-A has been guided by integrated activity plans developed in consultation with key stakeholders and the public through the NEPA and Native Alaskan consultation processes. The first such plan was the 1998 Northeast NPR-A IAP/EIS, which included the area where GMT-1 is currently proposed. That plan was amended by the 2008 Northeast NPR-A Supplemental IAP/EIS, which in turn was superseded by the 2012 NPR-A IAP/EIS and 2013 NPR-A IAP/EIS ROD that now governs all Federal lands in the NPR-A. The plans identified which areas are available to oil and gas leasing, and established various protective measures in the form of lease stipulations and BMPs designed to avoid and minimize impacts from oil and gas activities.

As envisioned by the 1998 Northeast NPR-A IAP/EIS, lease sales were held in 1999 and 2002, with CPAI receiving numerous leases, including the lease where the GMT1 site is located. CPAI began oil and gas production near the NPR-A on non-Federal lands in 2000 and 2001 with the construction and operation of facilities known as Alpine CD1 and CD2. In 2002, CPAI proposed an Alpine Satellite Development Plan (ASDP) that envisioned development of five satellite drilling pads — two in the Colville River Delta adjacent to the NPR-A (CD3 and CD4) and three in the NPR-A (CD5, GMT1, and GMT2). Under the ASDP, product from all five pads would be processed at the Alpine Central Processing Facility (CPF) located at CD1. Although within the boundaries of the NPR-A, CD5 is not on federally administered land, but GMT1 and GMT2 – which were known as "CD6" and "CD7" in the 2004 ASDP – are located on federally leased tracts. The BLM approved the plan for the two Federal sites in its 2004 ASDP EIS ROD. The 2004 decision was tiered to the 1998 Northeast NPR-A IAP/EIS and also incorporated the stipulations adopted in the 1998 Northeast NPR-A IAP/EIS ROD and additional mitigation measures to protect potentially affected resources.

The GMT1 project has evolved since it was first proposed in the 2004 ASDP with changes to the project design that reduce impacts to certain resources. These changes include: moving the drill site location out of the Fish Creek setback; reducing the road and pipeline length, and thereby reducing the amount of fill required and associated impacts to wetlands; and increasing the length of the Tiŋmiaqsiġvik (Ublutuoch) River Bridge in order to locate the abutments above the high-water banks and outside the 50-year floodplain.

To further evaluate the specific GMT1 project proposed here, a SEIS was prepared to the 2004 ASDP Final EIS. The Notice of Availability (NOA) for the Draft SEIS was published on February 21, 2014, and the NOA for the Final SEIS was published on November 7, 2014.

NPR-A Management Responsibilities and Requirements

As the Federal manager of the NPR-A, BLM is responsible for land-use authorizations on Federal land in the NPR-A. The authority for management of NPR-A comes from several statutes including the Federal Land Policy and Management Act (FLPMA), the Naval Petroleum Reserves Production Act of 1976 (NPRPA), as amended by the Department of the Interior Appropriations Act for Fiscal Year 1981 (P.L. 96-514), Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA), and the Mineral Leasing Act. These BLM authorities are further described below:

- Under FLPMA, the Secretary of the Interior has broad authority to regulate the use, occupancy, and development of public lands and to take whatever action is required to prevent unnecessary or undue degradation of public lands (43 USC § 1732). In accordance with FLPMA, BLM manages its lands for multiple uses while ensuring healthy and productive ecosystems.

- The NPRPA, as amended, requires oil and gas leasing in the NPR-A while also requiring protection of important surface resources and uses. The NPRPA provides the Secretary of the Interior with the authority to: protect "environmental, fish and wildlife, and historical or scenic values" in the NPR-A (42 USC § 6503(b)); and provide "conditions, restrictions, and prohibitions as the Secretary deems necessary or appropriate to mitigate reasonably foreseeable and significantly adverse effects on the surface resources of the National Petroleum Reserve in Alaska" (42 USC § 6506a(b)).

- Title VIII of ANILCA establishes procedures for Federal land managing agencies to evaluate impacts on subsistence uses and needs and means to reduce or eliminate such impacts (16 USC § 3120).

- The Mineral Leasing Act (MLA) (30 USC § 185), provides BLM with the authority to issue right-of-way grants for oil and natural gas pipelines and related facilities (not authorized by appropriate leases). Pursuant to this right-of-way grant, BLM will attach appropriate requirements for the construction, operation, maintenance, and reclamation of the proposed pipeline and associated road between CD5 and GMT1.

The 2013 NPR-A IAP/EIS ROD lists the current lease stipulations and BMPs applicable to oil and gas activities, and provides a process whereby an applicant can seek relief from the requirements and standards of the stipulation or BMP by requesting that BLM approve a "deviation" from the measure. In order for a deviation to be approved, BLM must determine that the objectives of the stipulation or BMP will be achieved by the applicant's alternative proposal.

One key protective measure is current BMP/Lease Stipulation K-1(e), which provides a 3-mile setback on either side of the main channel of Fish Creek, within which permanent oil and gas facilities may not be located unless BLM approves a deviation from the measure. Fish Creek and its surrounding lands are a key subsistence use area for Nuiqsut residents, particularly for the harvest of caribou and fish in addition to other important resources. In consultation with residents of Nuiqsut and the NSB, BLM established the 3-mile Fish Creek setback in the 1998 Northeast NPR-A IAP/EIS ROD to protect important subsistence activities and resources from impacts related to oil and gas development. In 2013, when BLM adopted its current Integrated Activity Plan for the NPR-A, BLM maintained the Fish Creek setback. In support of its pending applications, CPAI requested BLM approval of a deviation from Lease Stipulation K-1(e), to allow the proposed road and set of pipelines to be routed through the Fish Creek setback.

Decision

This ROD approves the development of the GMT1 project on BLM managed lands as described in Alternative A of the Final SEIS, with minor modifications explained in Appendix B.

This ROD concludes the SEIS process for BLM. It fulfills the NEPA requirements associated with consideration of CPAI's applications to develop oil accumulations on Federal lands leased by BLM to CPAI.

The ROD completes the required NEPA process for subsequent issuance of the appropriate BLM right-of-way grant, permits to drill, and other authorizations necessary for initial development of the GMT1 project. This includes:

- Construction and operation of the GMT1 drilling and production pad; and
- Construction and operation of a gravel road and a pipeline on BLM managed lands that will link the GMT1 pad to the CD5 pad on Kuukpik Corporation land, and with the Alpine Production Facility (CPF) located on State land.

The location of the GMT1 pad, road, bridges, and pipelines are described in Alternative A in the Final SEIS (Section 2.5 and Appendix drawings). The pad would measure approximately 11.8 acres. The road accessing GMT1 from CD5 would be approximately 7.6 miles long. A set of pipelines, power and communications lines would be mounted on a series of vertical support members (VSMs) parallel to the road. The exact specifications for these facilities may vary

slightly from those shown on the Final SEIS and application drawings to meet the requirements of permits issued by other Federal and State agencies.

This ROD approves deviations to three stipulations included in the 2008 Northeast NPR-A IAP/EIS ROD and three best management practices from the 2013 NPR-A IAP/EIS ROD. Consistent with the deviation clause in Appendix A of the 2013 NPR-A IAP/EIS ROD, this decision hereby approves the following deviations:

- Lease Stipulation/Best Management Practice K-1(e): to allow for the pipeline and road to be constructed within the 3-mile Fish Creek setback;
- Lease Stipulation/Best Management Practice K-1(g): to allow for the pipeline and road to be constructed within the 1/2-mile Tiŋmiaqsiġvik (Ublutuoch) River setback;
- Lease Stipulation 41 (now Lease Stipulation E-2): to allow oil infrastructure within 500 feet of water bodies;
- Best Management Practice E-7(a): to allow above ground pipelines to drop below the required minimum of 7 feet from the ground;
- Best Management Practice E-7(c): to allow less than a 500 foot separation distance between pipelines and roads; and
- Best Management Practice A-5: to allow for the refueling of equipment within 500 feet of the active flood plains of water bodies.

Additional discussion of the rationale for approving these deviations is included in Section 3, Management Considerations. Notwithstanding these deviations, BLM reaffirms the land use authorizations, stipulations, and best management practices established by the 2013 NPR-A IAP decision. All other lease stipulations and BMPs in place from the 2008 Northeast NPR-A IAP/EIS ROD and 2013 NPR-A IAP/EIS ROD, respectively, will remain in place. Additionally, the mitigation measures adopted by the 2004 ASDP ROD remain in effect and have been incorporated into the project by the applicant as design features.

In addition to project design features, BLM lease stipulations, and BMPs already applicable to the project, BLM is adopting in this ROD Supplemental BMPs designed to further avoid, reduce or compensate for impacts from this specific action. The Supplemental BMPs are selected from the potential new mitigation measures described and analyzed in the relevant resource sections in Chapter 4 of the Final SEIS, which were developed through the NEPA process based on suggestions from cooperating agencies, stakeholders, the public, and BLM staff. A full description of the adopted Supplemental BMPs is provided in Appendix A of this ROD, and they are summarized below by resource category:

Compensatory Mitigation

The permittee will provide $8 million to establish a compensatory mitigation fund that will facilitate the development and implementation of a regional mitigation strategy (RMS) and finance mitigation projects identified through the RMS process to offset unavoidable impacts of the project as described in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination. Under the RMS, mitigation projects may include, but

are not limited to, establishment of conservation easements or leases on Kuukpik Corporation lands along Fish Creek, or other areas with critical environmental, subsistence, or cultural significance as identified by the RMS, and cleanup of previously disturbed sites (e.g., legacy well reserve pits, landfills, etc.). The RMS will incorporate various components of a landscape-level conservation plan and will be developed through a collaborative, multi-stakeholder process including developing outcomes that benefit subsistence users most directly impacted by the GMT1 project, including members of the Native Village of Nuiqsut.

Air Quality

- To the extent practicable, all oil and gas operations (vehicles and equipment) must be powered by natural gas, electric power, or gasoline rather than diesel fuel.

- The permittee will provide funding for monitoring to identify and address concerns related to air quality in the Nuiqsut area.

Vegetation and Wetlands

- Interim reclamation on portions of a development site shall begin once BLM determines that environmental conditions are favorable for the replacement and re-establishment of natural soils and vegetation and such reclamation is feasible.

Wildlife and Birds

- The permittee shall establish a road kill reporting system to monitor vehicle collisions of birds and other wildlife on the CD5-GMT1 road.

- The permittee shall establish ground vehicle traffic restrictions that shall apply to permitted activities using the GMT1 to CD5 road in the time periods indicated based on caribou migration and sightings of caribou in the GMT1 road vicinity.

Subsistence

- The permittee will produce a clear and legally binding Right of Access Agreement that will provide the community of Nuiqsut with concise policies regarding use of the roads associated with the project and hunting prohibitions, if any, along the roads and near project components.

- In consultation with local hunters and local organizations, the permittee will continue to facilitate, improve, and expand communication protocols to inform subsistence users of daily flight patterns and identify potential conflict areas during peak hunting times.

- The permittee will be responsible for providing data to BLM for a monitoring study of aircraft flight patterns and impacts related to aircraft traffic on subsistence activities. The permittee will also reimburse BLM for an independent review of the associated data.

- The permittee will reduce aircraft traffic through the following measures: (1) suspend non-essential helicopter traffic during peak caribou hunting season to reduce the impacts of helicopter traffic on Nuiqsut caribou hunters; (2) reduce helicopter flights associated with ice road cleanup by requiring cleanup on foot when feasible; (3) limit the number of takeoffs and landings to support oil and gas operations with necessary materials and supplies to the maximum extent possible; and (4) reduce helicopter flights by utilizing unmanned aerial vehicles when feasible. Trips shall be combined when possible, and studies shall be conducted by boat and foot when possible.

- Except in the case of emergencies, spill response, training, or pre-positioning of response equipment and supplies, the permittee and its contractors will be prohibited from using airboats on rivers on BLM managed lands in the Nuiqsut subsistence use area.

- The permittee will be responsible, throughout the life of the project, for providing funding to monitor changes in subsistence activities in the community and harvest levels in the community of Nuiqsut. The permittee will also fund a study to quantify changes in subsistence use and harvest levels. The study will identify changes resulting from the proposed project, and at a minimum, monitor impacts to caribou, fish and bird harvests.

- The permittee will undertake and fund a thorough economic study of the costs that individuals and families incur to continue subsistence activities.

Public Health

- The permittee shall contribute funds for the creation of an Emergency Contingency Plan and associated Evacuation Plan for the community of Nuiqsut to identify the appropriate response by the community to a variety of health and safety events that could occur at the GMT1 development.

- The permittee shall minimize the undue idling of vehicles to reduce emissions associated with vehicle use and decrease noise impacts associated with the GMT1 project.

Project Design and Spill Measures

- The permittee shall establish additional protective measures by use of impermeable lining, and using liners for protection outside of secondary containment.

- Oil spill response equipment must be designed to be effective in Arctic conditions; Mechanisms must be available to prevent the freezing of response equipment and/or to de-ice such equipment when necessary.

- Equipment used to develop hydrocarbons must be designed in accordance with standard Arctic engineering practices for use in Arctic conditions, and design criteria must be based on conservative estimates.

- The permittee will develop a spill prevention and response plan that adopts the Alpine Development Participant Area Oil Discharge Prevention and Contingency Plan (Alpine C-Plan) and develop a response plan for blowouts that addresses requirements for communication with Nuiqsut residents and BLM.

- The permittee will implement leak detection systems for GMT1 facilities to reduce the extent of potential spills.

- The permittee will install increased spill minimization measures at the Tiŋmiaqsiġvik (Ublutuoch) Bridge, which may include use of a thicker wall diameter pipeline spanning the bridge.

Other/Monitoring

- As required by the 2013 NPR-A IAP, the permittee will be responsible for funding monitoring to assess the effectiveness of project designs and required mitigations in protecting resources. The funds will be used to establish and implement an effectiveness monitoring program designed to: monitor wildlife populations, habitat, and ecosystem processes potentially impacted by development; ensure public involvement and transparency; and maintain a high standard of oversight for industry-funded scientific studies related directly to the GMT1 project.

This decision will result in no unnecessary or undue degradation of public lands. Adverse impacts to these lands and the uses of these lands are minimized by:

- lease provisions and stipulations;
- required 2013 NPR-A IAP/EIS ROD BMPs;
- protections incorporated into the project design (such as the drill pad location outside of the Fish Creek setback);
- Supplemental BMPs developed through the course of the SEIS and adopted by this ROD (as described above and in Appendix A); and
- applicable Federal, state, and NSB laws and regulations.

This decision also adopts the Reasonable and Prudent Measures (RPM) and the implementing Terms and Conditions (T&C), included by the U.S. Fish and Wildlife Service (USFWS or Service) in its amended Biological Opinion dated January 26, 2015, to protect polar bears (*Ursus maritimus*), spectacled eiders (*Somateria fischeri*), and Alaska-breeding Steller's eiders (*Polysticta stelleri*). The Biological Opinion can be found in Appendix F.

ALTERNATIVES

The elements of the alternatives presented in the Final SEIS are consistent with the purposes of the statutes governing the NPR-A and with BLM's responsibilities under FLPMA. The action alternatives carried forward from the 2004 ASDP EIS were modified and updated for conditions specific to the GMT1 project as currently proposed. Each alternative offers a different approach to approving CPAI's applications to produce oil reserves on its leases. The following provides brief descriptions of the alternatives contained in Chapter 2 of the Final SEIS.

Alternative A (CPAI's Proposed Action): The proposed 11.8-acre GMT1 gravel pad would contain 33 drilling and injection wells. A 7.6-mile gravel road and 8.4-mile elevated pipeline would connect GMT1 to the existing CD5 pad. Produced fluids would be transported by pipeline via CD5 for processing at the existing CPF. Personnel and equipment would be flown to the airstrip at the existing CPF and transported to GMT1 via the gravel road. Gravel used for construction of roads and pads would be obtained from the existing ASRC Mine Site. The proposed GMT1 road would include two bridges (a 40-foot long bridge over Crea Creek and a 350-foot long bridge over the Tiŋmiaqsiġvik (Ublutuoch) River to accommodate road traffic and the pipelines, two valve pads on either side of the Tiŋmiaqsiġvik (Ublutuoch) River crossing, three vehicle pullouts, and a culverted crossing at Barely Creek. Aboveground pipelines would be supported on a set of VSMs between GMT1 and CD5, and additional new VSMs would be installed between CD4 and CPF; pipelines would be at elevations of at least 7 feet above the tundra for most of the pipeline route, except in two areas where the pipeline would be buried in the road. Approximately 3.1 miles of road and 3.5 miles of pipeline would pass within a 3-mile setback prohibiting permanent oil and gas infrastructure within 3-miles of either side of Fish Creek (see BMP/Lease Stipulation K-1(e) of the 2013 IAP/EIS ROD), and would require a deviation consistent with BLM's NPR-A 2013 IAP/EIS ROD. Approximately 0.3 mile of road and 0.2 mile of pipeline would pass within a 1/2-mile setback prohibiting permanent oil and gas infrastructure within 1/2-mile of either side of the Tiŋmiaqsiġvik (Ublutuoch) River (see BMP/Lease Stipulation K-1(g) of the 2013 IAP/EIS ROD), and would require a deviation consistent with the BLM's NPR-A 2013 IAP/EIS ROD. Additional deviations would be needed for Lease Stipulation 41 (now Stipulation E-2), BMP E-7(a), BMP E-7(c), and BMP A-5 all of which are described above and in Section 3 below. This alternative would require 6 miles of ice roads constructed annually through the life of the project. The total gravel footprint in USACE jurisdictional waters of the United States for this alternative would be approximately 72.6 acres.

Alternative B: Except as described below, all activities would be the same as described for Alternative A. Alternative B would comply with BLM's Lease Stipulation K-1(e) for oil and gas development in the NPR-A by maintaining the Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks. The GMT1 and its associated 8.6 mile access road and pipeline would be moved south, outside the 3-mile setback for Fish Creek and the 1/2-mile setback for the Tiŋmiaqsiġvik (Ublutuoch) River. Deviations would still be needed for Lease Stipulation 41 (now Stipulation E-2), and BMP E-7(a), as with Alternative A; however, the Alternative B route comes within

500 feet of one fish-bearing lake as opposed to three fish-bearing lakes under Alternative A. The pipeline would not need to be buried in the road near GMT1, and would remain 7 feet above the tundra, so no deviation from BMP E-7(c) would be needed as the pipeline would only be buried in the road near CD5, on Kuukpik Corporation lands. There would be no bridge over Crea Creek, due to rerouting of the road on a more southern route as compared with Alternative A, eliminating the need for a deviation from BMP A-5. The culverted crossing at Barely Creek would also be eliminated. This alternative would require 25.5 miles of ice roads during the first year of construction, 28 miles during the second year, and 6 miles of ice roads constructed annually through the life of the project. The total gravel footprint for this alternative would be approximately 80.3 acres.

Alternative C: Alternative C would feature the same GMT1 pad location and facility design, as well as the same route for the access road and pipeline to CD5 as described for Alternative A. This alternative would require an upgrade of the existing Nuiqsut Spur Road, Nuiqsut Dump Road, and the Nuiqsut airport, all of which are located on land owned by Kuukpik Corporation. The airport upgrade would require construction of a 3.7-acre logistics pad with a 1.4-acre taxiway-apron connecting to the existing airstrip, a 500-foot extension of the existing runway, and approximately 1.6 acres of footprint and one additional bridge to support this extension. The total gravel footprint for this alternative would be approximately 105.7 acres.

Alternative D1: In Alternative D1, the gravel road between GMT1 and CD5 would be eliminated and the GMT1 production pad would be accessible only by aircraft or ice road. All personnel and equipment would be transported to the GMT1 pad via fixed-wing planes and helicopters or seasonal ice road. The pipeline and VSMs would follow the same route and design as described for Alternative A. In addition to the facilities and features required for the GMT1 pad in all action alternatives, Alternative D1 would require that certain facilities, services, equipment, and supplies (otherwise provided at CPF) would need to be duplicated at or near the drill pad. Notably, the Alternative D pad would require its own 5,000-foot gravel airstrip and parking apron, 14.9-acre occupied structure pad to house additional infrastructure, and a 1.3-mile gravel access road between the GMT1 pad and the occupied structure pad. Drilling would be supported by a crew based in a 120-man camp (workers to support drilling and well tie-in) on the occupied structure pad. In addition, a 25-man operation support camp would also be located on the occupied structure pad. Under Alternative D1, drilling was anticipated to begin in May 2017 and would continue year-round for approximately 4 years to achieve economic and production goals. This alternative would require 15 miles of ice roads constructed annually during production, through the life of the project. The total gravel footprint for this alternative would be approximately 87.4 acres.

Alternative D2: Except as described below, all activities would be the same as described for Alternative D1. Alternative D2 is very similar to Alternative D1, except that Alternative D2 allows only seasonal drilling (February – April) when an ice road would be available between GMT1 and CD5. Operation (i.e., production after first oil) would be year-round, as in Alternative D1. Drilling was anticipated to begin February 2018 and would be supported by a 75-man drill rig support camp at GMT1 pad for 24 years of drilling. As in Alternative D1, a

25-man operation support camp would be located on the occupied structure pad. Production would be concurrent with drilling for 19 years and post-drilling production would continue for 11 years to 2053. With seasonal drilling, the drill rig would be mobilized and demobilized from the GMT1 pad each year via ice road. This alternative would require15 miles of ice roads constructed annually during production, through the life of the project. The total gravel footprint for this alternative would be approximately 85.8 acres, with a smaller occupied structure pad as a result of reduced scope of support facilities needed for seasonal operations.

Alternative E (No Action): Under this alternative, CPAI's applications to construct, operate, and maintain a drill site, access road, pipelines, and ancillary facilities to support development of petroleum resources in the Greater Mooses Tooth Unit would not be approved by BLM. No oil would be produced from GMT1 in the near future, and no new roads, airstrips, pipelines, or other oil facilities would be constructed beyond what is currently authorized in connection with CPAI's current development. Alternative E is the environmentally preferable alternative because it would prevent damage to the biological and physical environment, and would best preserve and protect historic, cultural, and natural resources.

MANAGEMENT CONSIDERATIONS

The Final SEIS fulfills the obligation of BLM and its Federal cooperating agencies under NEPA, to analyze the environmental impacts of Federal authorizations necessary for CPAI to undertake its proposed GMT1 development. Authorizing CPAI's development helps address the Nation's total energy needs. North Slope oil production, centered at Prudhoe Bay, is an important component of the Nation's domestic oil supply. The oil industry has discovered and developed other fields to the east and west of Prudhoe Bay. However, production is in decline from these older fields and development of CPAI's project will help offset this decline and help to provide a new source of oil for the Trans-Alaska Pipeline System. Moreover, the authorization of development of leases in the NPR-A satisfies the purpose of the NPRPA to explore and develop oil and gas resources in the NPR-A. Specifically, the NPRPA, as amended, encourages oil and gas leasing in the NPR-A while requiring protection of important surface resources and uses. Development of satellite oil accumulations at GMT1, with appropriate environmental protection measures, is consistent with the President's commitment to expand domestic energy production.

Federal laws, including the NPRPA, FLPMA, ANILCA, and the Endangered Species Act (ESA), require BLM to protect soil, water, air, vegetation, wildlife, archaeological and paleontological resources, and subsistence uses while fulfilling the agency's multiple-use mission. These resources are protected through:

- lease provisions and stipulations;
- required 2013 NPR-A IAP/EIS ROD BMPs;
- additional protections incorporated into the project design (such as the drill pad location outside of the Fish Creek setback);
- Supplemental BMPs developed through the course of the SEIS and adopted by this ROD (as described above and in Appendix A); and
- applicable Federal, state, and NSB laws and regulations.

Implementation of applicant-proposed design elements, except where they are inconsistent with the adopted decision, is required of the applicant.

Rationale for Adopting Alternative A

Among the alternatives evaluated in the Final SEIS, Alternatives A and B would result in fewer overall environmental impacts than action Alternatives C, D-1 and D-2. Alternatives A and B would have a smaller development footprint than the other action alternatives. Alternative C would result in greater noise and air pollution in Nuiqsut due to increased air and ground traffic into and out of the community. Additionally, Alternative C would involve development on lands owned by the Kuukpik Corporation; however, the Corporation has stated that it would not allow that development to occur. Alternatives D-1 and D-2 would not result in impacts associated with a gravel road, such as disturbance to wildlife from ground vehicle traffic,

impacts to vegetation from fugitive dust, and hydrological impacts due to restriction of surface water flow. However, with Alternatives D-1 and D-2 there would be increased noise and adverse impacts to air quality due to increased flights and emissions associated with the additional infrastructure required at the drill site. Alternatives D-1 and D-2 would also require annual construction of an ice road connection to GMT1, resulting in increased noise, traffic, and emissions in and near Nuiqsut and increased surface water withdrawals used to construct ice roads. Additionally, Alternatives D-1 and D-2 would not provide residents of Nuiqsut year round road access to GMT1, thus limiting opportunities for employment and subsistence access. Additionally, Alternatives C, D-1, and D-2 have substantially higher estimated capital expenditure costs than Alternatives A and B and may not be financially viable.

Alternative E would not allow CPAI to produce oil from accumulations on its oil and gas leases and would not fulfill legislative direction, national energy policy, or the purpose and objectives for which the NPR-A is managed. Alternative E was not chosen because another alternative (with mitigation) that allowed CPAI to produce oil was considered acceptable.

Alternatives A and B are similar in their design and impacts to certain environmental resources, such as wetlands. Alternative A has a shorter road and an overall smaller development footprint, but unlike Alternative B, the road and pipeline route encroaches into the 3-mile Fish Creek setback and includes a bridge and pipeline crossings over Crea Creek and at Barely Creek, and comes closer to 3 fish-bearing lakes. The shorter road and smaller footprint associated with Alternative A result in less impact to wetlands habitat, however the two additional crossings have the potential to negatively affect fish and water resources. Additionally, the road and pipeline encroachment within the 3-mile Fish Creek setback will adversely impact subsistence use in the area.

As discussed above in the Summary, BLM identified Alternative B as its preferred alternative in the Final SEIS but indicated that the Corps' LEDPA determination would be considered by BLM in making a final decision, and could result in the modification or change in the alternative adopted in this ROD. Given the similarities between Alternatives A and B with respect to certain resource impacts, and the fact that the Corps has determined that Alternative A is the LEDPA, this ROD adopts Alternative A in order to coordinate BLM's decision with the Corps and avoid conflicting Federal permitting decisions. The permittee will contribute funds to BLM to establish a compensatory mitigation fund to offset impacts to habitat values and major impacts to subsistence resources and uses, as well as for the development and initial implementation of a regional mitigation strategy that will improve planning and permitting efficiencies, reduce conflict, and better achieve petroleum development and conservation goals. Regional mitigation strategies are called for by the BLM Draft -Regional Mitigation Manual Section - 1794 and Secretarial Order No. 3330. These measures are further described in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination.

Consistency with the National Petroleum Reserve in Alaska IAP/EIS

The NPR-A IAP/EIS ROD issued in 2013 required that numerous protections be provided through lease stipulations and BMPs for oil and gas development on Federal lands within the NPR-A. These protections address measures to mitigate potential impacts related to waste prevention, handling, and disposal; spills; water use; overland moves; facility design and construction, ground transportation; air traffic; oil field abandonment; subsistence, orientation program; and other activities. These stipulations and BMPs are required for CPAI's development, with the exception of deviations approved in this ROD for the six stipulations and BMPs discussed below.

The IAP/EIS ROD provided flexibility to deal with unique aspects of oil and gas development proposals that are impossible to know prior to exploratory drilling. Consistent with the requirements of the IAP/EIS, this ROD approves deviations from six stipulations and BMPs as requested by CPAI in a letter to BLM dated October 14, 2014. Notwithstanding these deviations, BLM reaffirms the land use authorizations, stipulations, and best management practices established by the 2013 NPR-A IAP decision.

Deviations are approved in accordance with the following clause from the 2013 IAP/EIS ROD:

> Prior to approving an alternative procedure as part of the authorization, BLM's staff would analyze the proposal and determine if the proposal incorporating the alternative procedure would achieve the objectives of the stipulations and best management practices. If the BLM determines that the alternative procedure proposed by the applicant would meet the stipulation's or best management practice's objective, BLM could approve the alternative procedure. If BLM determines that the alternative procedure proposed by the applicant is unlikely to meet the objectives of a stipulation or best management practice, the requirements/standards would still be required. However, the Authorized Officer may allow a deviation from the objectives and requirement/standard in a new decision document supported by additional NEPA analysis.

Deviations are hereby approved for the following stipulations/BMPs based upon the above requirements.

Best Management Practice/Lease Stipulation K-1(e)

BMP/Lease Stipulation K-1(e) of the 2013 NPR-A IAP/EIS ROD states:

> 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. Fish Creek: a 3-mile setback from the highest high watermark of the creek downstream from the eastern edge of section 31, T11N,

> R1E., U.M. and a ½-mile setback from the bank's highest high watermark farther upstream.

Under Alternative A, 3.1 miles of gravel road and 3.5 miles of pipeline traverse the Fish Creek setback. The proposed pipeline lies 2.5 miles southeast of Fish Creek at the nearest point. This decision allows for some infrastructure to encroach 0.5 mile within the setback, impacting various environmental factors, including most importantly subsistence resources and activity, and thus warranting mitigation. Moist tussock tundra and moist sedge-shrub meadow habitats exist between CD5 and GMT1. These are relatively high and dry habitat areas compared to other habitat in the area. They are less prone to flooding and the resultant impacts, and they are less important habitat for waterbirds. The road proposed under Alternative A utilizes these habitats to the maximum practicable extent. Additionally, the Alternative A road has been sited to use the least amount of gravel of any action alternative considered in the Final SEIS. To minimize disturbance within the Fish Creek setback, CPAI will conduct construction activities during the winter when wetlands are frozen, and utilize water misting for dust control during summer months.

Pursuant to Section 404 of the Clean Water Act, the Corps considered the direct impacts to the aquatic ecosystem resulting from the placement of fill material into waters of the United States, including wetlands. The Corps' Clean Water Act authorization includes special conditions to further avoid and minimize potential adverse impacts and to compensate for unavoidable adverse impacts to the aquatic ecosystem. Additionally, the potential for an oil spill to reach a water body is considered small and is further mitigated by design considerations at stream crossings.

The Fish Creek setback, within which permanent oil and gas facilities are prohibited subject to the deviation approval process, was established to minimize impacts to fish and subsistence resources and to protect subsistence activities. Caribou and other subsistence resources will incur disturbance during operations from location of infrastructure closer to riparian areas. The setback is an important subsistence use area for Nuiqsut residents, and is well known as being highly productive of fish and wildlife populations..

Construction and operation of the road and pipeline within the Fish Creek setback may impact residents, who may avoid conducting subsistence activities near the road and pipeline. These impacts are also discussed in the Environmental Justice section of this decision and the ANILCA §810 determination. To address these impacts this ROD adopts Supplemental BMPs, in addition to existing protective measures to ensure that impacts to subsistence resources and uses are avoided and minimized, and otherwise compensated to offset unavoidable impacts, in order to fully satisfy the objective of the stipulation. Additionally, to offset unavoidable impacts to subsistence and other resources within the Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks, the permittee will provide compensatory mitigation funds to support development of a RMS and to finance mitigation projects to offset impacts to subsistence resources and uses that will be identified as part of the RMS process as described in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination. Accordingly, in light of

the adoption of Supplemental BMPs to address and compensate for impacts caused by encroachment of the road and pipeline into the Fish Creek setback, a deviation of this stipulation is approved, allowing the pipeline and road to be located within the Fish Creek setback.

Best Management Practice/Lease Stipulation K-1(g)
BMP/Lease Stipulation K-1(g) of the 2013 NPR-A IAP/EIS ROD states:

> 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. Ublutuoch (Tiŋmiaqsigvik) River: a ½-mile setback from the ordinary high water mark.

Under Alternative A, approximately 0.3 mile of gravel road and 0.2 mile of pipeline traverse the Tiŋmiaqsiġvik (Ublutuoch) River setback. The proposed road and pipeline cross the river perpendicularly to its main course and on BLM managed lands within approximately 0.4 mile of an oxbow curve in the river as a result of the crossing. This decision allows for the road and pipeline to encroach within the edge of the setback, impacting various environmental factors, including most importantly subsistence resources and activity. Moist tussock tundra and moist sedge-shrub meadow habitats exist between CD5 and GMT1. These are relatively high and dry habitat areas compared to other habitat in the area. They are less prone to flooding and the resultant impacts, and they are less important habitat for water birds. The road proposed under Alternative A utilizes these habitats to the maximum practicable extent. Additionally, the Alternative A road has been sited to use the least amount of gravel of any action alternative considered in the Final SEIS. To minimize disturbance within the Tiŋmiaqsiġvik (Ublutuoch) River setback, CPAI will conduct construction activities during the winter when wetlands are frozen, and utilize water misting for dust control during summer months.

Pursuant to Section 404 of the Clean Water Act, the Corps considered the direct impacts to the aquatic ecosystem resulting from the placement of fill material into waters of the United States, including wetlands. The Corps' Clean Water Act authorization includes special conditions to further avoid and minimize potential adverse impacts and to compensate for unavoidable adverse impacts to the aquatic ecosystem. Additionally, the potential for an oil spill to reach a water body is considered small and is further mitigated by design considerations at stream crossings.

The Tiŋmiaqsiġvik (Ublutuoch) River setback, within which permanent oil and gas facilities are prohibited subject to the deviation approval process, was established to minimize impacts to fish and subsistence resources and to protect subsistence activities. Caribou and other subsistence resources will incur disturbance during operations from location of infrastructure closer to riparian areas.

Construction and operation of the road and pipeline within the setback may impact residents, who may avoid conducting subsistence activities near the road and pipeline. These impacts are

also discussed in the Environmental Justice section of this decision and the ANILCA §810 determination. To address these impacts this ROD adopts Supplemental BMPs in addition to existing protective measures to ensure that impacts to subsistence resources and uses are minimized, in order to fully satisfy the objective of the stipulation. Additionally, to offset unavoidable impacts to subsistence and other resources within the Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks, the permittee will provide compensatory mitigation funds to support development of a RMS and to finance mitigation projects to offset impacts to subsistence resources and uses that will be identified as part of the RMS process as described in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination. Accordingly, in light of the adoption of Supplemental BMPs to address impacts caused by encroachment of the road and pipeline into the Tiŋmiaqsiġvik (Ublutuoch) River setback, a deviation of this stipulation is approved, allowing the pipeline and road to be located within the setback.

Lease Stipulation E-2

Lease Stipulation E-2 of the 2013 NPR-A IAP/EIS ROD states:

> Permanent oil and gas facilities, including roads, airstrips, and pipelines, are prohibited upon or within 500 feet as measured from the ordinary high water mark of fish-bearing water bodies. Essential pipeline and road crossings will be permitted on a case-by-case basis.

Deviation of this stipulation is warranted because compliance is technically infeasible due to the hydrology and number of water bodies in the project area, and other measures are required that would protect water bodies (e.g., leak detection, and use of secondary containment). While much of the major infrastructure is located away from lakes and streams, the project area between CD5 and GMT1 is characterized by many small water bodies. As a result, it is not possible in all instances to avoid encroachment within 500 feet of every water body, and under Alternative A, the road route would run within 500 feet of three fish-bearing lakes (L9818, L9820, and L9824).

The purpose of the 500-foot setback from water bodies is to protect fish, water quality, and aquatic habitat from impacts, including oil and fuel spills. On-the-ground inspections of the route of the road and pipeline prior to construction, along with existing stream and lake studies, will assist in agency determinations on facility design to minimize impacts to water bodies where facilities cannot be placed 500 feet from water bodies. In addition, aspects of the applicant's proposed action, such as use of containment tanks, and tank and pipeline inspections, and other NPR-A IAP/EIS stipulations and BMPs (e.g., those dealing with the handling of fuel and other pollutants) substantially reduce the potential for impacts to water bodies. Therefore, this decision approves a deviation of Stipulation E-2, and allows the essential pipeline and road crossing of the Tiŋmiaqsiġvik (Ublutuoch) River, a fish-bearing stream.

Best Management Practices E-7(a) and E-7(c)
Best Management Practice E-7 of the 2013 NPR-A IAP/EIS ROD states:

> Pipelines and roads shall be designed to allow the free movement of caribou and the safe, unimpeded passage of the public while participating in subsistence activities…
>
> (a) Above ground pipelines shall be elevated a minimum of 7 feet as measured from the ground to the bottom of the pipeline at vertical support members.
>
> …
>
> (c) A minimum distance of 500 feet between pipelines and roads shall be maintained. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipelines and roads converge on a drill pad. Where it is not feasible to separate pipelines and roads, the authorized officer will consider alternative pipeline routes, designs, and possible burial within the road.

The GMT1 to CD5 pipeline will be buried in the gravel road at two locations where the road crosses the pipeline, although one crossing is on Kuukpik Corporation lands near CD5. These locations where the pipeline will be below the 7-foot minimum are not anticipated to impede caribou movement or subsistence use because there will be no funneling of caribou movement, and there are areas nearby where the pipeline will be elevated at least 7 feet high.

A 500-foot distance between pipelines may not be feasible within narrow land corridors amid lakes and where pipelines and roads converge on a drill pad. The route depicted in Map 2.6-1 in the Final SEIS is based on topographic maps available to BLM at the time of the Final SEIS publication. CPAI has not yet completed its final surveys of the Alternative A road route, and will be required to maintain a 500-foot separation between the road and pipeline during survey and construction of the road where technically feasible to do so.

The purpose of the 7-foot minimum height and 500-foot minimum distance between roads and pipelines is to minimize disruption of caribou movement and subsistence use. The physical location of GMT1 and its associated road and pipeline are not anticipated to have adverse impacts to caribou populations, though caribou may incur some disturbance during operations from infrastructure. Supplemental mitigation measures such as speed limits and other design and operation features of the proposed project will reduce impacts to subsistence resources. Accordingly the requested deviations from BMPs E-7(a) and E-7(c) are approved.

Best Management Practice A-5
BMP A-5 of the 2013 NPR-A IAP/EIS ROD states:

> Refueling of equipment within 500 feet of the active floodplain of any water body is prohibited. Fuel storage stations shall be located at least 500 feet from any water body with the exception that small caches (up to 210 gallons) for motor

> boats, float planes, ski planes, and small equipment, e.g., portable generators and water pumps, are permitted. The Authorized Officer may allow storage and operations at areas closer than the stated distances if properly designed to account for local hydrologic conditions.

CPAI requested a deviation from this BMP to construct the Tiŋmiaqsiġvik (Ublutuoch) River and Crea Creek bridges. CPAI requested this deviation because some heavy construction equipment operated during the bridge construction is impractical to move off the frozen water bodies for refueling (for example cranes, hammers, rigs, and support equipment). CPAI will minimize refueling over ice and adjacent to the river and creek and will move the equipment a distance greater than 100 feet from any open water body to refuel for all construction activities. All equipment and vehicles that are nonessential to ongoing construction activities will be moved off the river channel for refueling. Except during refueling of essential equipment, fuel will be stored more than 100 feet away from any open water body. All of the tanks associated with the cranes, hammers, and drill rigs are less than 660 gallons (the largest is anticipated to be 300 gallons) and would be double walled with 110 percent containment. The standard operating procedures incorporate checklists and practices to prevent fuel spills during transfer and refueling.

The objective of this BMP is to minimize the impact of contaminants from refueling operations on fish, wildlife, and the environment. CPAI's refueling and fuel storage procedures minimize potential impacts to the Tiŋmiaqsiġvik (Ublutuoch) River and Crea Creek and are properly designed to account for the local hydrologic conditions. Additionally, movement of some heavy equipment off the frozen water bodies for refueling would be impractical. Therefore, BLM approves this deviation.

Endangered Species Consultation

Section 7(a)(2) of the ESA requires Federal agencies to consult with the USFWS and the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries), as appropriate, to ensure that their actions do not jeopardize the continued existence of species listed as threatened or endangered under the ESA, or destroy or adversely modify their critical habitat. The NOAA Fisheries, in a letter dated September 17, 2014, determined that this project may affect, but is not likely to adversely affect, federally listed threatened, endangered, or candidate species under its jurisdiction (Arctic ringed seals and Beringia DPS bearded seals).

The USFWS issued its Biological Opinion (BO) on December 2, 2014. It determined that the GMT1 project is consistent with the management actions considered in the 2013 IAP/EIS BO; therefore, USFWS determined that GMT1 is not likely to jeopardize the continued existence of spectacled eiders and polar bears. Further, USFWS determined the proposed project is not likely to adversely affect Alaska-breeding Steller's eiders. While USFWS does not anticipate incidental take of Steller's eiders due to this project, the Incidental Take Statement in the 2013 IAP/EIS BO provides coverage under the ESA should Steller's eiders unexpectedly collide with structures associated with GMT1.

In the original BO, USFWS estimated the level of incidental take for spectacled eiders and polar bears for three of the action alternatives presented for GMT1, including Alternative A, but did not include an Incidental Take Statement due to ongoing evaluations of alternatives by the Corps and BLM. Subsequently, USFWS issued an amendment to the BO for Alternative A – dated January 13, 2015 – that includes Reasonable and Prudent Measures, Terms and Conditions, and Conservation Measures that will be applicable to the project for purposes of the Corps' and BLM's authorizations. The USFWS issued a second amendment to the original BO, dated January 26, 2015, to include an Incidental Take Statement for spectacled eiders. No incidental take of polar bears was authorized in the BO (Appendix F of this ROD).

Wetlands and Floodplains Executive Orders

If a proposed action is to be located in a floodplain and/or involves construction in wetlands, then Executive Orders *11988 - Floodplain Management* (Floodplains EO) and/or *11990 - Protection of Wetlands* (Wetlands EO) may be applicable. As discussed below, these executive orders contain requirements that Federal agencies must comply with when evaluating a proposed action, including requirements for: public review of proposals, certain findings, adoption of mitigation, and, in the case of floodplains, public notice. These requirements may be addressed and satisfied through an agency's NEPA process.

Wetlands (Executive Order 11990)

Executive Order 11990 concerning the protection of wetlands requires that BLM consider factors relevant to the proposal's effect on the survival and quality of wetlands. Factors to be considered include the following:

> 1. Public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion;
> 2. Maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and
> 3. Other uses of wetlands in the public interest, including recreation, scientific, and cultural uses.

The BLM is required to avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds:

1. there is no practicable alternative to such construction; and
2. the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors.

The following discussion summarizes the evaluation of impacts to wetlands for Alternative A, and the findings that are a result of that evaluation. In addition, specific protective mitigation developed to avoid or lessen impacts to wetlands is presented.

The GMT1 project facilities and proposed drill site are located entirely within the northeastern NPR-A, on the North Slope of Alaska, immediately west of the Colville River delta. The project study area is depicted on Map 3.1-1 of the Final SEIS. The study area extends approximately 2.5 miles in radius from proposed project facilities and covers 116,447.7 acres. Waters and wetlands occupy approximately 97 percent of the project study area; water bodies account for 20 percent of this total (Final SEIS Table 3.3-1). The dominant wetland cover classes in the project study area include wet sedge meadow tundra (25 percent), tussock tundra (16 percent), and moist sedge-shrub tundra (14 percent).

Alternative A would result in placement of a gravel pad and road covering about 72.7 acres (see Table 4.2-2 Final SEIS). Indirect impacts from gravel spray and (or) dust deposition evaluated by GIS as a 300-foot impact zone surrounding gravel infrastructure may impact an additional approximately 587.3 acres of jurisdictional waters/wetlands of the United States. All direct and indirect impacts would be within potential wetlands. The impacts to vegetation and wetlands are characterized as long-term duration; the resource is considered important in context because wetlands are protected by legislation; and the geographic extent is considered local and covers only a small proportion of the northeastern NPR-A. Because virtually the entire area consists of wetlands, it would not be possible to produce the oil reserves on CPAI's GMT1 leases without impacting wetlands.

Wetlands impacts will be mitigated through BLM lease stipulations and BMPs already applicable to the project, requirements of Alternative A, and Supplemental BMPs adopted in this ROD. These include provisions relevant to CPAI's proposal that protect the function and values of wetlands, including requirements and mitigating designs:

- waste management, spill prevention and response, and HazMat emergency contingency plans;
- winter travel and protection of soil, vegetation, and streams;
- facility design and requirements that permanent facilities minimize footprint and be reclaimed to ensure eventual restoration of ecosystem function;
- extraction of gravel and construction of gravel roads, pads, and pipelines will occur in winter using ice roads, thus minimizing potential impacts to the tundra;
- road watering would occur to help control dust;
- incorporation of the findings of fish surveys and hydrologic modeling into the design of proposed bridges and culverts and subsequent monitoring of culverts and remedial measures based on this monitoring;
- additional leak detection criteria; and
- spill minimization measures at the Tiŋmiaqsiġvik (Ublutuoch) River bridge.

Furthermore, USACE is requiring 342.36 acres in compensatory mitigation credits based on the functional value of each acre of the direct project footprint, plus indirect impacts associated with the lost functional value due to impacts to the aquatic ecosystem surrounding the project footprint. Because of the protections identified in the Final SEIS, the Final SEIS determined

that development and operation of CPAI's project would be unlikely to significantly impact any wetland plant species or community, cause significant soil loss, or result in other than short-term and localized loss of water resources or water quality. Therefore, no significant impacts are expected that would affect public health, safety, and welfare through changes in the supply, quality, recharge or discharge, and pollution of water or, flood and storm hazards or sedimentation and erosion.

This decision includes all practicable measures to minimize harm to wetlands when considering all technical, economic, environmental, and other pertinent factors. While Alternatives A and B are similar in terms of impacts to wetlands, Alternative A has a slightly smaller gravel footprint than Alternative B. A reduction in impacts to hydrology under Alternatives D-1 and D-2 may have resulted from the elimination of a road connection to the existing CD5 pad. While this reduces some of the impacts to the surface, it creates other impacts, such as a larger gravel footprint than is required in alternatives with a gravel road. These alternatives would rely on air transportation and winter ice road transportation to GMT1. Regular ice road construction to these pads can result in impacts to the tundra. A lack of gravel road access to the existing Alpine facility would create a need for increased waste and chemical storage that enlarges the pad size and could delay spill response actions. Moreover, locating a road parallel to the pipeline facilitates pipeline leak detection and spill response, and provides access for any health and safety events at GMT1.

Therefore, BLM finds that there is currently no practicable alternative to construction of the GMT1 project in wetlands and that all practicable measures to minimize harm to wetlands have been taken, given the technical, economic, and environmental factors that must be weighed.

Floodplains (Executive Order 11988)

Executive Order 11988 concerning the protection of floodplains requires an agency to provide leadership and to take action to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. In carrying out activities required by EO 11988, the agency has the following responsibilities:

1. Evaluate the potential effects of any actions that may take place in a floodplain;
2. Ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management; and
3. Prescribe procedures to implement the policies and requirements of EO 11988.

Additional requirements are as follows:

4. Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain and the evaluation required will be included in any environmental impact statement prepared under NEPA.

5. If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this executive order requires siting in a floodplain, the agency shall, prior to taking action,

a. design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations, and

b. prepare documentation explaining why the action is proposed to be located in the floodplain.

The long-term effects, both direct and cumulative, on floodplains of CPAI's development on BLM managed lands as approved in this ROD are expected to be minor, and would be mitigated to the greatest extent practicable. More than half of the project study area is located within the Colville River drainage basin, although the project study area is also located within the Fish Creek drainage basin, Judy Creek drainage basin, and the Tiŋmiaqsiġvik (Ublutuoch) River drainage basin. As with wetlands, total avoidance of floodplains is impossible due to the geography and hydrologic features of the project area.

This decision avoids and minimizes impacts to floodplains, including those of Fish Creek and the Tiŋmiaqsiġvik (Ublutuoch) River, the largest streams within the GMT1 project study area. The design for the Tiŋmiaqsiġvik (Ublutuoch) River Bridge is 350 feet long which would extend from bank to bank with no piers located in the channel, and is designed to span a 50-year discharge event. The 40-foot-long Crea Creek Bridge would be constructed using two sets of pilings positioned approximately 40 feet apart with sheet pile abutments for erosion protection located at each end of the bridge. There will be valves on either side of the pipeline, as well as spill containment equipment on both sides of the river, to minimize effects in the event of a spill. Culverts are considered for all water crossings that do not require a bridge. Culverts will be installed at regularly spaced intervals to mitigate the risk of sheet flow interruption and thermokarst. Final design of the culverts for the CD5-GMT1 road will also depend on breakup characteristics for those drainages that could affect the roads.

The impacts of increased stream velocities beneath bridges and through culverts during flooding events were addressed in the 2004 ASDP EIS (See Section 4F.2.2.1). Constricting flows can result in increased stream velocities and a higher potential for ice jams, scour, and stream bank erosion. Impeding flows can result in a higher potential for bank overflows and floodplain inundation. Alternative A has the potential for long-term impacts to local water resources resulting from the placement of new infrastructure. Most impacts are related to changes in the drainage pattern, and to a lesser degree stream flow. There also would be short-term, temporary impacts from ice infrastructure (e.g., roads and pads). However, the intensity of impacts is characterized as minor and of localized extent.

A monitoring program will assist in the analysis of scour and fill processes occurring in the vicinity of the Tiŋmiaqsiġvik (Ublutuoch) River and Crea Creek Bridges. This could involve cross-section or bathymetric surveys to establish baseline conditions once the Bridges are built.

This will require monitoring of breakup discharges at Bridges. Continuous monitoring of the Tiŋmiaqsiġvik (Ublutuoch) River will be done the first year until flow ceases. The design of culverts along the GMT1 road will incorporate the findings of fish surveys and hydrologic modeling into their design. As part of this decision, CPAI will be required to undertake monitoring of culverts during breakup for impoundments, erosion, scour, and deposition created by placement of culverts to address these impacts.

Specific measures to protect water resources are provided in the 2013 NPR-A IAP/EIS, which include requirements that roads, pipelines, and water crossings be designed to maintain existing hydrology, including during flood periods. Also, gravel roads, culverts, and bridges must be designed with erosion control mechanisms. In addition to BLM lease stipulations and BMPs, project activities that could impact water resources will be subject to Federal, State, and local permit requirements. Thus, the facilities authorized in this ROD will avoid impacts to floodplains to the maximum extent practicable and will have minimal to negligible impacts on the functions and values of floodplains.

Environmental Justice (Executive Order 12898)

Executive Order 12898 requires that Federal agencies identify and address, as appropriate, any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The Final SEIS identified direct and indirect impacts that may affect the community of Nuiqsut, which meets the demographic characteristics to be qualified as a minority population. Negative impacts to subsistence that were considered in the finding of major impacts for Environmental Justice include the project footprint's direct and indirect impact to subsistence use areas, including the 3-mile Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks, disruption to subsistence hunting activities caused by aircraft traffic, reduced access to and user avoidance of traditional subsistence use areas, reduced value of traditional subsistence use areas, and decreased community participation and transmission of knowledge. Also, many residents identify the cumulative effects as the loss of traditional land and a sense of being surrounded by infrastructure. This context has substantially elevated the consequences of each subsequent development project. Compensatory mitigation funds provided by the permittee will be used to offset major impacts to subsistence through the creation of conservation leases or easements, clean-up of previously disturbed sites and/or other appropriate measures identified in the development of the RMS as described in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination.

The pipeline and road between GMT1 and CD5 could also result in a high and adverse impact to subsistence hunting of caribou if they were to disturb, displace, or obstruct the movement of caribou in such a way that the animals become substantially more difficult to harvest. In the unlikely event of a large spill on BLM managed land that affects, or is perceived by local residents as affecting, important subsistence resources, impacts would be high and adverse for residents of Nuiqsut. Negative sociocultural impacts associated with GMT1 and categorized as major in degree or intensity could include intra-community conflict, anxiety and social

disruption related to the permitting process for development, perceived inadequacy of mitigation and compensation systems, and distress associated with disruptions to the Nuiqsut cultural landscape. Some residents identify the flaring of natural gas, the risk of a blowout, and the lack of a clear emergency response plan as environmental justice issues.

Stipulations in the Federal leases and BMPs avoid or mitigate many of these impacts. Relevant stipulations include, but are not limited to, those that require ready access to spill cleanup materials, minimization of flights in the project area, spill response training, a required separation distance between roads and pipelines (reducing the potential of the combined facilities to obstruct caribou movement) where appropriate, and consultation with subsistence users. Additionally, development and implementation of a regional mitigation strategy, in consultation with representatives of the North Slope communities, would provide means to spatially identify and describe, in consultation with residents, appropriate measures to address negative impacts to subsistence resources, including the potential acquisition of conservation leases or easements to offset impacts in the Fish Creek setback as described in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination.

Alternative A and its existing mitigation measures and Supplemental BMPs also contribute to avoiding or mitigating impacts from a disturbance, displacement, or obstruction of caribou movement on BLM managed lands to the maximum extent practicable by design features and industry practices, including, but not limited to:

- using a non-reflective finish on all pipelines;
- establishing speed limits, pull-outs, and caravanning requirements on the GMT1-CD5 road; and
- consultation with the Kuukpik Subsistence Oversight Panel (KSOP), the Native Village of Nuiqsut (NVN), and Kuukpik Corporation to ensure operations do not adversely affect subsistence activities.

The question of whether environmental justice issues could potentially result from a project is highly sensitive to the history or circumstances of a particular community or population. The historical context within which environmental justice issues are considered for Nuiqsut includes the cumulative effects of oil development near the community.

Native Alaskan Consultation

Federally recognized tribes have a special, unique legal and political relationship with the Government of the United States as defined by the U.S. Constitution, treaties, statutes, court decisions, and EO's. These definitive authorities are also the basis for the Federal Government's obligation to acknowledge the status of federally recognized tribes in Alaska.

The BLM initiated government-to-government consultation and Alaska Native Corporation consultation processes as required by Presidential Executive Memorandums (April 29, 1994, and November 5, 2009), the Department of the Interior Policy on Consultation with Indian Tribes (Dec. 1, 2011), and the Department of the Interior Policy on Consultation with ANCSA

Corporations (Aug. 10, 2012), with letters sent on August 29, 2013, to the tribes and ANCSA corporations whose members could be substantially affected by the proposed development of GMT1.

The BLM held government-to-government consultation meetings on a weekly basis with the Native Village of Nuiqsut (NVN) tribal council throughout the NEPA process. Consultation with the tribal council will continue throughout the life of the GMT1 project, or until the council no longer wishes to hold formal consultation meetings. Throughout the planning process, comments and issues brought forward through formal government-to-government consultation with the NVN tribal council focused on impacts to resources such as subsistence, public health, and air quality, appropriate mitigation measures for these impacts, and emergency response capabilities in the unlikely event of a blowout or large spill.

The BLM also engaged in native consultation with Kuukpik Corporation and ASRC, primarily through meetings with Corporation and BLM/DOI leadership. Additionally, DOI and BLM officials held meetings with Native communities, tribal organizations, and Alaska Native Corporations on the North Slope on February 19, July 10, and August 28, 2014.

Management Decisions by Other Agencies

The SEIS benefited from suggestions and careful review of the analysis in the SEIS by its cooperating agencies. Consultation also occurred during the SEIS process with multiple agencies, including the USFWS, National Park Service, Bureau of Ocean Energy Management (BOEM), EPA, and the State of Alaska Department of Environmental Conservation (ADEC) in accordance with the June 2011 "Memorandum of Understanding among the U.S. Department of Agriculture, U.S. Department of the Interior, and U.S. Environmental Protection Agency, Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process" to model potential air quality impacts the GMT1 development project and to develop appropriate air quality protection measures. The BLM also consulted with the USFWS and NOAA Fisheries pursuant to the ESA.

CPAI's proposal is subject to approval by other Federal and State agencies, including many cooperating agencies on the Final SEIS such as the North Slope Borough. The authorities of these agencies are described in Section 1 of the Final SEIS. As noted in the Final SEIS and above, the USACE's LEDPA determination was considered by BLM in making this final decision, and resulted in BLM changing the alternative selected in this ROD from that which was identified as BLM's preferred alternative in the Final SEIS. Other agencies' decisions may provide mitigation in addition to that required by BLM, described in Section 5 of this ROD.

ANILCA: SECTION 810 SUMMARY

The Alaska National Interest Lands Conservation Act (ANILCA) §810(a) requires that a subsistence evaluation be completed for any Federal determination to "withdraw, reserve, lease or otherwise permit the use, occupancy or disposition of public lands." CPAI's proposed GMT1 Development Project encompasses lands that are owned by the Kuukpik Corporation and the BLM (Federal or public lands). The evaluations of the subsistence effects of each alternative only apply to those lands that are administered by the BLM. The ANILCA also requires that this evaluation include findings on three specific issues:

1. The effect of such use, occupancy, or disposition on subsistence uses and needs;
2. The availability of other lands for the purpose sought to be achieved; and
3. Other alternatives that reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 U.S.C. §3120).

The following discussion summarizes the ANILCA §810 evaluation for the decision in this ROD. The summary is based on the detailed ANILCA §810 analysis in Appendix B of the Final SEIS for GMT1 and tiers from the ANILCA §810 analysis conducted for the ASDP EIS in 2004. The analysis and conclusions presented in the ANILCA §810 evaluation in the Final SEIS also applies to the decision in this ROD.

Without the Cumulative Case: The effects of Alternative A, adopted in this ROD, fall above the level of significantly restricting subsistence use for the community of Nuiqsut. While access to subsistence areas near Fish Creek may be facilitated for those hunters and fishers who choose to use the GMT1 road, the potential impacts to subsistence resources, user access, user avoidance, and patterns of use exceed the non-significant level; therefore, a positive determination to ANILCA §810 is required.

The positive finding for Alternative A of a significant restriction to subsistence for the village of Nuiqsut considers reduced access to subsistence use areas, reduced availability of subsistence resources, and hunter avoidance of industrial areas. Specific considerations include the following:

- Some hunters will avoid infrastructure, including the road, at a greater distance than the project footprint resulting in a loss or devaluation of traditional subsistence use areas. The presence of nearby oil infrastructure is considered more than a "slight inconvenience" to many Nuiqsut hunters, who have previously altered their traditional hunting patterns to avoid other nearby developed areas. The geographic scale of this impact will be larger than the direct GMT1 project overlap.
- Noise, traffic, and infrastructure, particularly during the construction phase but continuing throughout the life of the project could affect the availability of key resources (caribou, wolves, and wolverine). The construction impacts would last for two years; two years is considered greater than "occasional redistribution".

- A high number of overlapping caribou use areas has been documented throughout the GMT1 project study area and recent documentation shows the highest number of overlapped areas along the Nigliq Channel, Fish Creek, and in overland areas west of the community toward the Tiŋmiaqsiġvik (Ublutuoch) River.
- During the 30-year production phase, the road itself and traffic on the road may cause local diversion of caribou during peak caribou hunting season (July and August).
- Helicopter traffic is the most commonly cited impact on caribou hunting, and Alternative A will result in increases in helicopter and fixed-wing aircraft traffic from existing conditions.
- Impacts may result in increased risk, increased investments in time, money, fuel, and equipment, and may potentially change hunting success. Such effects will have a greater negative impact on poor residents who are less able to afford the means to travel further away from town and residents for whom the project area overlaps or is near their family's traditional hunting and fishing areas.
- The many social and cultural aspects of subsistence are at least as important as its nutritional and economic benefits. These aspects include cherished family time on the land, cooperating, teaching, processing, cooking, consuming, sharing, and celebration. Changes to residents' ability to participate in subsistence activities, to harvest subsistence resources in traditional places at the appropriate times, and to eat subsistence foods could have long-term or permanent effects on culture by diminishing social ties within the community.

With the Cumulative Case: The cumulative case includes past, present, and reasonably foreseeable future actions, which are presented in Section 4.6 of the Final SEIS. The cumulative case includes, but is not limited to, existing oil development at Kuparuk and in the Colville Delta area, offshore oil and gas developments, a road and pipeline between Umiat and the Dalton Highway, additional oil development east and west of GMT1, a commercial gas pipeline to transport North Slope gas south, and climate change. The effects of the cumulative case exceed the "may significantly restrict" threshold for the communities of Nuiqsut, Barrow, Atqasuk, Point Lay, Wainwright, and Anaktuvuk Pass, and thus a positive ANILCA §810 determination was made.

The ANILCA §810 provides that no "withdrawal, reservation, lease, permit, or other use, occupancy or disposition of the public lands which would significantly restrict subsistence uses shall be effected" until the Federal agency gives the required notice and holds hearings in accordance with §810(a)(1) and (2), and makes the three determinations required by §810(a)(3)(A), (B), and (C). The BLM has found in this subsistence evaluation that all the alternatives considered in the Final SEIS for GMT1, except for the No Action alternative, may significantly restrict subsistence uses for the community of Nuiqsut. The subsistence evaluation for the cumulative case has also found that all alternatives, including the No Action alternative, may significantly restrict subsistence uses for the communities of Nuiqsut, Barrow, Atqasuk, Point Lay, Wainwright, and Anaktuvuk Pass. Therefore, the BLM undertook the notice and hearing procedures required by ANILCA §810(a)(1) and (2), as described above, and now must make the three determinations required by §810(a)(3)(A), (B), and (C). 16 U.S.C.

§3120(a)(3)(A), (B), and (C). The BLM has determined that the Alternative (Alternative A) adopted in this ROD meets the following requirements (16 U.S.C. §3120(a)(3)(A), (B), and (C)) for Federal action that may result in a significant restriction on subsistence uses:

> *1. The significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands.*

The BLM prepared the Final SEIS in accordance with its responsibility to manage the NPR-A under the authority of two laws passed in 1976, the NPRPA and FLPMA. The NPRPA, as amended, authorizes and directs the Secretary of the Interior to undertake an "expeditious program of competitive leasing of oil and gas in the National Petroleum Reserve-Alaska" (42 U.S.C. §6508(a)). At the same time, the statute also requires that all oil and gas activities "undertaken pursuant to this section shall include or provide for such conditions, restrictions, and prohibitions as the Secretary deems necessary or appropriate to mitigate reasonably foreseeable and significantly adverse effects on the surface resources" of the NPR-A and that maximum protection be provided for significant surface values, including environmental, fish and wildlife, historical, scenic, and subsistence values consistent with the purposes of the Act (42 U.S.S. § 6504 and 6508). It was in furtherance of these objectives, together with other management guidance found in the NPRPA, FLPMA, NEPA, and ANILCA, that the SEIS was undertaken.

This ROD approves Alternative A as the final development scenario. Alternative A considers the necessity for economically feasible development of the oil discoveries on CPAI's lease while providing protections to minimize and compensate for impacts on subsistence resources and uses. Under Alternative A, the stipulations and BMPs that currently exist in the 2008 Northeast NPR-A IAP/EIS ROD and 2013 NPR-A IAP/EIS serve as additional mitigation measures to be used to reduce the impact of the proposed activity on subsistence resources, as do the supplementary BMPs, including compensatory mitigation.

The BLM has considered and balanced a variety of factors with regard to the proposed activity on public lands, including the comments received during public meetings and on the Draft and Final SEISs from residents, subsistence users, local and regional Native Corporation leaders and other stakeholders, and understandings gained through regular consultation with the Native Village of Nuiqsut Tribal Council. The BLM has determined that the significant restriction that may occur under Alternative A is necessary, consistent with sound management principles for the use of these public lands, with BLM's obligation to allow for development on active leases in the NPR-A, and for BLM to fulfill the management goals for the NPR-A as guided by the statutory directives in the NPRPA, FLPMA, and other applicable laws.

> *2. The proposed activity will involve the minimal amount of public lands necessary to accomplish the purpose of such use, occupancy, or other disposition.*

The BLM has determined that Alternative A described in this ROD involves the minimal amount of public lands necessary to accomplish the purpose of the Greater Mooses Tooth Unit

Development Project. The GMT1 project consists of an 11.8-acre drilling and production pad, gravel road, and pipelines on BLM managed lands that will link GMT1 to the CD5 pad (on Kuukpik Corporation land) and eventually with the CPF located on State land within the Colville River Delta. Advances in oil field technology in recent decades have made it possible to reduce the size of drilling pads significantly and rely on directional and horizontal drilling to reach accumulations of oil throughout the fields. It would not be practicable to further reduce the amount of land needed for CPAI's project and still produce the oil accumulations from these lands.

> *3. Reasonable steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.*

Through the NEPA process undertaken for the ASDP in 2004, BLM identified subsistence as one of the primary issues to be addressed. In 2013, impacts to subsistence use, changes in use patterns, and the existence of new, Nuiqsut-specific subsistence harvest information were identified as important reasons to undertake a Supplemental EIS for GMT1. As a requirement of the North Slope Borough permit for the ASDP, a Nuiqsut caribou subsistence monitoring project was established by Stephen R. Braund and Associates (under contract to CPAI). That ongoing project has collected data and published annual reports since 2008 that have been critical in evaluating the impacts of proposed projects in the region. That project, other harvest information and subsistence surveys, the results of public scoping meetings in the villages of the North Slope, meetings with the NPR-A Subsistence Advisory Panel, and consultation with the Native Village of Nuiqsut Tribal Council were used to analyze and evaluate the range of impacts to subsistence use as a result of the proposed activity.

Comments received from North Slope residents and organizations as well as understandings gained through consultation led BLM to consider several Supplemental BMPs that are established with this ROD, including:

- A right of access agreement for the GMT1 road;
- An aircraft monitoring and reporting process;
- Reduction of non-essential aircraft traffic during peak caribou season;
- Utilization of emerging technology (i.e., unmanned aerial vehicles) to reduce the need for aircraft, where feasible; and
- Continued caribou and new fish and bird subsistence harvest monitoring projects.

Given these steps, as well as the requirements and restrictions of the existing lease stipulations and 2013 NPR-A IAP ROD Best Management Practices, BLM has determined that Alternative A as it is presented in this ROD includes reasonable steps to minimize adverse impacts on subsistence uses and resources.

MITIGATION AND MONITORING

Stipulations and BMPs designed to protect the resources and uses on BLM managed land were described in the 2013 NPR-A IAP/EIS ROD and listed in the Final SEIS in Appendix E. All action alternatives incorporated CPAI's existing lease stipulations for the Greater Mooses Tooth Unit, as well as the BMPs in the 2013 NPR-A IAP/EIS ROD, although deviations were necessary in all alternatives. As the GMT1 applicant and primary petroleum development company in the Nuiqsut area, CPAI continues to strive to mitigate impacts from flights in its exiting Alpine development field, and contributes financially and otherwise to subsistence support programs in the community. CPAI has also incorporated project design features in a manner that reduces impacts to subsistence and other resources, detailed in Section 4.7 of the Final SEIS.

Deviations to a number of the stipulations and BMPs in the IAP/EIS have been approved in instances in which implementation of a stipulation is technically not feasible, and/or where the objectives of the stipulations can still be met. In addition, this ROD adopts Supplemental BMPs as described above under Part 1, Decision. It has been determined that all practical means to avoid or minimize environmental harm from the project have been adopted in this ROD.

Secretarial Order 3330, "Improving Mitigation Policies and Practices of the Department of the Interior," (Oct. 31, 2013) established a Department-wide mitigation strategy to ensure consistency and efficiency in the review and permitting of infrastructure development projects and in conserving valuable natural and cultural resources. Central to the strategy is (1) the use of a landscape-scale approach to identify and facilitate investment in key conservation priorities; (2) early integration of mitigation considerations in project planning and design; and, (3) ensuring durability of mitigation measures. A regional mitigation strategy developed to build on efforts to date relative to GMT1, and incorporating multiple stakeholders in a collaborative forum will provide greater certainty for future development, capacity for landscape-level conservation planning and implementation, and prioritize cleanup of previously disturbed sites.

Consistent with the requirements of Secretarial Order 3330, and to provide a consistent and transparent process for future development activities, the permittee will provide funds for the development and implementation of a regional mitigation strategy for the Northeastern NPR-A region, the most appropriate scale for addressing anticipated development and conservation needs during the life of the proposed project. The regional mitigation strategy will serve as a roadmap for mitigating impacts from GMT1 and future projects enabled or assisted by the existence of GMT1, and result in outcomes that benefit subsistence users most directly impacted by the GMT1 project, including members of the Native Village of Nuiqsut. This strategy, which will be developed in consultation with Federal, state, Native and other relevant stakeholders, will identify those additional areas within the Northeastern NPR-A region that are reasonably foreseeable for development and will identify those areas most suitable for conservation, mitigation, or other activities while ensuring continued use for subsistence activities, and building climate resilience of communities and ecosystems. This strategy will improve planning

and permitting efficiencies, reduce conflict, and allow for the advance planning that will best achieve development and conservation goals. The strategy's objectives will include but not be limited to (1) maintaining functioning habitat necessary to sustain fish and wildlife species abundance and distribution; (2) ensuring continued access to subsistence use areas; and, (3) contributing to the cleanup of previously disturbed sites that pre-date the production phase of NPR-A development.

Monitoring will be undertaken to determine the status of the various resources in the project area, to ensure compliance with and enforcement of stipulations, BMPs, and decisions in this ROD, and to measure the effectiveness of protective measures. The 2013 NPR-A IAP/EIS ROD requires applicants to fund monitoring to evaluate the effectiveness of project designs and mitigation measures and thereby guide BLM's adaptive management of the area. Additional studies and monitoring would not duplicate efforts already being performed by CPAI. Several new monitoring measures, including the new Effectiveness Monitoring Strategy, aircraft data monitoring, and monitoring measures for air quality and subsistence, have been adopted pursuant to BLM's existing monitoring authority per the 2013 NPR-A IAP/EIS ROD.

PUBLIC INVOLVEMENT

The BLM considered public comments throughout the SEIS planning process. The following list highlights major steps in the public involvement process. For more information on public involvement, see Chapter 5 of the Final SEIS.

Scoping: The BLM solicited public scoping comments for 21 days from August 16 through September 6, 2013. In all, fourteen sets of comments were received from private citizens, environmental organizations, and government agencies, including the NSB and the Native Village of Nuiqsut. Scoping comments received after the scoping deadline were also considered in identifying the range of issues and additional mitigation measures to be addressed in the SEIS.

Public Review of the Draft SEIS: The comment period for the Draft SEIS was open for 60 days, from February 21 through April 22, 2014. During the public comment process, BLM received a total of 17,558 written communications.

The BLM also held public meetings during the comment period in North Slope communities, Anchorage, and Fairbanks. The public meetings in North Slope communities were also ANILCA §810 hearings as noted by asterisk. A list of the meetings and meeting dates are provided below. In order to capture all relevant comments, the entirety of the public meetings in North Slope communities were captured by a court reporter and reviewed for substantive comments.

- Monday, March 10: Point Lay *
- Tuesday, March 11: Atqasuk *
- Wednesday, March 12: Barrow *
- Thursday, March 13: Nuiqsut *
- Monday, March 17: Wainwright *
- Tuesday, March 18: Anaktuvuk Pass *
- Wednesday, March 19: Fairbanks
- Thursday, March 20: Anchorage

Comments received after the Final SEIS were released and prior to the ROD. The BLM received comments from a variety of stakeholders after publication of the *Federal Register* notice and distribution of the Final SEIS on November 7, 2014. These stakeholders include: CPAI; ASRC; cooperating agencies on the Final SEIS, including NVN, EPA, NSB, and the State of Alaska; and environmental groups. The comments did not identify any significant new circumstances or information bearing upon the proposed action or its impacts. Several comments reiterated preferences for alternatives contained in the Final SEIS, and all of the letters contained recommendations for BLM's

approach to the mitigation measures to be adopted. In reaching the decisions in this ROD, BLM reviewed and fully considered all comments received.

In addition to the above, the plan benefited from suggestions and careful review of the analysis in the SEIS by seven cooperating agencies: the North Slope Borough, the State of Alaska, the Native Village of Nuiqsut, USFWS, BOEM, USACE, and EPA.

Pursuant to ANILCA §810(a)(1) and (2), BLM also conducted hearings in North Slope communities to gather comments regarding potential impacts to subsistence use resulting from the alternatives considered in the SEIS.

FINAL AGENCY ACTION

Approval of Authorizations

It is my decision to approve the development by ConocoPhillips Alaska, Inc., of the GMT1 project on BLM managed lands as described in Alternative A of the Final SEIS subject to the terms, conditions, stipulations, and environmental protection measures developed by the DOI, as reflected in this ROD.

Bud C. Cribley
State Director, BLM Alaska

February 13, 2015
Date

Assistant Secretary Approval

I hereby approve this decision. My approval of this decision constitutes the final decision of the DOI and, in accordance with the regulations at 43 CFR § 4.410(a)(3), is not subject to appeal under Departmental regulations at 43 CFR Part 4.

Approved by:

Janice M. Schneider
Assistant Secretary
Land and Minerals Management

Feb 13, 2015
Date

APPENDIX A: SUPPLEMENTAL BEST MANAGEMENT PRACTICES

The following list contains the final language of the new supplemental mitigation measures as adopted for the GMT1 project. The measures are organized by resource and numbered as presented in Chapter 4 of the Final SEIS. These measures will only apply to the GMT1 project (in addition to existing Lease Stipulations and BMPs). However, some of the new mitigation measures amend existing BMPs from the 2013 NPR-A IAP/EIS ROD for the purposes of GMT1 by adding new paragraphs to them. The Glossary of the Final SEIS contains applicable definitions. In some cases, language may have changed from the Final SEIS language, and such measures are noted with an asterisk (*). Rationale for these changes can be found in Appendix B, Modifications and Clarifications.

The permittee may propose a deviation from these requirements/standards as described above in the Decision section. If, after experience or additional study, BLM concludes that a requirement/standard is not achieving, or is unlikely to achieve, the protective objective when applied to a specific future on-the-ground action, or would not do so as well as the use of more recently proven technology or techniques, BLM could at the activity-level permitting stage and under the terms of the stipulation or best management practice deviation process, allow other restrictions to meet the objective.

Compensatory Mitigation

Supplemental Best Management Practice 1— Establishment of Compensatory Mitigation Fund and Regional Mitigation Strategy*

Objective: To off-set identified impacts, including major impacts to subsistence uses that cannot be fully mitigated by avoidance and minimization, the permittee has agreed to contribute $8 million dollars to BLM to establish a compensatory mitigation fund that will provide for the development and implementation of a landscape-level regional mitigation strategy (RMS) and to finance mitigation projects as identified by the RMS as discussed further below.

Requirement/Standard: To address the impacts associated with the construction and operation of GMT1, the permittee must contribute to the BLM (1) $1 million within 60 days of issuance of the ROD, to develop and implement a landscape-level RMS for the Northeastern NPR-A region, and (2) $7 million in 2 payments of (a) $3.5 million within 30 days after installation of first gravel during the first GMT1 ice road season, and (b) $3.5 million within 30 days after completion of the pad, road, and pipeline, to fund mitigation projects identified in the RMS that compensate for residual impacts of the project within the Fish Creek and Tiŋmiaqsiġvik (Ublutuoch) River setbacks, including major impacts to subsistence use. The RMS will be completed within 18 months unless otherwise approved by the Authorized Officer.

A. Compensatory Mitigation Fund

Several types of potential new compensatory mitigation measures were reviewed in the Final SEIS. The Final SEIS also recognized that in lieu of providing separate funding streams for multiple compensatory mitigation measures, the permittee might instead contribute funds to a single new compensatory mitigation fund. In this decision, BLM has concluded that a single compensatory mitigation fund would provide greater efficiency and ease of administration, and has therefore consolidated these mitigation requirements.

The funds provided by the permittee will be used to create a compensatory mitigation fund to support development and implementation of a regional mitigation strategy and to finance various future compensatory mitigation projects or other measures to offset major impacts to subsistence uses that cannot be fully mitigated by avoidance and minimization stipulations in the 2013 NPR-A IAP/EIS ROD. Such projects will be identified through a transparent, stakeholder driven process to develop a regional mitigation strategy and will be implemented as funds become available through the payment schedule described above. Mitigation projects may include, but are not limited to, establishment of conservation easements or leases on Kuukpik Corporation lands along Fish Creek, or other areas with critical environmental, subsistence or cultural significance, and cleanup of previously disturbed sites (e.g. legacy well reserve pits, landfills, etc.).

The fund may be administered by BLM or through other arrangements, in consultation with relevant stakeholders, and would be used to implement a variety of new compensatory mitigation measures identified by the RMS. The fund will give BLM flexibility to direct expenditures towards those mitigation measures determined to be most appropriate and effective, and to better coordinate compensatory mitigation efforts with other regulatory agencies and non-profit organizations.

B. Regional Mitigation Strategy

Consistent with Secretarial Order No. 3330, Improving Mitigation Policies and Practices of the Department of the Interior, BLM's obligations under FLPMA, and the principles of Integrated Arctic Management (IAM) – a science-based, multi-stakeholder approach required by the National Strategy for the Arctic Region, the RMS will identify priority areas within the Northeastern NPR-A region for avoidance and future compensatory mitigation actions. The RMS will be developed through public process and in consultation with Federal, state, Native and other relevant stakeholders. The RMS will be based on the best available science including studies and monitoring conducted pursuant to General Supplemental BMP 1: Establishment and Implementation of an Effectiveness Monitoring Program at BLM, described further below. Implementation actions may occur incrementally and adaptively as subsequent developments occur in the Northeastern NPR-A region, and linkages may be established with similar strategies developed in the future for adjacent areas in the NPR-A. The RMS will serve as a roadmap for mitigating impacts from GMT1 and future projects enabled or assisted by the existence of GMT1. The RMS process will also provide additional transparency for permittees as well as provide tangible opportunities for permittees to support public-private partnerships

as a direct outcome of GMT1, and to remain a leader in the field of corporate social responsibility on the North Slope.

In addition to GMT1, the RMS will consider future foreseeable habitat and subsistence-impacting land uses that are enabled or assisted by the existence of GMT1, primarily oil and gas development and related infrastructure, as well as associated foreseeable impacts to resources, values, and functions in the region, including socioeconomic impacts.

The general geographic scope of this effort is the Northeastern NPR-A region. The BLM will work through a public process to define more specifically the geographic region for the RMS with consideration to: (1) the scientifically-based relevant scale necessary to sustain goals and objectives for resources, values, and functions (e.g., species' ranges, subsistence use areas) that will be foreseeably impacted by future land uses, including oil and gas development; (2) the geographic extent of land uses (e.g., oil and gas lease tracts, units and participating areas); and, (3) existing compensatory mitigation programs.

The RMS will identify resources, values, and functions that warrant mitigation due to foreseeable residual impacts and identify possible avoidance or compensatory mitigation actions or projects to address those impacts. The strategy's objectives will include, but not be limited to, (1) maintaining functioning habitat necessary to sustain fish and wildlife species abundance and distribution; (2) ensuring continued access to subsistence use areas in areas with important ecological or cultural significance; and, (3) contributing to the cleanup of previously disturbed sites that pre-date the production phase of NPR-A development. The RMS may include the following elements (additional components may be included following stakeholder engagement during development of the RMS):

- Identification of opportunities for avoidance of or additional protection of special areas;
- Identification of goals and objectives for resource values and functions that warrant mitigation;
- Evaluation and prioritization of mitigation actions, including compensatory mitigation sites that will support the achievement of identified goals and objectives, including considerations of each site's durability and the additionality of mitigation actions;
- Compensatory mitigation investment options in the region (e.g. conservation easements, mitigation banks, in lieu fee funds, permittee-responsible actions);
- Durability, maintenance, compliance monitoring, effectiveness monitoring, and adaptive management strategies to maximize the effectiveness of mitigation actions;
- Development of a framework to provide for compensatory mitigation for deviations to established BMPs where appropriate; and
- Development of climate change resilience/adaption projects to support continued subsistence use.

The RMS will be designed such that BLM will include the identified avoidance, minimization, and compensatory mitigation recommendations in future NEPA analysis for BLM management actions and third party actions, in this region of the NPR-A, that could foreseeably result in additional habitat loss and degradation, and result in outcomes that benefit subsistence users

most directly impacted by the GMT1 project, including members of the Native Village of Nuiqsut.

Atmospheric Environment

Supplemental Best Management Practice 1: Air Quality (new subparagraph to BMP A-10)

Objective: Prevent unnecessary or undue degradation of the lands and protect health. Requirement/Standard: To the extent practicable, all oil and gas operations (vehicles and equipment) must be powered by natural gas or electric power rather than diesel fuel. To the extent natural gas and electric power are not practicable, the permittee will use gasoline rather than diesel to the extent practicable. Any vehicles and equipment that require diesel fuel must use ULSD as defined by the Alaska Department of Conservation, Division of Air Quality.

Potential Benefits and Residual/Unavoidable Impacts: Natural gas has fewer impurities, is less chemically complex, and generally results in less pollution when combusted than diesel fuel. In most applications, using natural gas produces less CO_2, SO_2, and particulate matter, than diesel fuel, resulting in reduced health risks from fuel combustion in equipment associated with oil and gas operations. Natural gas is an available fuel for stationary combustion sources on the North Slope; however, vehicle fueling with natural gas may not be currently feasible due to a lack of infrastructure and availability of appropriate vehicles. Where use of natural gas is not practicable, use of gasoline generally results in less pollution when combusted than diesel fuel. Use of natural gas-generated electric power to operate GMT1 sources, rather than diesel-fired electric power generation, is environmentally beneficial.

Supplemental Best Management Practice 2: Air Quality (new subparagraph to BMP A-10)*

Objective: Provide BLM oversight and technical review of air quality monitoring near the GMT1 project; address concerns in the local community regarding oversight for air quality.

Requirement/Standard: The permittee will provide funding for monitoring to identify and address concerns related to air quality in the Nuiqsut area. Reports from the monitoring station in Nuiqsut will be provided to BLM, the State, NSB, and the local community and tribal government pursuant to BMP A-10(h). The permittee will provide funding for BLM technical review of these documents. The permittee will also provide funds to BLM, via an ongoing cost reimbursement agreement, to support BLM's independent verification of the air quality monitoring and reports.

Potential Benefits and Residual/Unavoidable Impacts: Members of the public have expressed concern over air quality in the project vicinity. Providing for a technical BLM review of the monitoring results provides certainty for BLM and the community that air quality is

being carefully considered and will help identify any potential project-related impacts that would cause exceedances of NAAQS, or fail to protect public health.

Vegetation and Wetlands

Supplemental Best Management Practice 1: Oil Field Abandonment (new subparagraph to BMP G-1)

Objective: Ensure long-term reclamation of land to its previous condition and use.

Requirement/Standard: The abandonment and reclamation plan shall provide that as wells or facilities are permanently abandoned, interim surface reclamation requirements will be incorporated whenever feasible, in consultation with the local community, tribal government, and interested stakeholders.

Potential Benefits and Residual/Unavoidable Impacts: Reclamation on portions of a development site shall begin once the BLM determines that environmental conditions are favorable for the replacement and reestablishment of natural soils and vegetation and such reclamation is feasible. The permittee will periodically review and report on science related to reclamation of oil and gas infrastructure and roads in the arctic to ensure effective reclamation of disturbance. Reclamation on portions of a development site that are no longer being used for development will decrease the short-term impacts to surface resources directly caused by infrastructure. This would have benefits to vegetation and wetlands by replacing gravel fill and other disturbed areas with productive and functioning wetland habitats that contribute to ecological services, including support of subsistence resources. Abandonment and reclamation activities within the NPR-A are governed by 43 CFR Part 3160, subpart 3162, which requires lessees to reclaim the land in accordance with plans approved by the BLM (43 CFR 3162.3-4 and 3162.5-1).

Birds/Terrestrial Mammals

Supplemental Best Management Practice 1: Roadkill Monitoring System for Birds and Wildlife (BMP 2 in Terrestrial Mammals)

Objective: Implement a reporting system to monitor roadkill of birds and other wildlife on transportation routes.

Requirement/Standard: The permittee shall provide an annual report to the Authorized Officer reporting roadkill of birds and mammals to help BLM determine whether additional preventative measures on vehicle collisions should be made.

Potential Benefits and Residual/Unavoidable Impacts: Knowledge about bird and mammal mortality due to vehicle traffic will help managers to develop methods to reduce collision rates with vehicles.

Supplemental Best Management Practice 1 (Adapted from BMP K-5.e.1 and 2): Minimize Potential Ground Vehicle Traffic Disturbance of Caribou*

Objective: Minimize disturbance and hindrance of caribou, or alteration of caribou movements, by vehicle traffic on the CD5-GMT1 gravel road during the oestrid fly-relief and fall-migration seasons.

Requirement/Standard: The following ground vehicle traffic restrictions shall apply to permitted activities using the GMT1 to CD5 road in the time periods indicated:

1. Along the GMT1 to CD5 road, from July 16 through November 30, traffic speed shall not exceed 15 miles per hour when caribou are within 0.5 mile of the road. Additional strategies may include limiting trips or using convoys, to the extent practicable.
2. The permittee or a contractor shall observe caribou movement from July 16 through November 30. Based on these observations, traffic will be stopped temporarily to allow a crossing by 10 or more caribou. Sections of road will be evacuated whenever an attempted crossing by a large number of caribou appears to be imminent.
3. The permittee shall submit, prior to road construction, a vehicle use plan that considers these and any other appropriate mitigation measures. Adjustments will be required by the Authorized Officer if resulting disturbance is determined to be unacceptable.
4. The permittee will consult with the Authorized Officer every 3 years to determine if the seasonal restrictions, and restrictions described in paragraphs 1 and 2 above are still appropriate given possible changes in migration patterns. In light of ongoing caribou monitoring, the Authorized Officer may modify the restrictions as appropriate to achieve the objectives of this measure.

Potential Benefits and Residual/Unavoidable Impacts: Limiting vehicle traffic during caribou migration will help reduce impacts and disturbance to caribou. Unavoidable impacts would continue due to the presence of the road and continued traffic.

Subsistence

Supplemental Best Management Practice 2: GMT1 Road Right of Access Agreement
Objective: Reduce impacts to subsistence in the project area by guaranteeing that residents will have the right to use the GMT1 road throughout the life of the project. Ensure that residents are aware of the policies regarding use of project-associated roads for subsistence activities; thus reducing misunderstandings and ensuring the safety of project workers and local residents.

Requirement/Standard: Prior to construction of the road, the permittee will produce a clear and legally binding Right of Access Agreement the will provide the community of Nuiqsut with concise policies regarding authorized use of the roads associated with the project and hunting prohibitions, if any, along the roads and near project components. The permittee will ensure

that this agreement is disseminated throughout the community. The Agreement will also be provided to BLM.

Background, Potential Benefits and Residual/Unavoidable Impacts: Clear policies regarding use of project roads for subsistence activities will likely reduce misunderstandings about whether and to what extent local harvesters can use and/or hunt from the road. Residents will be more likely to use project roads if they are well-informed about company policies and security restrictions. Although the permittee has stated that this right will be in place, many residents are skeptical that the right will be guaranteed for the life of the road. No residual or unavoidable impacts are anticipated from this measure. The BLM may incorporate other requirements into its right-of-way grant for the GMT1 road as appropriate.

Supplemental Best Management Practice 3: Consultation Regarding Aircraft Communication Protocols

Objective: Ensure that current communication protocols related to helicopter and fixed wing air traffic by the permittee are adequate in addressing Nuiqsut concerns about the impacts of air traffic on their hunting activities.

Requirement/Standard: In consultation with local hunters and local organizations, the permittee will continue to facilitate, improve, and expand communication protocols to inform subsistence users of daily flight patterns and identify potential conflict areas during peak hunting times. This consultation should include efforts to advertise these communication protocols within the community so that a majority of Nuiqsut subsistence harvesters are aware of them, and confirmation that existing minimum altitude requirements are adequate. The consultation results, and any changes to aircraft traffic resulting from the consultation, should be documented, distributed to BLM and other stakeholders.

Potential Benefits and Residual/Unavoidable Impacts: Strong communication protocols with the community of Nuiqsut regarding the timing, altitude, and location of air traffic should reduce the frequency of these impacts on subsistence users. However, such protocols will not remove impacts of air traffic altogether.

Supplemental Best Management Practice 4: Aircraft Data Reporting Requirements*

Objective: Gather information on aircraft flight patterns associated with the GMT1 development in the project area.

Requirement/Standard: The permittee will track and record aircraft flight data and provide quarterly reports to BLM in a manner that facilitates meaningful analysis of activities.

The permittee will provide BLM with clear and detailed quarterly flight reports that include the timing, flight path, and purpose of each flight in the project area. The reports will

provide total numbers of flights and document any actual increase in flight traffic once GMT1 is in the construction phase.

The reports will highlight any flights that represent deviations from BLM's best management practice F-1 and include explanations for any deviations. The permittee will provide data related to the altitude of flights.

The format for providing the data to BLM must meet the approval of the Authorized Officer. As the Authorized Officer deems it appropriate, the data reports shall be consistent with standards established by BLM's Assessment, Inventory, and Monitoring program.

Background, Potential Benefits, and Residual/Unavoidable Impacts: Improved monitoring and analysis of flights, flight purposes, and other flight patterns will help BLM to better estimate the impacts of aircraft, and potentially reduce impacts. The BLM will cross-reference flight data with the latest caribou movement data as part of its study. Data collected from this study will help BLM to adapt management decisions to changing conditions and circumstances and make better decisions for future research studies and development projects in the NPR-A.

Supplemental Best Management Practice 5: Reduce Non-essential Aircraft Traffic

Objective: To reduce the impacts of helicopter traffic on Nuiqsut subsistence activities.

Requirement/Standard: In ongoing consultation with the City of Nuiqsut, the North Slope Borough Department of Planning, Native Village of Nuiqsut, Kuukpik Corporation, and the Kuukpik Subsistence Oversight Panel, Inc., BLM will establish a time period during peak caribou hunting when non-essential helicopter flights associated with BLM-permitted activities will be suspended near Nuiqsut. Consultation results, including any potential actions to be taken based on the consultation should be documented and distributed to BLM and other stakeholders. Ongoing (multi-year, already planned) scientific /environmental studies that depend on access to study sites could continue if there is no alternative access to sites. These suspension dates can be revised by the Authorized Officer every 3 years upon review of peak caribou season.

The number of takeoffs and landings to support oil and gas operations with necessary materials and supplies shall be limited to the maximum extent possible. Trips shall be combined when possible, and studies shall be conducted by boat and foot when possible.

Additionally, whenever possible, workers traveling by foot or via off-road vehicles equipped with trailers should be used in conjunction with helicopters to travel the ice road routes for cleanup as long as basic safety standards can be met. Exemptions from tundra travel restrictions for this purpose will be granted by BLM.

Potential Benefits and Residual/Unavoidable Impacts: Reducing helicopter traffic or limiting the geographic area affected by helicopter traffic would reduce the incidence of conflicts

between BLM-permitted helicopter traffic and Nuiqsut subsistence activities. However, other operators on the North Slope may continue to fly during the suspension period.

Negative impacts of ice roads are increased by the traditional method of stick picking (debris removal), which can require hundreds of short helicopter flights. Clean-up is normally done once the ice road is closed in early spring by 2 workers walking along the ice road route gathering debris in bags while the helicopter leapfrogs over them every 0.25 to 1 mile to pick up the bags. This takes a substantially greater amount of time and flights than other methods may take, including clean up systems that employ more workers on the ground. It also prevents the helicopter from being used for other purposes during a period in the early spring which is not a peak subsistence hunting period. Greater availability of the helicopter during this early-spring period may allow the permittee to conduct other required actions earlier, instead of delaying them until peak hunting season.

Supplemental Best Management Practice 7: Reduce Flights by Utilizing Unmanned Aerial Vehicles

Objective: To reduce the impacts of aircraft traffic on Nuiqsut subsistence activities.

Requirement/Standard: The permittee will begin to employ unmanned aerial vehicles (UAVs) to conduct monitoring activities that otherwise require helicopters (i.e., pipeline inspections, studies, and other appropriate activities) when feasible. The permittee will consult with the BLM every three years to determine feasibility of this technology and appropriate monitoring activities for its use.

Background, Potential Benefits and Residual/Unavoidable Impacts: Much of the ecological monitoring that is required of lessees and permittees is supported by/requested by local residents, but there is less understanding and little support for the number of helicopter flights that are required to conduct those activities. The potential for using UAVs for baseline monitoring was discussed at the Sep. 2013 NPR-A Subsistence Advisory Panel (SAP) meeting when a representative of Shell Oil announced that the company was experimenting with using them. The SAP was supportive of their use to decrease impacts from helicopters. The UAVs have been utilized for oil field studies at Prudhoe Bay, and have the potential for use in the NPR-A. Residents of Nuiqsut have requested that the latest technology be used for such studies as soon as and to the greatest extent possible in order to alleviate the high number of aircraft flights. The BLM would not have the authority to implement this BMP on lands that are not managed by BLM in the Nuiqsut area, where much of the disturbance from aircraft occurs.

Supplemental Best Management Practice 8: Prohibit Airboats in Key Subsistence Use Areas*

Objective: To reduce noise and disturbance impacts from airboats on subsistence resources, users, and activities.

Requirement/Standard: Except in the case of emergencies, oil spill response training, mobilization and deployment of pre-staged spill response equipment, and mobilization and response during a spill event, the permittee and its contractors will be prohibited from using airboats on rivers on BLM managed lands in the Nuiqsut subsistence use area (for this measure, defined as a 50-mile-wide buffer around the community). Through consultation with local residents, BLM may identify other key boating areas that should be avoided. The Authorized Officer and the permittee will coordinate to identify specific areas/rivers where oil spill response training and preparation activities would be permitted by BLM.

Potential Benefits and Residual/Unavoidable Impacts: Prohibiting the use of airboats in places where residents are actively traveling by boat to harvest subsistence resources will reduce potential disruptions to subsistence users and resources. The sudden and loud noise of airboats causes acute stress situations for subsistence users, particularly the elderly. Residual issues could arise if local subsistence use of airboats increased (there is currently one airboat, not in use, in Nuiqsut). The BLM would not have the authority to implement this measure on non-BLM managed land and it is therefore unlikely that hunters and other subsistence users will experience complete respite from airboat disturbance if the measure is not adopted by the permittee for other lands.

Supplemental Best Management Practice 9: Subsistence Monitoring Studies

Objective: Monitor the impacts of GMT1 development on subsistence harvests and activities for the community of Nuiqsut.

Requirement/Standard: The permittee will monitor, through the life of the project, changes in subsistence activities in the community of Nuiqsut. The permittee will fund a study to quantify changes in subsistence use and harvest levels. The study would identify changes resulting from the proposed project, and at a minimum, monitor impacts to caribou, fish, and bird harvests.

Potential Benefits and Residual/Unavoidable Impacts: A subsistence monitoring study would help identify the impacts of GMT1-related activities on Nuiqsut subsistence activities. The 4 years of data from the Nuiqsut subsistence caribou monitoring project (SRB&A 2010b, 2011a, 2012, 2013b) is a valuable resource for evaluating impacts. The permittee may continue the Nuiqsut Caribou Subsistence Monitoring Project (initiated in 2008 and proposed for a total length of 10 years) on an annual basis until 2018 and on a biennial basis after that. The Subsistence Fishery Monitoring on the Colville River project may be expanded to include Fish Creek and extended on a biennial basis. After 2030, the Authorized Officer and the permittee may agree on adjustments to the focus and duration of these subsistence monitoring studies. The results of an expanded subsistence monitoring project could be used to develop future mitigation measures aimed at lessening the impacts of GMT1 on Nuiqsut harvesters. Subsistence monitoring studies will continue throughout the life of the project, or until the Authorized Officer determines such studies are no longer necessary or prudent.

Supplemental Best Management Practice 10: Economic Study of Subsistence Impacts*

Objective: To better understand the economic impacts of development on subsistence uses and activities and provide recommendations regarding how these impacts could be mitigated.

Requirement/Standard: The permittee will undertake a thorough one-time economic study at the beginning of the GMT1 project of the costs that individuals and families incur to continue subsistence activities at desired levels (or would have to incur to participate in subsistence activities if they are not able to afford them). The study will include an overview of the increased impacts to subsistence activities related to past and current future projects, and will account for the increase in cost of living. The study will also describe the adequacy of existing subsistence mitigation funds to address identified impacts.

Potential Benefits and Residual/Unavoidable Impacts: Local residents assert that costs associated with subsistence activities are steadily increasing, in large part because they must travel further, explore new and unfamiliar areas, take on increased risks, and request increased time off from regular employment. An economic study of the costs of subsistence would provide more quantifiable data on the magnitude of these impacts and will assess the efficacy of existing mitigation measures. Residual and unavoidable impacts include the difficulties of verifying the accuracy of the data in such a report and, more importantly, the larger problems that many Alaskan anthropologists and subsistence specialists have identified in attempts to quantify aspects of subsistence. These concerns, in summary, are that Euro-American conceptions of subsistence tend to be static, restrictive, and minimalist because they are tied to ideas of resource management and a definition of subsistence as the minimum resources necessary to support life. Such concepts and the studies that result from them tend to downplay the Alaska Native view of subsistence as a holistic, all-encompassing way of life. The dynamic nature and rich cultural and historical context of subsistence has arguably been undermined and constricted by an over-emphasis on Alaska's subsistence policies which have evolved to ensure that impacts to subsistence uses are minimized within the context of economic development, rather than to enhance, protect, and conserve Alaska Native subsistence economies and cultures.

<u>Public Health</u>

Supplemental Best Management Practice 2: GMT1 Disaster Response Plan for Nuiqsut *

Objective: To minimize the indirect impacts of stress, and direct impacts to Public Health resulting from large-scale health and safety incidents at GMT1 or associated facilities.

Requirement/Standard: Prior to construction, the permittee shall contribute $60,000 toward funding the creation of an Emergency Contingency Plan and associated Evacuation Plan for the community of Nuiqsut to identify the appropriate response by the community to a variety of health and safety events that could occur at the GMT1 development. The plans will be developed by and in consultation with the permittee, NSB, State of Alaska, City of Nuiqsut,

Native Village of Nuiqsut, Kuukpik Corporation, and other industry partners as appropriate. Funds will be held by BLM until NSB, the City of Nuiqsut, or another agency with appropriate authority is prepared to undertake the creation of the plans; any unexpended funds would be returned to the permittee. After review and approval by the appropriate State and local agencies, BLM will accept the completed plans.

Potential Benefits and Residual/Unavoidable Impacts: The Emergency Contingency Plan and associated Evacuation Plan will alleviate stress and will be a resource to be utilized by the community of Nuiqsut should a large-scale health and safety event occur.

Supplemental Best Management Practice 3: Minimize Undue Idling of all Vehicles
Objective: Prevent unnecessary or undue degradation of the lands and to protect health.

Requirement/Standard: To the extent practicable, engines of rolling stock (such as pick-up trucks, vans, buses, other trucks and trailers, and heavy machinery) used for oil and gas operations will be powered off when not in active use.

Potential Benefits and Residual/Unavoidable Impacts: Prohibiting unnecessary vehicle idling will reduce emissions associated with vehicle use, such as carbon monoxide and fine particulate matter and volatile organic carbon. Additionally, this measure will decrease noise impacts associated with the GMT1 project. Emissions at Alpine are within the range of ADEC air quality regulations and are subject to ADEC permitting restrictions.

Spills

Supplemental Best Management Practice 1: Fuel Storage (new subparagraph to BMP A-4)

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

Requirement/Standard: Fuel and hazardous material storage containers with a capacity greater than 660 gallons must use impermeable lining and diking capable of containing 110 percent of the containers' capacity. Vinyl liners, with foam dikes and a capacity of 25 gallons, must be placed under all valves or connections to fuel tanks when located outside of secondary containment.

Potential Benefits and Residual/Unavoidable Impacts: Potential benefits of these added measures above current protections include additional protection for vegetation, wetlands, and other surface resources by locating potential spill sources away from the edges of the pad, and using liners for protection outside of secondary containment.

Supplemental Best Management Practice 2: Oil Spill Response Equipment (new subparagraph to BMP A-3)

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

Requirement/Standard: Oil spill response equipment for use in winter conditions must meet the following standards:

Equipment must be designed to be effective in Arctic conditions.

Mechanisms must be available to prevent the freezing of response equipment (including the equipment used for storing, transferring, and treating recovered fluids) and/or to de-ice it.

Potential Benefits and Residual/Unavoidable Impacts: Potential benefits of these added measures above current protections include additional protection for vegetation, wetlands, and other surface resources by ensuring response equipment is operational under extreme weather conditions and other limiting factors such as ice and snow conditions.

Supplemental Best Management Practice 3: Facility Equipment and Design Criteria (new subparagraph to BMP A-3)

Objective: Minimize pollution by ensuring adequate facility design criteria and system integrity.

Requirement/Standard: Equipment used to develop hydrocarbons must meet the following standards:

Equipment must be designed in accordance with standard Arctic engineering practices for use in Arctic conditions;

Design criteria must be based on conservative estimates (as determined by the authorizing officer).

Potential Benefits and Residual/Unavoidable Impacts: System integrity is essential for spill prevention, but not all integrity requirements are within the scope of Oil Spill Contingency Planning. Potential benefits of these added measures above current protections include additional protection for vegetation, wetlands, and other surface resources by ensuring facility design and system integrity are suitable to harsh Arctic environmental conditions.

Supplemental Best Management Practice 4: Spill Prevention and Response Plan*

Objective: Under the requirements of 43 CFR 3162.5-1(c) and (d), develop a contingency plan for blowouts, spills, and other undesirable events that addresses equipment and communication with affected residents. Minimize pollution by ensuring effective hazardous materials contingency planning. Establish BLM's role in an actual response scenario on unitized lands and in the ROW corridor.

Requirement/Standard: To the extent practicable, the permittee will develop a spill prevention and response plan that adopts the *Alpine Development Participant Area Oil Discharge Prevention and Contingency Plan* (Alpine C-Plan).

The Response Plan will include the following requirements:

a. The appropriate BLM office must be notified of any spills or releases that occur on unitized lands. Thresholds are established under BLM's NTL-2007-01-Alaska for incidents that require immediate notification (e.g., any blowout that occurs; any spill, regardless of volume, to water, tundra, or undisturbed lands; and spills to land greater than 1 barrel for oil).
b. As part of BLM's approval of the initial Plan, CPAI will provide a detailed, probabilistic risk assessment for spills, a most likely trajectory for various environmental conditions related to a catastrophic spill, and an assessment which includes pre-staging equipment across the Nigliq Channel. The BLM may require updated assessments in the event new factors are discovered indicating potentially significant risks not previously analyzed.
c. The BLM will be provided with up-to-date copies of the Alpine C-Plan and all amendments to the plan, which BLM will review (with respect to GMT1) on a five-year basis or as otherwise required by the BLM Authorized Officer. The BLM Authorized Officer reserves the right to require changes to the contingency plan to ensure compliance with Federal requirements.
d. The BLM will require submission of ACS Technical Manual and any updates. (This describes all the tactics used to control, contain, and clean up a spill.)
e. If the Unified Plan is enacted, the Federal On-Scene Coordinator (FOSC) is responsible for directing the emergency spill response. On unitized and Federal lands, necessary measures to control and remove pollutants and to extinguish fires are subject to the approval of the BLM Authorized Officer.
f. If there is a spill due to system failure which necessitates an emergency shut-down of equipment or other in-Unit undesirable event as defined by NTL-2007-01-Alaska, BLM will be notified prior to system restart. This will ensure that repair was appropriately and correctly done, and that appropriate investigations into the root cause of the spill will occur.
g. The BLM will require that specific tactics (e.g., boom locations, access locations, staging areas, etc.) be described for drainages (Crea Creek, Barkley Creek and Tiŋmiaqsiġvik (Ublutuoch) River) in the GMT1 area, while recognizing that actual spill response would be based on conditions of the time of the spill.
h. The BLM will require that the Alpine C-Plan be amended with specific facility descriptions for GMT1, including (Section 3.10) specific environmental features and sensitive areas.
i. An emergency countermeasure plan must include well capping if technically feasible.

Preparedness Plan includes the following requirements:

a. The BLM will observe and evaluate responder training and response exercises to ascertain response readiness. The permittee will accommodate BLM's observation of training efforts.
b. If satellite fields developed in the NPR-A become a significant portion of the Alpine Development Area, BLM be will periodically check the availability of immediate incident responders and to monitor training records (Alpine C-Plan p. 3-49).
c. If any pre-deployed boom is identified for the GMT1 area, BLM requires amendment of Alpine C-Plan to show its location.

Prevention Plan includes the following recommendations:

a. The BLM will require submission of the corrosion control programs applied to all lines connected with GMT1, and periodic (biennial) reports of corrosion monitoring.
b. The spill prevention section should contain: all spill prevention programs in place to inspect, maintain, and repair all equipment; a description of the age and condition of equipment; spill prevention methods and operating restrictions for periods when response is not possible; and policies protecting whistleblowers.

Potential Benefits and Residual/Unavoidable Impacts: By default, BLM would be represented by the DOI Regional Environmental Officer on the Alaska Regional Response Team (ARRT) in support of the FOSC. The ARRT is a group of representatives from Federal agencies and the ADEC responsible for providing advice and input to the FOSC in the event of a spill response and for maintaining and updating the *Alaska Federal and State Preparedness Plan for Response to Oil and Hazardous Substance Discharges and Releases* (Unified Plan) and all of the sub-area plans in Alaska. Combined with existing regulations, these measures ensure BLM's involvement in spill prevention, planning, and response, and ensure coordination with affected residents.

Many of the requirements are within the scope of oil spill contingency planning, but not specifically required under current regulations. System integrity will help prevent spills from occurring, while planning for organized and adequate response equipment and personnel will help ensure fast and proper cleanup. Potential benefits of these added measures above current protections include additional protection for vegetation, wetlands, and other surface resources by ensuring effective prevention of a spill, as well as planning for proper controls in the event of a spill or blowout.

The BLM will work to enter into a MOU with EPA, ADEC, and other necessary Federal and State agencies to clarify roles and responsibilities as they pertain to Unified Plan spill response at GMT1.

Supplemental Best Management Practice 5: Leak Detection Criteria (new subparagraph to BMP E-4)

Objective: Implement leak detection systems for GMT1 facilities.

Requirement/Standard: To the extent practicable, the permittee will provide a specific description of the leak detections systems installed on all lines described in the development plan. The descriptions could be an addendum to the Alpine C-Plan or a stand-alone document. Monitoring would be via remote continual monitoring (e.g., camera or FLIR) of water crossings, or daily on-site visual inspections. The spill prevention section of the Alpine C-Plan must contain criteria to prevent and detect slow leaks.

Potential Benefits and Residual/Unavoidable Impacts: Automated and visual on-site leak inspections would reduce the extent of spills.

Supplemental Best Management Practice 6: Spill Minimization Measures at the Tiŋmiaqsiġvik (Ublutuoch) River Bridge*

Objective: Minimize the impact of contaminants on fish, wildlife, and the environment, including wetlands, marshes, and marine waters, as a result of fuel, crude oil, and other liquid chemical spills into waterways.

Requirement/Standard: The permittee will install increased spill minimization measures at the Tiŋmiaqsiġvik (Ublutuoch) River Bridge, which may include use of a thicker wall diameter pipeline spanning the bridge.

Potential Benefits and Residual/Unavoidable Impacts: Potential benefits of these added measures above current protections include additional protection for water resources, fish, and public health. In the event of a guillotine break in the pipeline crossing over the Tiŋmiaqsiġvik (Ublutuoch) River, CPAI's current manual valve design could release up to 15,234 barrels of fluids (oil, water, gas) into the Tiŋmiaqsiġvik (Ublutuoch) River. The flow of water from the Tiŋmiaqsiġvik (Ublutuoch) River eventually meets the Beaufort Sea, and thus release contaminants could potentially reach the Beaufort Sea and impact marine mammals. The use of automated valves causes this projected number to drop significantly to 626 barrels of fluid. Altering the type of valve should not make a difference in the gravel footprint for the valve pad, given that BLM analyzed a gravel footprint for manual valves, and there is a power source running the length of the road and pipeline which could power the automated valves. Thus, BLM does not anticipate that additional space would be needed for batteries or power generation. In the alternative, BLM and the permittee may consider the use of other measures to achieve similar spill minimization, such as use of a thicker wall diameter pipeline spanning the Tiŋmiaqsiġvik (Ublutuoch) River Bridge.

<u>General/Monitoring</u>

Supplemental Best Management Practice 1: Establishment and Implementation of an Effectiveness Monitoring Program at BLM*

Objective: Ongoing evaluation of the effectiveness of BMPs and mitigation measures designed to maintain sustained yield of important resources in the Greater Mooses Tooth Unit and

within the scope of direct and cumulative impacts of GMT1 pursuant to the requirements of the 2013 NPR-A IAP/EIS ROD.

Requirement/Standard: The permittee will be responsible for funding monitoring to assess the effectiveness of project designs and required mitigations in protecting resources. The BLM, as the lead administering agency, for the effectiveness monitoring will work with cooperators to identify necessary studies to monitor fish and wildlife populations, habitat, and ecosystem processes, functions and services potentially impacted by development; to ensure public involvement, transparency, and rigor in the development and use of the best available science for evaluating the effectiveness of BMPs and mitigation measures; and, to maintain a high standard of oversight for industry-funded scientific studies related directly to the GMT1 project. The BLM interdisciplinary staff and cooperators from other agencies and entities with subject matter expertise will establish a framework, including reference sites following BLM Assessment, Inventory, and Monitoring protocols, to coordinate long-term work on the baseline condition and natural ongoing processes in the Arctic, that are needed to adequately assess the effectiveness of GMT1 mitigation measures. Potential cooperators include BLM's existing partners in research, monitoring, and compliance (including but not limited to the USGS, USFWS, NSB wildlife department, ADF&G, ADEC, NPR-A Working Group, Arctic Landscape Conservation Cooperative, NSSI, and AOGCC) as well as Alaska Native Corporations and Tribes. Based on results of the effectiveness monitoring program, the permittee may be required to develop an adaptive management plan. Additionally, the permittee may submit a request and associated study plan to BLM to conduct monitoring work, which may be reviewed and approved by the Authorized Officer.

Potential Benefits and Residual/Unavoidable Adverse Impacts: The 2013 NPR-A IAP/EIS ROD requires project proponents to be responsible for funding studies and monitoring associated with exploration and development, including baseline studies prior to activities and monitoring to evaluate the effectiveness of project designs and mitigation measures guiding adaptive management. A rigorous and transparent process is necessary for the public to be able to fully trust the results that come from industry-funded work. This effort would focus on answering the questions of decision-makers and stakeholders including local residents, and to provide BLM with additional data to use in its decision making and mitigation efforts.

APPENDIX B: MODIFICATIONS AND CLARIFICATIONS

The following describes clarifications and minor modifications that BLM has made in this decision and Supplemental BMPs presented in the Final SEIS. (Modifications that have been made to correct sentence structure, grammatical errors, sub-paragraph letters, and other non-substantive errors are not discussed below.)

Compensatory Mitigation – Supplemental Best Management Practice 1: Compensatory Mitigation Fund and Regional Mitigation Strategy: The BMP title was revised to more clearly describe the intent of the BMP, and the word "monitoring" was eliminated to avoid potential confusion with the GMT1 effectiveness monitoring program. Text has been edited to incorporate two other Supplemental BMPs: Terrestrial Environment Supplemental BMP 2: Legacy Well Remediation Fund; and Subsistence Supplemental BMP 6: Conservation Easement or Lease on Kuukpik Corporation-Owned Surface along Fish Creek. After further consideration and stakeholder input. The BLM believes these two measures would be best addressed by incorporating them into one measure under the compensatory mitigation fund. Thus, BLM may establish a conservation easement on lands near the project area, or require clean-up of previously disturbed sites, in coordination with stakeholders using compensatory mitigation funds provided by the permittee and as part of the ongoing RMS. This mitigation measure was reorganized for clarity, and language was added to the mitigation measure to more fully address BLM's landscape-level resource objectives, BLM's rationale for adopting a compensatory mitigation measure, and to clarify obligations and costs for the permittee. More detailed discussion of this new Supplemental BMP is contained in Appendix A – Compensatory Mitigation and Appendix D – Compensatory Mitigation Determination.

Air Quality - Supplemental Best Management Practice 2: Air Quality (new subparagraph to BMP A-10)*
Language was added to clarify obligations and costs for the permittee**.**

Birds/Mammals - Supplemental Best Management Practice 2: Minimize Potential Ground Vehicle Traffic Disturbance of Caribou: Text has been modified to eliminate a vehicle use plan restricting access to only residents of the local community and authorized CPAI personnel. The BLM recognizes that Kuukpik Corporation shareholders have a right to use the road and authorize its use, and that government personnel will use the road for monitoring and compliance work. The required Right of Access agreement will provide concise policies regarding use of the road, including those parties that have the right of use access to the road. Unauthorized parties will be prohibited from accessing the road as detailed in the Road Right of Access Agreement.

Subsistence - Supplemental Best Management Practice 4: Aircraft Data Reporting Requirements: Text has been modified to clarify the intent that BLM conduct the study based on flight information provided by CPAI; CPAI would not conduct the study. Additionally, the language was clarified to recognize that this measure would only apply to CPAI-operated

flights, while BLM recognizes that there are other operators conducting flights for other purposes, such as scientific studies.

Subsistence - Supplemental Best Management Practice 8: Prohibit Airboats in Key Subsistence Use Areas: Text has been clarified to recognize that CPAI/Alaska Clean Seas would need to access the Tiŋmiaqsiġvik (Ublutuoch) River during spill response training, and prohibitions could lead to technical difficulties and delays.

Subsistence - Supplemental Best Management Practice 10: Economic Study of Subsistence Impacts: Text has been clarified to state that the study will occur at the beginning of the life of the GMT1 project.

Public Health - Supplemental Best Management Practice 2: GMT1 Disaster Response Plan for Nuiqsut: Text has been clarified to reflect that CPAI would contribute funds to this plan, rather than act as the sole funding source. Clarification was added that CPAI will participate in the joint development of the plan, but will not be the entity ultimately responsible for its coordination.

Spills - Supplemental Best Management Practice 4: Spill Prevention and Response Plan: Subsection (f) was edited to clarify that BLM would be notified; however, BLM approval is not needed for a system restart. Subsection (c) was edited to clarify that BLM would review the Alpine C-Plan; however, BLM approval is not required. Language was added to reserve the BLM Authorized Officer the right to require changes to the contingency plan to ensure compliance with Federal requirements.

Spills - Supplemental Best Management Practice 6: Spill Minimization Measures at the Tiŋmiaqsiġvik (Ublutuoch) River Bridge: Text has been edited to clarify that BLM may require a thicker wall diameter pipeline to span the bridge, as opposed to automated valves. The BLM and CPAI technical staff met and discussed this issue. Due to engineering design and ASME code, automated valves are not feasible at the crossing.

General/Monitoring – Supplemental Best Management Practice 1: Establishment and Implementation of an Effectiveness Monitoring Program at BLM: Text has been edited to clarify that BLM will require the permittee to fund studies and monitoring as is required by the 2013 NPR-A IAP/EIS ROD.

APPENDIX C: POTENTIAL NEW MITIGATION MEASURES NOT ADOPTED

The decision in this ROD includes all practicable means to avoid or minimize environmental harm consistent with the purpose and need of the action, including potential impacts associated with cumulative impacts. Pursuant to 40 CFR 1505.2(c), BLM provides the following explanations for not adopting four mitigation measures considered in the Final SEIS as Supplemental BMPs.

- Potential Mitigation Measure 1 for Public Health (see Sec. 4.4.6 of the Final SEIS): This potential mitigation measure would have the State of Alaska establish a public health monitoring program at a regional level to track health indicators that are vulnerable to impacts from oil and gas activities. The North Slope Borough and the Alaska Native Tribal Health Consortium would have roles in the identification of appropriate indicators, thresholds, and responsive actions. The measure does not require a role for BLM. The ROD, therefore, does not adopt this mitigation measure.

- Potential Mitigation Measure 1 for Cultural Resources (see Sec. 4.4.1 of the Final SEIS): This potential mitigation measure would require additional consultation for cultural resources for future surveys. All cultural resource surveys have already been completed for Alpine Satellite Development Plan project area for both GMT1 and any future GMT2 drill site. This mitigation measure is not relevant to the proposed project and cannot be implemented. The ROD, therefore, does not adopt this mitigation measure.

- Potential Mitigation Measure 1 for Subsistence (see Sec. 4.4.5 of the Final SEIS): This potential mitigation measure would require the permittee to fund and provide in-kind services for the construction of a boat launch and associated parking area on the Tiŋmiaqsiġvik (Ublutuoch) River. The Native Village of Nuiqsut stated to BLM in a letter dated November 24, 2014, that such a boat launch may increase traffic in the area, and thus could increase impacts to subsistence. The ROD, therefore, does not adopt this mitigation measure.

- Potential Mitigation Measure 11 for Subsistence (see Sec. 4.4.5 of the Final SEIS): This potential mitigation measure would require the permittee to establish a subsistence food sample testing service for residents who have concerns about contaminants in harvested food. Based on additional consultation with residents, it is not clear whether residents would utilize this service. Furthermore, it is unlikely residents would use such a service if it were to be directly provided or directly funded by the project applicant. The BLM may provide such a service, in coordination with the NSB or FWS, as part of its ongoing effectiveness monitoring in the project area. The ROD, therefore, does not adopt this mitigation measure.

APPENDIX D: COMPENSATORY MITIGATION DETERMINATION

As discussed in the Introduction to the ROD, BLM's authority for management of NPR-A and to issue land use authorizations for the GMT1 project comes from several statutes, including the Federal Land Policy and Management Act (FLPMA), the Naval Petroleum Reserves Production Act (NPRPA), Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA), and section 28 of the Mineral Leasing Act. Each of these statutes and their implementing regulations require BLM to consider impacts to the environment and other resources and uses during its processing of applications for land use authorizations; and each provide broad authority for BLM to impose measures requiring applicants to mitigate adverse impacts to resources and uses, including measures that avoid or reduce impacts or compensate for unavoidable impacts.

The congressional declaration of policy for FLPMA states that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values…." (43 USC § 1701(a)(8)). The FLPMA directs that "[i]n managing the public lands the Secretary shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands" (43 USC § 1732(b)).

The NPRPA provides BLM with additional mitigation authority specific to oil and gas operations in the NPR-A, directing the Secretary to "include or provide for such conditions, restrictions, and prohibitions as the Secretary deems necessary or appropriate to mitigate reasonably foreseeable and significantly adverse effects on the surface resources of the National Petroleum Reserve in Alaska …. " (42 USC § 6506a(b)).

Title VIII of ANILCA requires Federal land managing agencies to evaluate impacts of proposed actions on subsistence uses, and provides that any action which would significantly restrict subsistence uses cannot be approved unless the agency takes reasonable steps to minimize impacts to subsistence uses and resources resulting from such actions (16 USC § 3120).

Section 28 of the Mineral Leasing Act provides BLM with authority to issue rights-of-way across Federal lands for oil and natural gas pipelines and related facilities, and provides that such rights-of-way "shall be subject to such terms and conditions as the Secretary or agency head may prescribe regarding extent, duration, survey, location, construction, operation, maintenance, use, and termination" (30 USC § 185). Specific to environmental protection, subsection 28(h) of the act requires BLM to impose stipulations which are "designed to control or prevent damage to the environment (including damage to fish and wildlife habitat)" and that "protect the interests of individuals living in the general area of the right-of-way or permit who rely on the fish, wildlife, and biotic resources of the area for subsistence purposes" (30 USC § 185(h)).

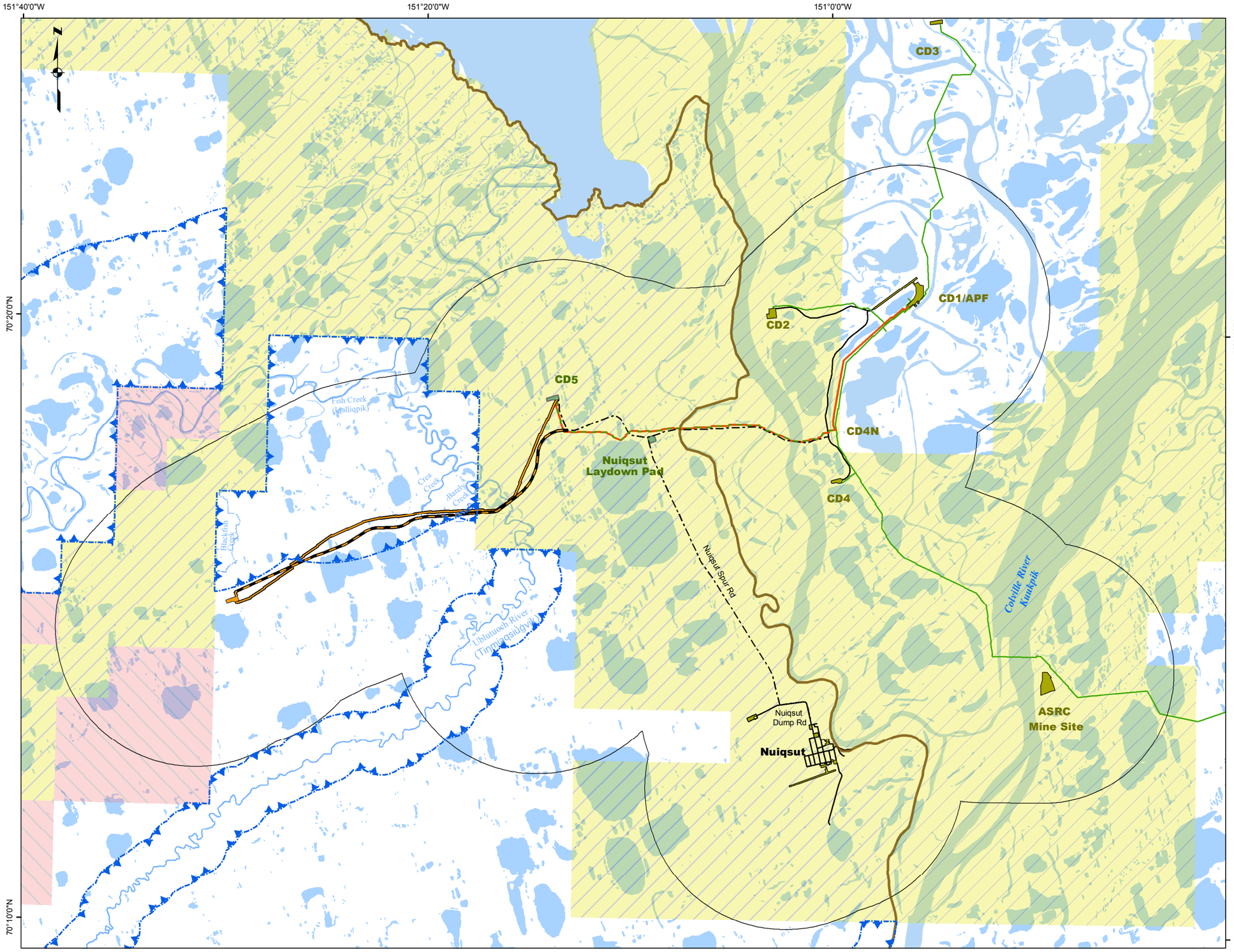
According to BLM policy (IM 2013-142), offsite compensatory mitigation is generally appropriate when, as is the case here, the agency determines that impacts cannot be mitigated

to an acceptable level onsite, and it is expected that the land use authorization as proposed would not be in compliance with law or regulations, or consistent with land use plan decisions or other important resource objectives.

To off-set identified impacts, including major impacts to subsistence uses that cannot be fully mitigated by avoidance and minimization, the permittee will provide $8 million to BLM to establish a compensatory mitigation fund. More specifically, the permittee must contribute to BLM (1) $1 million within 60 days of issuance of the ROD, for the development and implementation of a landscape-level Regional Mitigation Strategy (RMS) for the Northeastern NPR-A region, and (2) $7 million in 2 payments of (a) $3.5 million within 30 days after installation of first gravel during the first GMT1 ice road season, and (b) $3.5 million within 30 days after completion of the pad, road, and pipeline. The RMS will be completed within 18 months unless otherwise approved by the Authorized Officer. This compensatory mitigation requirement is specific to the GMT1 project and does not establish as precedent for future projects in the NPR-A any particular methodology for compensatory mitigation. Mitigation for future projects will be addressed during the review of specific project applications and will be informed by the RMS.

APPENDIX E: MAPS

Map 1: GMT1 project Layout



GMT1 Project Layout

Legend

GMT1 Project Infrastructure
- Road
- Pipeline
- Facility
- 14 inch Water[1] Injection Line
- Bridge

Boundaries
- NPR-A Project Study Area

Setback Areas
- Fish Creek 3mi
- Ublutuoch River 0.5mi

Proposed or Permitted (not part of GMT1)
- Pipeline
- Road
- Facility

Existing
- Pipeline
- Road
- Facility

Surface Land Ownership Kuukpik Lands
- Conveyed
- Selected

Footnote:
1:14 inch Water Injection line from CD1/APF to CD4N will be constructed on a new pipe rack. From CD4N to CD5 the14-inch Water Injection line will be placed on the already proposed or permitted pipe rack (not part of GMT1).

Date: 1/29/2015

0 0.5 1 2 3 Miles

NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet

Bureau of Land Management - Alaska
National Petroleum Reserve - Alaska

ASDP SEIS ROD

APPENDIX F: U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION

United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE
Fairbanks Fish and Wildlife Field Office
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
January 26, 2015

Stacie McIntosh
Arctic Field Office Manager, Acting
Bureau of Land Management
1150 University Ave.
Fairbanks, Alaska 99709

Harry A. Baij, Jr.
Project Manager
U.S. Army Corps of Engineers
Alaska District Regulatory Division, North Branch
P.O. Box 6898
JBER, Alaska 99506-1518

Re: Amendment to the biological opinion regarding the permitting, construction, and operation of GMT1.

Dear Ms. McIntosh and Mr. Baij:

This document amends the Service's original biological opinion (BO, attached) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq*., ESA), on the effects of actions resulting from proposed permits issued by the U.S. Army Corps of Engineers (USACE) and the U.S. Bureau of Land Management (BLM) to ConocoPhillips Alaska, Inc. (CPAI) for construction and operation of a satellite oil production development, GMT1, in the Greater Mooses Tooth Unit within the NPR-A. Proposed actions may affect polar bears (*Ursus maritimus*), spectacled eiders (*Somateria fischeri*), and Alaska-breeding Steller's eiders (*Polysticta stelleri*).

At the time the original BO was written, the BLM and USACE had not issued their Records of Decision (RODs); thus, we evaluated three alternatives of the *Final Supplemental Environmental Impact Statement for Proposed Greater Mooses Tooth Oil and Gas Project in Alaska* (FSEIS; BLM 2014) dated October 29, 2014 and the project as described in the USACE's Public Notice POA-2013-461 (Public Notice) dated September 15, 2014. The Service determined that the Proposed Action of permitting GMT1 is not likely to jeopardize the continued existence of spectacled eiders and polar bears regardless of the alternative selected, nor are any of the likely to adversely affect Alaska-breeding Steller's eiders.

We issue only one Incidental Take Statement for a given project based on one Proposed Action. Because the BLM and USACE had not selected an alternative when they initiated formal consultation, we estimated the level of incidental take for spectacled eiders and polar bears for three of the development alternatives presented for GMT1 but did not provide an Incidental Take Statement or Reasonable and Prudent Measures (RPMs) and implementing Terms and Conditions (T&Cs) that serve to minimize incidental take.

While the alternatives differ, the RPMs and implementing T&Cs that would accompany the Incidental Take Statement are the same for all alternatives. Therefore, at the permitting agencies' request, on January 13, 2015 we provided RPMs, T&Cs, and Conservation Measures to the BLM and USACE. However, the BLM and USACE had not chosen an alternative at that time, and so we did not issue an Incidental Take Statement.

The USACE issued its ROD for GMT1 on January 16, 2015, permitting the action as described in the Public Notice. On January 26, 2015 the BLM asked us to finalize the BO assuming Alternative A as described in the FSEIS is selected. Thus, we hereby amend this BO to include the Incidental Take Statement and a Re-initiation Notice that identifies the conditions requiring re-initiation of consultation by the BLM and USACE.

Please note we have modified one sentence regarding oil spill response training in T&C 1b from the previous BO amendment dated January 13, 2015. The change clarifies when certain minimization measures are required within 200 meters of shore in riverine, marine, or inter-tidal areas. The purpose of this T&C is to minimize disturbance of spectacled eiders in instances where summer (June 1 through August 15) support/construction activities occur at ground level off existing thoroughfares. Because oil spill response training is ground- level support activity, this change does not alter the obligation of the BLM and USACE to minimize disturbance from oil spill response training throughout the entire Action Area, as stated in this T&C in its entirety.

Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, but not the purpose of, carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS). Please be aware that all known instances of incidental takings of listed species must be reported to the Service using the contact information below.

Spectacled Eiders

Habitat Loss and Disturbance/Displacement, and Predation

Our estimates of incidental take are based on the acreage of gravel fill and the 200-m zone surrounding infrastructure, the lifetime of this infrastructure, and the density of spectacled eiders in the Action Area. Using the methodology described in the *Effects* section, we anticipate the incidental take of up to five nests for the 32-year life of the project.

Collisions

We estimated up to one spectacled eider may collide with the drilling rig while it will operate (from 2017-2021). Given the inland location of proposed GMT1 structures compared to the principally marine autumn migration route of eiders and the comparatively small profile of structures within the path of migrating eiders, we likely have significantly overestimated incidental take. Additionally, BLM's BMPs will likely reduce collision risk but to an unknown degree; thus, we have not adjusted our incidental take estimates to reflect the benefit of these measures.

Reasonable and Prudent Measures

Reasonable and Prudent Measures (RPMs) and their implementing Terms and Conditions (T&Cs) aim to minimize the incidental take anticipated to result from the Proposed Action. As described above, activities resulting from GMT1 may lead to the incidental take of spectacled eiders through habitat loss, disturbance, predation, and collisions. The Service expected that adherence to the lease stipulations and BMPs included in the IAP ROD (BLM 2013) would effectively minimize incidental take of spectacled eiders, and thus did not include RPMs and T&Cs in the IAP BO (USFWS 2013). However, the Action Area for GMT1 includes areas outside of NPR-A where these BMPs do not apply. Thus, we are including RPMs and T&Cs for spectacled eiders in this amended BO to minimize incidental take within the entire Action Area. The RPMs and T&Cs are based on the BMPs applied to management within NPR-A but have been adapted to focus on minimizing incidental take of spectacled eiders within the entire Action Area.

Disturbance

RPM 1. Minimize ground-level activity (by vehicle or on foot) within 200 meters of occupied spectacled eider nests.

Predation

RPM 2. Minimize the use of GMT1 facilities as nesting, denning, or shelter sites for avian and nest predators.

Collisions

RPM 3. Minimize the likelihood that collisions would occur as a result of GMT1 infrastructure.

Terms and Conditions

Disturbance

RPM 1. *Minimize ground-level activity (by vehicle or on foot) within 200 meters of occupied spectacled eider nests.*

T&C 1a. Ground-level activity (by vehicle or on foot) within 200 meters of occupied spectacled eider nests, from June 1 through August 15, will be restricted to existing thoroughfares, such as pads and roads. Construction of permanent facilities, placement of fill,

alteration of habitat, and introduction of high noise levels within 200 meters of occupied spectacled eider nests will be prohibited.

T&C 1b. In instances where summer (June 1 through August 15) support/construction activity must occur off existing thoroughfares, Service-approved nest surveys must be conducted during mid-June prior to the approval of the activity. Collected data will be used to evaluate whether the action could occur based on employment of a 200-meter buffer around nests or if the activity would be delayed until after mid-August once ducklings are mobile and have left the nest site. Also, in cases in which oil spill response training is proposed to be conducted within 200 meters of shore in riverine, marine, or inter-tidal areas, the BLM and USACE will work with the Service to schedule the training at a time that is not a sensitive nesting/brood-rearing period or require that nest surveys be conducted in the training area prior to the rendering a decision on approving the training. The protocol and timing of nest surveys for spectacled eiders will be determined in cooperation with the Service, and must be approved by the Service. Surveys should be supervised by biologists who have previous experience with spectacled eider nest surveys.

These T&Cs are based on the BLM's BMP E-18.

Predation

RPM 2. *Minimize the use of GMT1 facilities as nesting, denning, or shelter sites for avian and nest predators.*

T&C 2a. Areas of operation shall be left clean of all debris.
This T&C is based on the BLM's BMP A-1.

T&C 2b. CPAI shall prepare and implement a comprehensive waste management plan for all activities occurring within the GMT1 Action Area. The plan shall be submitted to the authorized officers for approval, in consultation with federal, State, and North Slope Borough regulatory and resource agencies, as appropriate (based on agency legal authority and jurisdictional responsibility), as part of a plan of operations or other similar permit application. Management decisions affecting waste generation shall be addressed in the following order of priority: (1) prevention and reduction, (2) recycling, (3) treatment, and (4) disposal. The plan shall consider and take into account the following requirements:

1. Methods to avoid attracting wildlife to food and garbage. The plan shall identify precautions that are to be taken to avoid attracting wildlife to food and garbage.
2. Disposal of putrescible waste. Requirements prohibit the burial of garbage. Lessees and permitted users shall have a written procedure to ensure that the handling and disposal of putrescible waste will be accomplished in a manner that prevents the attraction of wildlife. All putrescible waste shall be incinerated, backhauled, or composted in a manner approved by the authorized officer. All solid waste, including incinerator ash, shall be disposed of in an approved waste-disposal facility in accordance with Environmental Protection Agency and Alaska Department of Environmental Conservation regulations and procedures. The burial of human waste is prohibited except as authorized by the authorized officer.

These T&Cs are based on the BLM's BMPs A-2a and A-2b.

T&C 2c. CPAI shall utilize best available technology to prevent facilities from providing nesting, denning, or shelter sites for ravens, raptors, and foxes. The lessee shall provide the authorized officer with an annual report on the use of oil and gas facilities by ravens, raptors, and foxes as nesting, denning, and shelter sites. Additionally, feeding of wildlife is prohibited and will be subject to non-compliance regulations.
This T&C is based on BLM's BMP E-9.

Collisions

RPM 3. *Minimize the likelihood that collisions would occur as a result of GMT1 infrastructure.*

T&C 3a. Illumination of all structures between August 1 and October 31 shall be designed to direct artificial exterior lighting inward and downward, rather than upward and outward, unless otherwise required by the Federal Aviation Administration.
This T&C is based on BLM's BMP E-10.

T&C 3b. To reduce the possibility of spectacled eiders colliding with above-ground utility lines (power and communication), such lines shall either be buried in access roads or suspended on vertical support members except in rare cases which are to be few in number and limited in extent. Exceptions are limited to the following situations, and must be reported to the USFWS when exceptions are authorized:

1. Overhead power or communication lines may be allowed when located entirely within the boundaries of a facility pad;
2. Overhead power or communication lines may be allowed when engineering constraints at the specific and limited location make it infeasible to bury or connect the lines to a vertical support member; or
3. Overhead power or communication lines may be allowed in situations when human safety would be compromised by other methods.

This T&C is based on BLM's BMP E-11c.

T&C 3c. To reduce the likelihood of spectacled eiders colliding with communication towers, towers should be located, to the extent practicable, on existing pads and as close as possible to buildings or other structures, and on the east or west side of buildings or other structures if possible. Support wires associated with communication towers, radio antennas, and other similar facilities, should be avoided to the extent practicable. If support wires are necessary, they should be clearly marked along their entire length to improve visibility to low-flying birds. Such markings shall be developed through consultation with the Service.
This T&C is based on BLM's BMP E-11d.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. BLM and USACE are encouraged to:

1. develop an outreach program that aims to eliminate use of lead shot and accidental shootings of spectacled and Alaska-breeding Steller's eiders within the Action Area.
2. continue to monitor threatened eiders and BLM special status species in the Action Area. Results will allow the Service, BLM, and USACE to better evaluate abundance, distribution, and population trends of listed eiders and other special status species. These efforts will enhance the likelihood that future oil and gas development within NPR-A and the Colville River delta will not jeopardize listed eiders or lead to listing additional species.
3. work with the Service and other Federal and State agencies in implementing recovery actions identified in the Steller's and spectacled eider recovery plans. Research to determine important habitats, migration routes, and wintering areas of spectacled and Steller's eiders is an important step toward minimizing conflicts with current and future North Slope oil/gas activities.

The Service requests notification of the implementation of any conservation recommendations by the BLM and USACE to keep the Service informed of actions minimizing or avoiding adverse effects or benefiting candidate or listed species or their habitats.

Thank you for your cooperation in the development of this BO. If you have any comments or require additional information, please contact Ted Swem, Endangered Species Branch Chief, at ted_swem@fws.gov, (907) 456-0441, or Fairbanks Fish and Wildlife Field Office, 101 12th Ave., Fairbanks, Alaska, 99701.

Re-initiation Notice

This concludes formal consultation on the Action described. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary BLM or USACE involvement or control over the action has been retained (or is authorized by law) and:

1) If the amount or extent of incidental take is exceeded;
    a. Habitat loss, associated disturbance/displacement, and predation:
        - Up to five spectacled eider nests during the 32-year development lifespan
    b. Collisions:
        - Up to one spectacled eider.
2) If new information reveals the Proposed Action may affect listed species in a manner or to an extent not considered in this opinion that includes but is not limited to the following:

a. More than to two deterrence events that lead to injury (e.g., pain and bruising) during the 32-year life of development, but that do not cause severe injury or death;
b. Any human-caused incidents that lead to the death of a polar bear; or
c. Any human-caused incidents that cause the premature abandonment of polar bear dens.

3) If a new species is listed or critical habitat designated that may be affected by the Action.

Sincerely,

Ted Swem

Ted Swem
Branch Chief
Endangered Species

attachment

Cc: Michael Salyer, North Branch Chief, U.S. Army Corps of Engineers

Biological Opinion for Effects of Greater Moose's Tooth 1 Oil and Gas Development in the National Petroleum Reserve-Alaska on the Polar Bear, Spectacled Eider, and the Alaska-breeding Steller's Eider

Prepared by:
U.S. Fish and Wildlife Service
Fairbanks Fish and Wildlife Field Office
101 12th Ave, Room 110
Fairbanks, Alaska 99701

December 2, 2014

Table of Contents

List of Figures

List of Tables

1 Introduction

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (BO) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq*., ESA), on the effects of actions resulting from proposed permits issued by the U.S. Army Corps of Engineers (USACE) and the U.S. Bureau of Land Management (BLM) to ConocoPhillips Alaska, Inc. (CPAI) for construction and operation of a satellite oil production development, GMT1, in the Greater Mooses Tooth Unit. A satellite production development is an oil or gas development removed from a central processing facility (CPF) that requires a gathering system (e.g., pipeline) and roads or an airstrip to connect it to the CPF. Proposed actions would occur within the National Petroleum Reserve – in Alaska (NPR-A) and may affect polar bears (*Ursus maritimus*), spectacled eiders (*Somateria fischeri*), and Alaska-breeding Steller's eiders (*Polysticta stelleri*). The Action Area includes land and water within a 2.5-mi (4.0 km) zone around the proposed GMT1 drill site and support infrastructure (Figure 1).

1.1 Project and Consultation History

Planning efforts for GMT1 began more than a decade ago. The satellite oil development at GMT1 was previously described and evaluated as part of the Alpine Satellites Development as CD6 in an environmental impact statement (BLM 2004), a biological assessment (Johnson et al. 2004), and a biological opinion (USFWS 2004). During subsequent exploration thattook place after the Alpine Satellites Development project was permitted, it was established that the two satellites on federal land (CD6 and CD7) were not located in the same reservoir [Colville River Unit (CRU)] as CD1, CD2, CD3, CD4, and CD5. As a result, CPAI requested that the BLM designate and approve the proposed Greater Mooses Tooth Unit Area (GMTU) so CPAI could perform exploration and development operations in an efficient and logical manner under a unit plan of development. CD6 was renamed to GMT1 after it was determined that it would not be part of the CRU and would be in the newly established GMTU. This consultation for GMT1 evaluates effects on listed species that may occur from selecting Alternative A, B, or D as described in the *Final Supplemental Environmental Impact Statement for Proposed Greater Mooses Tooth Oil and Gas Project in Alaska* (FSEIS; BLM 2014) and the *Final Report* prepared by ABR, Inc. (ABR 2014). The alternatives differ by the type and location of access infrastructure for the drill site (Figure 1, Table 1).

In 2013, the BLM adopted its Record of Decision (ROD) for the Integrated Activity Plan/Environmental Impact Statement (IAP/EIS) for NPR-A (BLM 2013). The IAP ROD (BLM 2013) allocates lands available and unavailable for oil and gas leasing, exploration, and development and includes best management practices (BMPs) and lease stipulations that minimize impacts of these activities. The IAP/EIS (BLM 2012) also included a development scenario, and on February 5, 2013, the Service issued the *Biological Opinion for the National Petroleum Reserve – Alaska Integrated Activity Plan, 2013* (IAP BO, USFWS 2013) for potential effects to listed species resulting from implementation of the IAP. We concluded that the scenario, including the BMPs and lease stipulations, was not likely to jeopardize the continued existence of Alaska-breeding Steller's eiders, spectacled eiders, or polar bears. We also provided the BLM with an Incidental Take Statement for Alaska-breeding Steller's eiders and spectacled eiders.

In this BO for GMT1, we (1) analyzed effects within the Action Area, and (2) assessed if the conclusion we reached in the IAP BO (USFWS 2013, pp. 98-99) – that the development scenario was not likely to jeopardize the continued existence of Alaska-breeding Steller's eiders, spectacled eiders, and polar bears – was also appropriate for GMT1. ABR (2014) included information on the yellow-billed loon (*Gavia adamsii*) and Pacific walrus (*Odobenus rosmarus divergens*). When the BLM initiated formal consultation, the yellow-billed loon was a candidate under consideration for listing under the ESA and was classified as "warranted but precluded" for listing. On October 1, 2014, the Service found that the yellow-billed loon does not meet the definition of an endangered or a threatened species under the ESA and determined listing pursuant to the ESA was not warranted (79 FR 59195). The Pacific walrus does not occur within the Action Area and would not be affected by project actions. Thus, we do not consider either species further in this BO.

Potential impacts of the Proposed Action were evaluated in the context of the status and environmental baseline of the species to provide an aggregative analysis of impacts to listed species. Our analysis includes potential direct and indirect effects, cumulative effects, and effects of interrelated and interdependent actions on listed species in the Action Area, including effects of BMPs and lease stipulations that would govern management of GMT1. Information in this BO is based on a variety of sources, including ABR (2014), published literature, agency and consultant biological surveys and reports, the IAP/EIS (BLM 2012) and IAP BO (USFWS 2013), the FSEIS (BLM 2014) for this project, the USACE's Public Notice POA-2013-461 (dated September 15, 2014), and personal communications with agency staff.

Based on this information, the Service has determined that the Proposed Action of permitting GMT1 is consistent with the Proposed Action considered in the IAP BO (USFWS 2013). Therefore, the previous conclusion – that the Proposed Action in the IAP BO (USFWS 2013, pp. 98-99) is not likely to jeopardize the continued existence of spectacled eiders and polar bears – is also appropriate for GMT1. Further, we determined the proposed project is not likely to adversely affect Alaska-breeding Steller's eiders. While we do not anticipate incidental take of Alaska-breeding Steller's eiders for this project, the Incidental Take Statement in the IAP BO (USFWS 2013, p. 102) provides the BLM coverage under the ESA should Steller's eiders unexpectedly collide with structures associated with this Proposed Action.

We estimated the level of incidental take for spectacled eiders and polar bears for three of the development alternatives presented for GMT1. Effects differ among alternatives. At the time this BO was written, the BLM and USACE had not issued their Records of Decision (RODs), and we issue only one Incidental Take Statement for a given project. Once the BLM and USACE issue RODs for GMT1, we will amend this BO to include an Incidental Take Statement for spectacled eiders along with Reasonable and Prudent Measures and implementing Terms and Conditions.

The process for authorizing take (incidental or intentional) for marine mammals such as polar bears differs from the process of authorizing incidental take of other threatened and endangered species. Although we have enumerated the extent of anticipated incidental take of polar bears, the Service is not authorizing incidental take of polar bears under the ESA in this BO. Consistent with the ESA and regulations at 50 CFR §402.14(i) Appendix (A), incidental take statements for marine mammals are not included in formal consultations until regulations, authorizations, or permits under the Marine Mammal Protection Act and/or its 2007 amendments (MMPA) until regulations, authorizations, or permits under the MMPA are in effect. Because such take must first be authorized under the MMPA, incidental take under the ESA that results from actions conducted in compliance with all requirements and stipulations set forth in the MMPA authorization will be considered by the Service to also be authorized under the ESA. CPAI has obtained authorization under the MMPA for take of polar bears for their various oilfield projects on the North Slope to date. These LOAs will expire before the end of the development lifespan of this project, but we assume that CPAI continue to receive LOAs in the future.

1.2 Effects Determination for Alaska-breeding Steller's Eiders

As described in the IAP BO (USFWS 2013, pp. 31-32), Alaska-breeding Steller's eiders breed almost exclusively on the Arctic Coastal Plain (ACP), and nesting is concentrated in tundra wetlands near Barrow, Alaska. Steller's eiders occur at very low densities elsewhere on the ACP (Larned et al. 2012). Two decades of annual aerial and ground-based surveys on the Colville River Delta and in northeastern NPR-A have not detected this species in the Action Area, and recent records near the Action Area are rare. We conclude that the probability of Steller's eiders occurring in the Action Area is so low as to be discountable. Thus, GMT1 is not likely to adversely affect this species, and effects on Steller's eiders will not be evaluated further in this BO.

2 The Action Area

Regulations implementing the ESA (50 CFR §402.02) define an "Action Area" as "area[s] to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Potential impacts of GMT1 on threatened species would occur at different geographic scales (e.g., disturbance from aircraft would occur over a larger area than disturbance from ground passenger vehicles). ABR (2014) depicts the Action Area as the 2.5-mi (4.0 km) zone around the proposed GMT1 drill site and all proposed support infrastructure (Figure 1). We expect this zone encompasses all potential effects of the Proposed Action on threatened species, and thus use it as the Action Area.

3 The Proposed Action

We tier this BO for GMT1 to the analysis in the BLM's IAP BO (USFWS 2013). To evaluate potential impacts of development, the BLM provided a long-term development scenario in their IAP/EIS (BLM 2012), and the Service analyzed (USFWS 2013, pp. 63-94) a range of potential effects on threatened species based on this scenario. The scenario includes several types of developments, one of which is a satellite oil production development. The proposed GMT1 is a satellite oil production development and the first of several potential development projects in NPR-A. Uncertainty regarding the extent and location of development that may occur will decrease as the BLM (and other action agencies such as the USACE) propose to permit additional developments.

We evaluate three alternatives in this BO. While the FSEIS (BLM 2014) evaluates more than three alternatives, the BLM considered the alternatives described in this BO to contain the full suite of potential impacts of GMT1. While the drill site location is the same in all alternatives, the alternatives differ by the type and location of access infrastructure for the drill site (Figure 2, Table 1, Table 2). In Alternatives A and B, all-season roads provide drill site access, with a more northern route for Alternative A than Alternative B. Alternative A is most similar to the proposed project described in the USACE's Public Notice POA-2013-461, as CPAI submitted its application to the USACE for only its proposed project. In Alternative D1 an airstrip provides drill site access with ice roads providing additional access when conditions allow. We describe similarities and differences among the alternatives in Sections 3.1 and 3.3, respectively. Please see ABR (2014), the USACE's Public Notice POA-2013-461, and the FSEIS (BLM 2014) for a complete description of the alternatives.

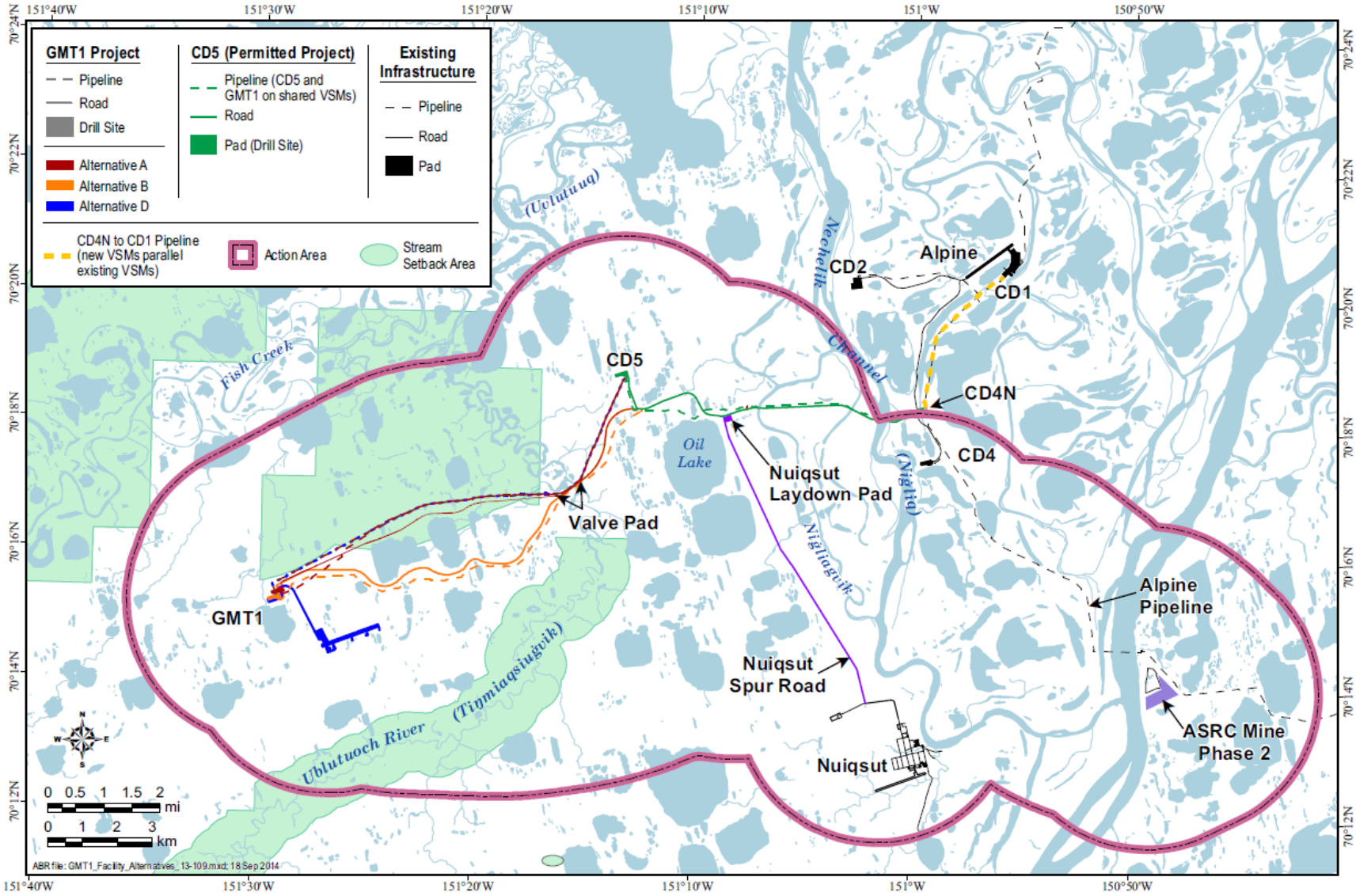


Figure 1. GMT1 facility alternatives and Action Area (2.5 mi zone around the facilities, ice roads, and material source). From ABR (2014).

3.1 Overview of Similarities among Alternatives

GMT1 would develop infrastructure to extract an estimated peak production of 20,000 barrels/day of hydrocarbons from within NPR-A in 2018, declining to 5,000 barrels/day by 2026 (BLM 2014, p. 403). The three alternatives have the following elements in common:

- The drill site is in the same location in all alternatives.
- Alpine (Figure 1) would serve as the main construction camp and supply hub supporting construction and operation of GMT1.
- The project would begin in winter 2015/2016 with:
    - construction of ice roads to facilitate erecting vertical support members (VSMs) for pipelines power and communication cables,
        - 1,488 vehicle trips on ice roads during construction preparation, and
    - excavation of 625,500–845,600 cubic yards (18.3–24.7 ac) of gravel from the Arctic Slope Regional Corporation (ASRC) mine site to facilitate road, pad, and bridge construction.
        - The ASRC mine was previously permitted (POA-1996-869-M4, modification M6 was issued 30 January 2014) and is separate from this action. The mine is approximately 4.5 mi northeast of Nuiqsut, is outside of the NPR-A, and could supply more than the necessary quantity of gravel for the GMT1 project.
- Construction would continue in winter 2016/2017 and would include the construction of the gravel road and drill pad, and bridge piers substructure and superstructure along with the continued installation of VSM's, pipelines, power and telecommunication cables and facilities
- Drilling using a single rig (205 ft tall) would occur from 2017-2021.
- Oil is expected to enter a pipeline connecting GMT1 to CD5 in the final quarter of 2017.
- 115-1,604/ new flights/year would occur after initial construction (Table 4).

Additionally, all alternatives include the following components (ranges indicate variation among alternatives; Figure 1, Figure 2, and Table 2):

- The gravel footprint would total 72.7–87.3 ac comprised of:
    - an 11.8–15.7 ac drill site with 33 well capacity;
    - 7.7–8.5-mi gravel access road or 5,000-ft airstrip with 1.2-mi gravel access road; and
    - 0.7–1.4 ac of manual valve gravel pads.
- 8.3–8.6-mi long pipeline on VSMs that also support power and fiber optic lines between GMT1 and CD5
- 3.3-mi long pipeline rack on new VSMs from CD4N to CD1
- Pipeline tie-ins at CD5 and CD1
- 6–45 mi of ice roads for construction or winter access, varying annually (Table 3)

Table 1. Comparison of GMT1 infrastructure dimensions by alternative. From ABR (2014).

Alternative	Footprint (ac)	Airstrip (ft)	All-season Road Length (mi)	Pipeline length (mi)
A (road access)	72.7	--	7.7	8.3
B (road access conforming to stream setbacks)	80.4	--	8.5	8.6
D (roadless access)	87.4	5,000	1.2	8.4

[a]Values are approximate and may change during final design. VSM footprints total <0.1 acre and are included in each alternative footprint. The footprint is the total area to be covered by gravel in each alternative including pad, road, etc.

3.1.1 BEST MANAGEMENT PRACTICES AND LEASE STIPULATIONS

CPAI would adhere to BMPs and lease stipulations as presented in the IAP ROD (BLM 2013) and CPAI's lease. However, the IAP ROD (BLM 2013) provides the BLM a mechanism to grant "deviations" from BMPs and lease stipulations, provided the alternative procedures would still achieve the objectives of the BMPs and stipulations. If the BLM determines that the alternative procedure proposed by the applicant would meet the objectives of the stipulation or BMP, the BLM could approve the alternative procedure. CPAI, in support of Alternative A, would need BLM to grant deviations from the following BMPs and lease stipulations (CPAI 2014):

- A-5: Refueling within 500 ft of waterbodies;
- E-2: Facilities located within 500 ft of waterbodies;
- E-7 (a): Pipeline height of 7 ft;
- E-7 (c) 500 ft separation distance between pipelines and roads; and
- K-1(e): Fish Creek 3-mi buffer.

Please see *Appendix A* for the deviations that would be required in order to implement each alternative. Deviations to A-5, E-2, K-1(e), and K-1(g) could increase the risk to aquatic resources should a large oil spill occur. However, the BLM has concluded in the FSEIS (BLM 2014) that the alternatives for development of GMT1, including the proposed deviations, are consistent with the IAP/EIS for NPR-A (BLM 2012), and may grant these deviations in cases where the project would still meet the objectives of the BMPs and lease stipulations with these deviations.

3.2 Overview of Differences among Alternatives

In Alternative A, an all-season road would connect the GMT1 drill site pad to CD5. This alternative includes three vehicle pullout pads (50 x 200 ft each; Table 1, Table 2, and Figure 1). Alternative A requires two bridges, one to span the Ublutuoch River (Tiŋmiaqsiuġvik) and one to span Crea Creek. Approximately 3.1 mi of road and 3.6 mi of pipeline (roughly 40% of the total length of each) would be built within the Fish Creek setback.

Alternative B is similar to Alternative A, but the pipeline and road are placed entirely outside the Fish Creek setback (Figure 1, Table 1). This alternative also includes three vehicle pullout pads (50 x 200 ft each; Table 1, Table 2, and Figure 1). Alternative B includes one bridge that crosses the Ublutuoch River (Tiŋmiaqsiuġvik). The access road for Alternative B is slightly longer than the one presented for Alternative A (Table 1).

Alternative D1 is a roadless access alternative where a 5,000-foot airstrip provides access with additional access by ice roads when conditions allow. Alternative D1 has a 1.2 mi all-season road connecting the airstrip to the drill site and a pad to accommodate housing and storage needs when the site is not accessible by ice roads (Table 1, Table 2). The combined gravel footprint is the largest of the alternatives (Table 1), and a substantially longer ice road would be required annually as opposed to just during construction (Table 3).

Under Alternatives A and B, annual vehicle trips peak at 87,847 during the first year of construction in 2016. During the avian breeding season (May–August) in 2016, vehicle trips range from 420 to 2,625/month. Annual vehicle trips in 2017, the second year of construction, are expected to decline slightly to 73,395, with 2,937–3,672 trips/month occurring during May–August. From 2018 to the end of 2021 (drilling), 26,675 annual trips would be needed, which includes 1,753–2,192 trips/month occurring in May–August and 5,698 trips during winter months (February–April) on the annual resupply ice road (6 mi). Beginning in 2022, operation traffic rates would drop to 4,946 trips/year, including 624 trips/year on all-season roads and 4,322 vehicle trips/year on annual resupply ice roads.

Annual vehicle trips would peak at 78,074 under Alternative D1 during the first year of construction in 2016. All travel would be during the ice road season with no traffic during May–November. During 2017, traffic would peak at 94,083 trips/year, with 1,926–3,900 trips/month during May–August. Vehicle trips would decline to 52,411/year in 2018–2021 (drilling) with 3,119–3,899 trips/month in the May–August period. Traffic rates also would decline but still be approximately six times higher than under Alternatives A and B. Beginning in 2022, 32,359 trips/year would occur, including 21,840 trips/year on the gravel road connector and 10,519 trips/year on the annual resupply ice road.

Table 2. Estimated potential footprint areas and gravel volumes by infrastructure type for GMT1. Ranges include wetland fill area and gravel volumes for Alternatives A, B, and D1. From ABR (2014).

Infrastructure Type	Footprint (ac)[a]	Fill Quantity (cu yds)[a]	Notes/dimensions[a]
GMT1 Drill site Pad	11.8–15.7	131,000–157,900	463–290 x 1,200 ft
All-season Access Road, GMT1 to CD5	59.2-66.1	480,000-538,000	7.7–8.5 mi long; 32 ft crown width, minimum 5 ft depth
Vehicle Pullout Pads (Alternatives A and B only)	0.9	8,550	Three 50 x 200-ft (0.3 ac) vehicle pullout pads
Manual Valve and Tie-in Pads (east and west)	0.7-1.4	6,500–13,000	Each pad is 100 ft x 100 ft; with 20 x 25 ft extension
Air Access Facilities (Alt D airstrip, road, and structure pad)	70.9	687,700	46.4 ac airstrip and apron, 9.6 ac airstrip access road, 14.9 ac structure pad
Total Gravel Fill for GMT1	72.7–87.3	628,050–845,600	Pads, roads, airstrip
ASRC Mine Site	18.3-24.7[b]		Estimated from gravel volumes excavated previously at this mine site

[a] Values are approximate and may change during final design.
[b] Material source pit footprint, estimated from a mean 34,180 cubic yards/acre of mine footprint.

Table 3. Estimated ice road lengths (miles) by alternative and year for GMT1. Road lengths may vary as much as a mile depending on final routing. From ABR (2014).

Alternative	Year 1 Construction	Year 2 Construction	Annual Post Construction
A (road access)	45	36	6
B (road access conforming to stream setbacks)	43	36	6
D (roadless access)	33	36	15

Table 4. Annual flight requirements for GMT1 project by alternative. From ABR (2014).

		Number of Flights			
Alternative	Flights[a]	2016	2017	2018	2019 and beyond
A and B	New Flights	539	504	115	115
	Total Flights including Baseline Flights	3,536	3,501	3,112	3,112
D	New Flights	681	1,371	1,604	579-1,604
	Total Flights including Baseline Flights	3,678	4,368	4,601	3,576-4,601

[a]New flights are flights associated with construction, drilling, and operation of the GMT1 project. Baseline flights are flights already occurring in the project area, as part of biological and hydrological surveys, or support of operations at Alpine, but not directly associated with the GMT1 project.

4 Status of the Species

The status of spectacled eiders and polar bears is described in the section captioned *Status of the Species* in the IAP BO (USFWS 2013, pp. 25-41). No significant changes to the status of spectacled eiders or polar bears have occurred since the issuance of the IAP BO (USFWS 2013) on February 5, 2013. Thus, the status of spectacled eiders and polar bears as described in the IAP BO (USFWS 2013) provides the context to analyze effects of GMT1 on these species.

4.1 Climate Change

We used the best available information to discuss how climate change may affect spectacled eiders and polar bears in the IAP BO's Action Area (USFWS 2013, pp. 25, 38, 41, 54-56, 58, 59, 60-61, 89, 90). We addressed uncertainty regarding climate change in the IAP BO (USFWS 2013) by acknowledging that climate change will likely affect individual organisms and communities, but that it is difficult to predict with specificity or reliability how these effects will manifest. If new information regarding how climate change affects listed species occurring within the Action Area becomes available, we will update the *Status of the Species* at that time.

5 Environmental Baseline

Regulations implementing the ESA (50 CFR §402.02) define the environmental baseline to include the past and present impacts of all Federal, State, or private actions and other human actions in the Action Area. Also included are anticipated impacts of all proposed Federal projects in the Action Area that have undergone section 7 consultation and the impacts of State and private actions contemporaneous with the consultation in progress.

5.1 Spectacled Eiders

Spectacled eiders use portions of the Action Area during spring and summer to breed, nest, and raise broods. Two information sources indicate a low density of spectacled eiders occurs in the Action Area: pre-nesting and nesting surveys conducted by ABR (Figure 3) and the Service's annual pre-nesting aerial surveys (Figure 4). We summarize this information below. See ABR (2014) for additional information.

For the portion of the Action Area surveyed by ABR, estimated pre-nesting spectacled eider density ranged from 0.01 birds/km² (0.01 indicated birds/km², SE = 0.004, *n* = 20 years) in the Colville River Delta study area to 0.03 birds/km² (indicated birds/km^2, SE = 0.006, *n* = 14 years) in the NE NPR-A study area (ABR 2014). Additionally, limited nest searches conducted as early as 1958 in a portion of the Action Area located 11 spectacled eider nests, all north of CD5 (Figure 3, ABR 2014). Although not collected systematically, this information corroborates the findings of the Service's aerial surveys indicating that a low density of pre-nesting spectacled eiders occurs in the Action Area.

Annual aerial surveys of the ACP in June (Mallek et al. 2007, Larned et al. 2012, Stehn et al. 2013) provide another source of information for pre-nesting spectacled eider density in the Action Area. Density estimates ranged from 0–0.425 birds/km² in 2009–2012 (Figure 4), with the highest density centered on the northcentral Colville River Delta.

5.1.1 SUMMARY

Spectacled eiders occur in the Action Area at low density, but likely with the highest density occurring in the northern portion of the Action Area, particularly in or near the Colville River Delta. While we do not have information on use of the Action Area for brood rearing, we can infer from the low density of breeding adults that they would also occur at low density of pairs present before and during nesting that few broods would occur in the Action Area.

5.2 Polar Bears

The highest number of polar bears in the Action Area would most likely occur during fall and winter when pregnant females enter the terrestrial environment to search for suitable maternal den sites. Polar bears may also abandon melting sea ice and use the terrestrial environment to transit to other areas during summer and early autumn. Female polar bears typically den from mid-November until mid-April, and transient polar bears could be present in the Action Area at any time.

Portions of the Action Area contain habitat capable of supporting maternal dens. Physical features that generally define potential polar bear denning areas are those that facilitate the capture of sufficient snow to allow den excavation (Durner et al. 2003). An estimated 95% of all dens adjacent to the Beaufort Sea occur within 8 km (5 mi) of the coast (74 FR 56058). The portion of the Action Area within 8 km of the Beaufort Sea coastline that contains suitable denning habitat primarily occurs along the Ublutuoch River (Tiŋmiaqsiuġvik) and Niġliq and Niġliagvik channels of the Colville River (Figure 5, ABR 2014). We expect females would den infrequently in the Action Area because suitable denning habitat within the Action Area is sparse and polar bears generally den at a low density across the landscape (Harington 1968, Lentfer and Hensel 1980, Amstrup and Gardner 1994).

We expect transient polar bears to pass through the Action Area only infrequently, as they generally remain close to the coast. While no systematic polar bear surveys have been conducted in the Alpine Satellites Development project area, the majority of opportunistic sightings (since 1917) occur northeast of the GMT1 Action Area, which is much closer to the coast (Figure 5).

5.2.1 SUMMARY

While polar bears may be present in the Action Area, we expect them to occur infrequently, with the highest numbers occurring in the portion of the Action Area closest to the coast.

5.3 Impacts of Other Potential Factors in the Action Area

Because the Action Area is within NPR-A and managed by the BLM, potential factors affecting threatened species unrelated to the Proposed Action have undergone separate consultation and/or were considered in the IAP BO (USFWS 2013). These potential factors include disturbance of threatened eiders, accidental shooting of threatened eiders, disturbance of polar bears from interactions with humans, avian and polar bear research, subsistence harvest of polar bears, and climate change. Other consultations addressing potential impacts in the Action Area include the:

- annual programmatic consultation for BLM summer activities in NPR-A (e.g., USFWS 2014a);
- annual Intra-Service Section 10 permit for ABR Inc.'s eider survey work on the North Slope (USFWS 2014b);
- Intra-Service Migratory Bird Subsistence Hunting Regulations (USFWS 2014c);
- Intentional harassment of polar bears: Intentional take of polar bears with the Marine Mammals Management Office (MMM; USFWS 2014d);
- Incidental disturbance of polar bears: Beaufort Sea Incidental Take Regulations with MMM (USFWS 2011); and the
- 2004 Alpine Satellite Development Project (USFWS 2004).

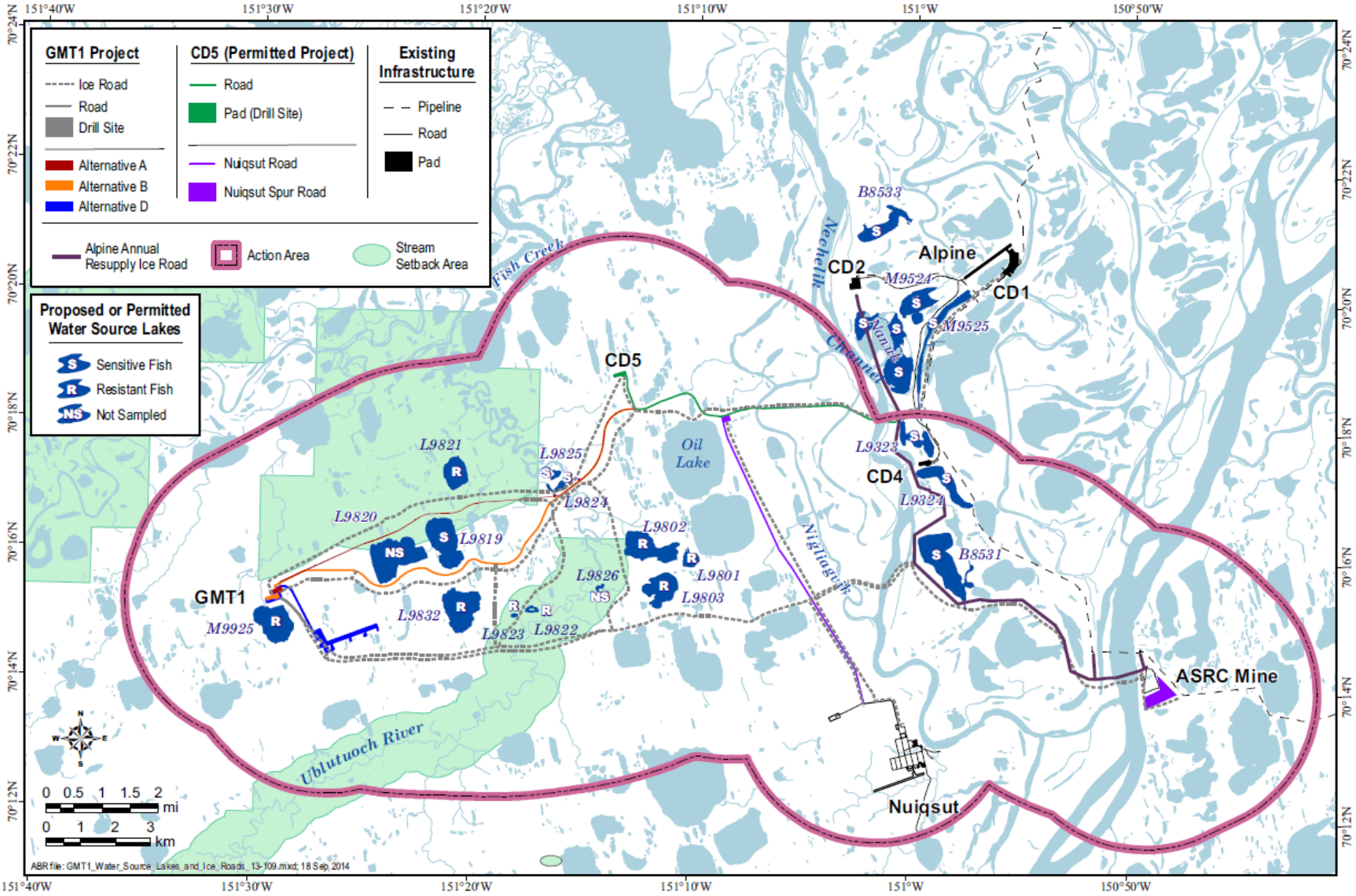


Figure 2. Ice road routes and potential water source lakes for GMT1 project alternatives. From ABR (2014).

6 Effects of the Action

Regulations implementing the ESA (50 CFR §402.02) define the "effects of the Action" as the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that Action. The IAP BO (USFWS 2013) provides a comprehensive analysis of the possible effects of the development scenario, including effects of satellite oil production developments such as GMT1. Because 1) we tier this effects analysis for GMT1 to the analysis in the IAP BO (USFWS 2013, pp. 63-89, 94-96), and 2) our primary goal is to verify that the "no jeopardy" conclusion in the IAP BO (USFWS 2013, pp. 98-99) is also appropriate for GMT1, this analysis only describes effects of GMT1 that may adversely affect spectacled eiders and polar bears. Please see the IAP BO (USFWS 2013, pp. 63-89, 94-96) for a broader discussion of possible effects to threatened species resulting from satellite oil production developments within NPR-A.

6.1 Spectacled Eiders

Based on our analysis for satellite oil production developments in the IAP BO (USFWS 2013) and our review of the Proposed Action for GMT1, we determined that the following factors may cause adverse effects to spectacled eiders:

- Habitat loss with associated increased disturbance, displacement, and predation, and
- Collisions.

In the sections below, we describe how these factors could affect the reproductive potential of spectacled eiders and estimate this lost productivity. Regardless of the alternative selected, the BLM will require CPAI to adhere to many BMPs and lease stipulations, while potentially allowing deviations from some of these BMPs and lease stipulations. The specific deviations granted would vary according to the alternative selected. Thus, we also briefly describe the impact of allowing the deviations listed in the *Proposed Action* section.

We evaluated the effects of oil and other toxic substance spills on spectacled eiders in the IAP BO (USFWS 2013, pp. 77, 98) and concluded that adverse effects to spectacled eiders are unlikely to occur due to the low probability of large spills occurring and because spectacled eiders are unlikely to contact small spills. BMPs, lease stipulations, and development setbacks from the coast reduce the likelihood of a significant quantity of oil spilled in NPR-A reaching concentrations of spectacled eiders in marine waters. Because the deviations the BLM may grant could affect spill risk in aquatic habitats, we discuss their potential impacts in section captioned *6.1.3 Effects of Best Management Practices and Lease Stipulations*.

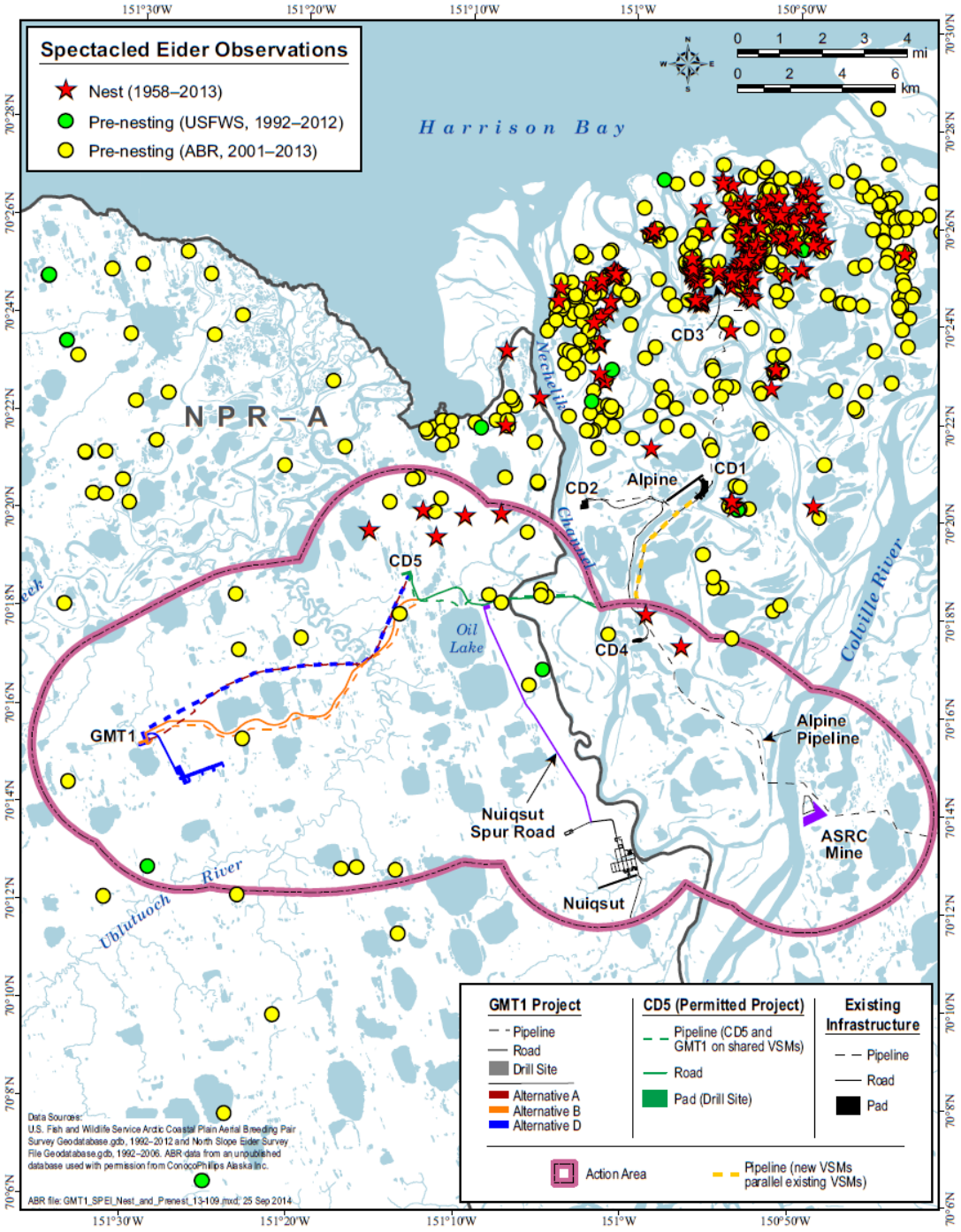


Figure 3. Locations of spectacled eiders from pre-nesting aerial surveys and ground-based nest surveys conducted in the area of GMT1. Aerial surveys were conducted at 50% coverage in NE NPR-A, 2004-2006, 2008–2013, and 100% coverage on the Colville River Delta, 2004–2013. Nest searches were not conducted uniformly over the area. Nest searches were conducted at Alpine during 1995–2001, CD4 during 2000–2002, and CD3 during 2000–2007 and 2009–2013. From ABR (2014).

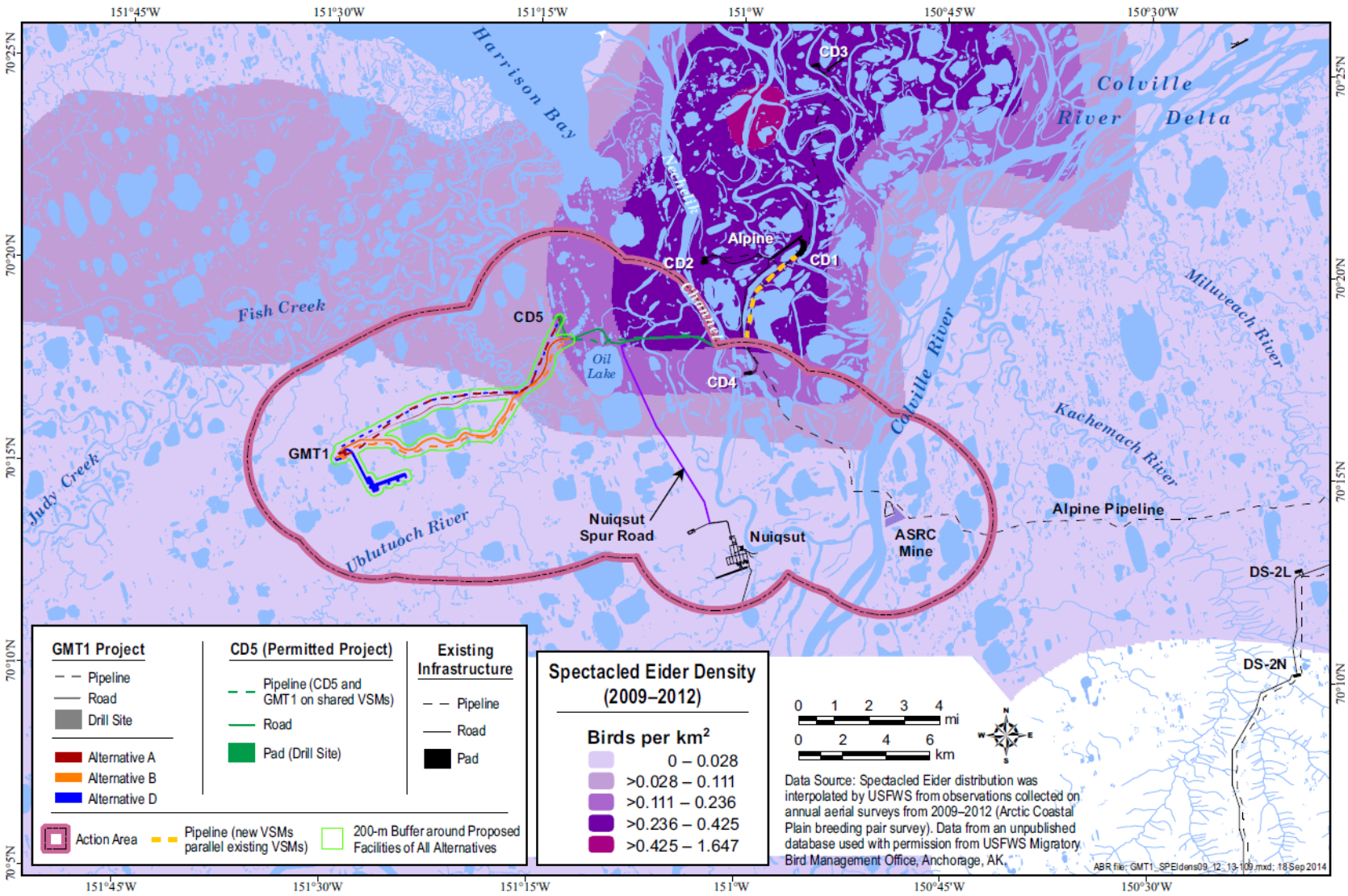


Figure 4. Estimated densities of pre-nesting spectacled eiders from U.S. Fish and Wildlife Service Arctic Coastal Plain surveys, 2009-2012, in the GMT1 Action Area. From ABR (2014).

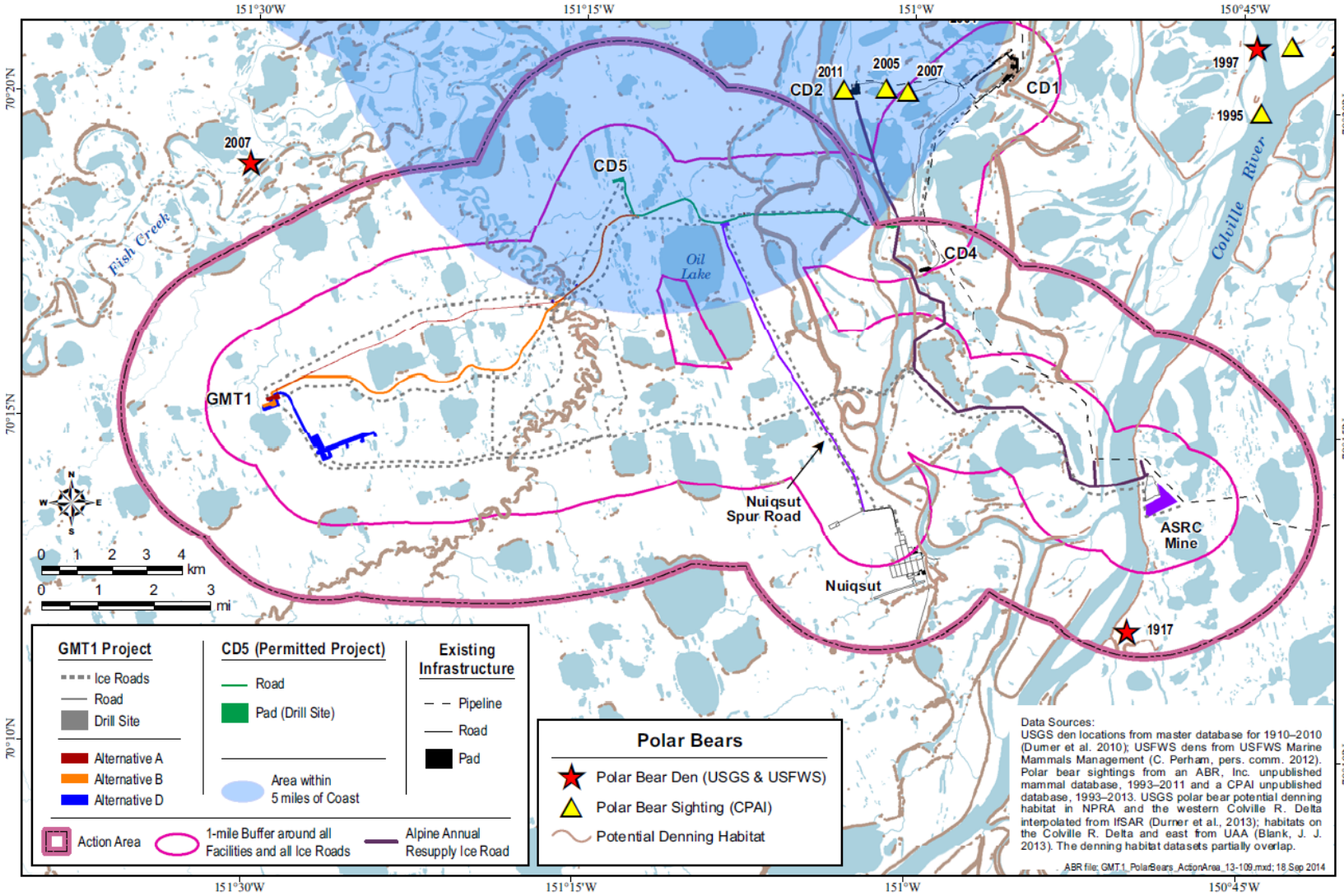


Figure 5. Potential terrestrial polar bear denning and 1-mi potential disturbance zone around alternative infrastructure types in the GMT1 Action Area. From ABR (2014).

6.1.1 HABITAT LOSS

Because spectacled eider density varies across the Action Area (Figure 4), so do the impacts of habitat loss from gravel pads, roads, and material sites. Assuming the gradient in observed density of spectacled eiders (Figure 3) reflects a gradient in habitat quality, and that displacing birds from preferred habitat reduces their reproductive potential, placing fill in areas used by breeding and brood-rearing spectacled eiders would compromise their reproductive potential. The BLM estimated that the Proposed Action would result in the long-term loss of 8.23, 8.11, and 7.77 km^2 in the Action Area for Alternatives A, B, and D1, respectively (Table 5, Table 6), due to fill (e.g., for gravel pads and roads) and associated disturbance in adjacent habitat. Most of the GMT1 Action Area is within a low-density contour for pre-nesting spectacled eiders (Figure 4). We estimate lost productivity of spectacled eiders that could result from the three alternatives in the section captioned *6.1.1.3 Estimated Loss of Spectacled Eider Production*.

Temporary habitat loss for eiders could also result from GMT1. Accumulated snow from ice roads, plowing activities, or unnatural snow drifts could melt slowly and could preclude spectacled eiders from nesting in those areas. Ice roads, pads, and airstrips could also compact vegetation, which could reduce cover for nesting spectacled eiders. The most noticeably-affected areas would include terrain with considerable micro topographic relief caused by mounds, tussocks, hummocks, and high-centered polygons. These areas are used by spectacled eiders for nesting and loafing. Wet areas would be less likely to be affected than drier sites (Walker 1996). However, vegetation generally recovers from this temporary impact within a few years (Yokel et al. 2007). Taking into consideration recovery time for vegetation in affected areas, at any given time, tens (of potentially millions) of acres might have reduced quality for spectacled eiders in the GMT1 Action Area, but we expect the reduction in habitat quality to be minimal and the duration to be short-lived.

6.1.1.1 Disturbance and Displacement

Oil development activities that may result from the Proposed Action could disturb spectacled eiders and potentially prevent them from initiating nests or displace them from preferred nesting habitat. For example, pre-nesting spectacled eiders (observed in groups or pairs) were located an average of 239 m from structures, whereas nests were found an average of 442 m from structures near the Alpine development (Anderson et al. 2007), and the distance between pre-nesting spectacled eiders and the location of Alpine oilfield structures before and after construction did not differ (Johnson et al. 2006). We can infer from this example that nesting birds may be more sensitive to activities occurring at infrastructure than pre-nesting birds, and habitat near facilities may have a lower nesting value compared to distant areas. The severity of disturbance and displacement will likely depend upon the duration, frequency, and timing of the disturbing activity. Gravel mining, material hauling, pad, road, and pipeline construction, and pipeline maintenance are all expected to occur in winter and therefore will not disturb spectacled eiders. However, once pads, staging areas, and roads are constructed these areas will be subject to year-round human activities, including drilling (from 2017-2021), machinery, and facility noise, and vehicle traffic during the breeding, nesting, and brood-rearing periods. Frequent fixed-wing and helicopter flights will also occur, with the highest number of flights occurring if the BLM selects Alternative D1.

Disturbance during the nesting and brood-rearing period (approximately June 5 - August 15) could adversely affect individuals by: 1) displacing adults and or broods from preferred habitats

during pre-nesting, nesting, and brood rearing, leading to reduced foraging efficiency and higher energetic costs; and 2) flushing females from nests or shelter in brood-rearing habitats, exposing eggs or ducklings to inclement weather and predators. Hens may also damage eggs as they are flushed from a nest (Major 1989), and may abandon nests entirely, particularly if disturbance occurs early in the incubation period (Livezy 1980, Götmark and Ähnlund 1984). Individual tolerance and behavioral response of spectacled eiders to disturbance will likely vary, and the effect of disturbance would vary with facility type; for example, the GMT1 pipelines may have less activity around them than the drilling pad and thus may have less impact. Thus, estimating loss of nesting habitat from disturbance is difficult. Based on best judgment and conservative estimates to benefit the species, we estimate nesting behavior may be disrupted and/or displaced by human activities within 200 m of active facilities.

6.1.1.2 Predators

The effects of predators on spectacled eider reproduction in the Action Area are extremely uncertain, and we are unable to estimate eider productivity effects with any reliability. We expect structures associated with the Proposed Action to increase the number of potential nesting and perching sites for ravens and increase availability of anthropogenic food and nesting/denning resources for predators. We assume that the 200 m zone (for disturbance) included in that calculation of habitat loss for structures also incorporates most potential losses from predators. Thus, we conclude there will be no additional egg or subsequent recruitment losses from predation for spectacled eiders.

6.1.1.3 Estimated Loss of Spectacled Eider Production

We estimated lost productivity of spectacled eiders due to habitat loss for the three alternatives evaluated for GMT1. For each alternative, we calculated this loss annually and for the 32 years of the project (Table 5, Table 6). Lacking a more precise estimate of density in the Action Area, we used the weighted mean of median density estimates from Service surveys (Table 5) as the area-specific density for calculating potential displacement and loss to disturbance. Here, we follow the same logic and assumptions used in the IAP BO (USFWS 2013, pp. 66-71). We assume that project disturbance and direct habitat loss would result in a loss or displacement of nests within that area, but would not result in the loss of adult birds. The area affected includes the habitat permanently lost to the gravel footprint and the area within the 200 m disturbance zone (Table 5, Table 6). We also assume that the number of nests is half the number of indicated total birds recorded on pre-nesting surveys (i.e., one nest for every two birds). Below is an example calculation of annual and life-of-project loss or displacement within 200 m of the gravel footprint based on Alternative A:

Annual

0.03911 indicated birds/km² × 8.23 km² = 0.322 birds/year

0.322 birds/year × 0.5 nests/indicated bird = 0.161 nests/year

Life of Project (2 years construction + 30 years of operation)

32 years × 0.161 nests/year = 5.15 nests

We estimate that on average the project may result in the loss of fewer than one nest annually. Assuming the life of the project is 32 years, three to five nests could be lost over that entire period (Table 6) depending on the alternative selected. We believe these estimates are likely to be conservative overestimates of actual impacts for the following reasons:

1. The 200 m zone around GMT1 is composed primarily of habitats avoided or not used by spectacled eiders for nesting (moist tussock tundra and moist sedge–shrub meadow total 62–74% of the area depending on alternative, Table 11 in ABR 2014);
2. Spectacled eiders can nest successfully within 200 m of active gravel roads, pads, and airstrips (results of CD3 eider studies in Johnson et al. 2008); and
3. Inherent in this approach is the assumption that spectacled eiders displaced by habitat loss or disturbance do not nest successfully elsewhere, which is supposition for the purposes of estimating potential impacts.

6.1.2 COLLISIONS

ABR (2014) identified the drilling rig, a communication tower, and one or two light masts as potential collision risks. Vehicles could pose an additional collision risk (USFWS 2013; for Alternatives A and B only). However, all structures have narrow profiles and lack guywires, which should reduce their risk of causing collisions. To adhere to the BLM's BMP E-10, lights on tall structures would be shielded and pointed downward to minimize attraction and confusion of passing birds. While vehicle collisions could occur, we expect them to occur rarely and affect at most very few individuals.

Despite BLM's BMPs and lease stipulations (BLM 2013), collisions resulting from GMT1 may occur. Collisions could lead to injury (e.g., concussions, wounds, broken bones, internal bleeding) or death. Because we expect few spectacled eiders to migrate through or to nest and rear broods in the GMT1 Action Area, we expect very few eiders to collide with structures in the Action Area.

Table 5. Spectacled eider mean density estimated from density polygon weighted averages in disturbance zones (200 m) around GMT1 alternatives. Spectacled eider density base map of is based on USFWS unpublished data, 2009-2012. Adapted from ABR (2014).

	Alternative A			**Alternative B**			**Alternative D1**		
Median density point[a]	Area (km^2)[a]	Proportion of Area[b]	Weighted density[c]	Area (km^2)	Proportion of Area[b]	Weighted density[c]	Area (km^2)	Proportion of Area[b]	Weighted density[c]
0.014	5.47	0.66	0.0092	5.81	0.72	0.010	5.84	0.75	0.011
0.070	2.27	0.28	0.0195	1.94	0.24	0.017	1.68	0.22	0.015
0.174	0.49	0.06	0.0104	0.36	0.04	0.007	0.26	0.03	0.005
Total	*8.23*	1.00		*8.11*	1.00		*7.77*	1.00	
Mean density[d]			**0.040**			**0.034**			**0.031**

[a]Median point within range of indicated birds/km^2. See Figure 4.

[b]Area of each polygon calculated in GIS by ABR.

[c]Weighted density (indicated birds/km^2) = median density point polygon x proportion of area.

[d]Mean density = sum of weighted densities.

Table 6. Estimated loss of spectacled eider nests among alternatives using mean density estimates of pre-nesting spectacled eiders from USFWS density polygons (2009-2012) in the GMT1 disturbance zone (200-m zone). Adapted from ABR (2014).

			Annual Loss Estimate		**Total Loss Estimate**		
Alternative	Median Density[a]	Area (km^2)[b]	Birds/year[c]	Nests/bird	Nests/year[d]	Project Lifespan[e]	Nests[f]
A	**0.040**	*8.23*	0.322	0.5	0.16	32	5.15
B	**0.034**	*8.11*	0.273	0.5	0.14	32	4.37
C	**0.031**	*7.77*	0.241	0.5	0.12	32	3.85

[a]Median weighted point within range of indicated birds/km^2. See bold numbers in Table 5.

[b]Total area within the 200-m disturbance zones calculated in Table 5 (*see italic numbers*).

[c]Birds/year = density x area

[d]Nests/year – birds/year x 0.5 nests/bird

[e]Assumes 2 years of construction + 30 years of operation

[f]Number of nests lost =nests/year x 32 years

6.1.2.1 Estimate of Collision Risk

Most reported collisions associated with oil and gas developments on the North Slope of Alaska have occurred with offshore structures or those along the coast during autumn (molt) migration (Service unpubl. data). These coastal structures pose a greater risk of collisions to spectacled eiders than inland structures because most spectacled eiders are thought to migrate offshore (http://alaska.usgs.gov/science/biology/seaducks/spei/2009_spei_animation.php) during autumn. Structures on the drilling pad likely pose the greatest collision risk to spectacled eiders due to their height. Project plans place the drilling pad in the southern portion of the Action Area and several miles from the coast away from the typical migration path of spectacled eiders (Figure 1). Thus, we anticipate the collision risk of structures associated with GMT1during autumn migration is low. Additionally, 24-hour daylight during spring would increase structure visibility and would minimize the likelihood of collisions during spring migration.

The drilling rig poses the greatest risk of collision in all three alternatives due to its height and relatively large profile compared to the proposed communication tower and light masts. The drilling rig would be in place from 2017 through 2021. An estimate of the proportion of spectacled eiders vulnerable to collisions with this structure would help us assess collision risk with this structure, but no specific data on spectacled eider collisions are available. Thus, using the method described in the IAP BO (USFWS 2013, pp. 73-75), we used an estimate of the proportion of the North Slope spectacled eider population migrating past the human-built Northstar Island in the Beaufort Sea and the estimated proportion of the North Slope population of common eiders (*Somateria mollissima*) that collided with structures at Northstar Island to estimate this vulnerability. We estimate that less than one spectacled eider may collide with the GMT1 drilling structure while the drilling rig would be in place (from 2017-2021). We believe this is likely a significant overestimate because the calculation is based on reported collisions in the marine environment where collision risk is likely to be higher than at inland locations (such as GMT1), and where spectacled eiders are unlikely to migrate frequently.

GMT1 may pose some risk to locally-nesting or produced spectacled eiders. However, spectacled eiders occur in the Action Area in very low density during the pre-nesting and nesting periods (Figure 4). Thus, the drilling rig poses a very small collision risk to locally-nesting or produced spectacled eiders.

Combining the risk of collisions of autumn migration, spring migration, and locally-nesting or produced spectacled eiders, we roughly estimate that one spectacled eider may collide with the drilling rig at GMT1 while it is in place (from 2017-2021).

6.1.3 Effects of Best Management Practices and Lease Stipulations

As discussed in the IAP BO (USFWS 2013), the BLM would require adherence to almost all of the NPR-A IAP ROD's (BLM 2013) BMPs and lease stipulations, several of which benefit spectacled eiders. In order for either Alternative A or Alternative D1 to be implemented, the BLM would have to grant deviations to A-5, E-7a, E-7(c) and K-1(e). Implementation of Alternative B would require BLM to grant deviations to E-2 and E-7(c). While deviations to E-7(a) and E-7(c) would not impact spectacled eiders, deviations to A-5, E-2, K-1(e), and K-1(g) could slightly increase the risk of oil reaching the marine environment, should a large spill occur.

In spring and autumn, spectacled eiders congregate in ice-free marine waters such as those offshore of river deltas. Spectacled eiders contacting spilled oil could suffer injuries or die.

Based on the large spill scenario analysis in the FSEIS (BLM 2014), large oil spills are unlikely to occur for any alternative. However, the probability of oil reaching the coast is slightly higher for Alternative A than Alternative B, should a large oil spill occur from the pipeline in the ice-free season because the pipeline in Alternative A is slightly closer to the coast, is within a watershed that drains directly into the marine environment, and crosses two rivers. However, selecting Alternative A would not increase the likelihood of a large spill occurring. Thus, the low probability of a large oil spill occurring from a pipeline makes it highly unlikely spectacled eiders would be affected by the deviations.

As explained previously, the deviation to the Fish Creek Exclusion in Alternative A would result in habitat loss for spectacled eiders, but only slightly more than what is estimated for Alternatives B and D1 (Table 5, Table 6).

6.2 Polar Bears

Based on our analysis for satellite oil production developments in the IAP BO (FWS 2013) and the Proposed Action for GMT1, we determined that the following factors may cause adverse effects to polar bears:

- Oil spills
- Disturbance
- Human-polar bear interactions

In the sections below, we describe how these factors could affect polar bears and estimate the number of polar bears potentially affected by them. Regardless of the alternative selected, the BLM will require adherence to many BMPs and lease stipulations and will allow a few deviations from these BMPs and lease stipulations. The specific deviations granted would vary according to the alternative selected. Thus, we also briefly describe the impact of allowing the deviations listed in the *Proposed Action* section.

6.2.1 Oil Spills

In the IAP BO (USFWS 2013, p. 99), we concluded that given the low probability of a large oil spill combined with the infrequent occurrences of polar bears in NPR-A, it is highly unlikely that polar bears would be affected by oil spills in NPR-A should spills occur. Likewise, we do not expect polar bears would be affected by spills within the GMT1 Action Area should spills occur. We continue the discussion of the impacts of oil spills as it pertains to the proposed deviations to BMPs in section *6.2.4 Effects of Best Management Practices and Lease Stipulations*.

6.2.2 Disturbance

Several activities that would occur at GMT1 could disturb polar bears. Possible sources of disturbance could include aircraft, drilling activities, activity at facilities, pipeline construction and maintenance, and gravel and ice road construction and associated vehicle traffic. These disturbances could affect denning and non-denning polar bears.

6.2.2.1 Denning Bears

Under all alternatives, the greatest potential for disturbance to denning polar bears would be during construction in the winters of 2015/2016 and 2016/2017 when noise and activity levels would be greatest. The effect of disturbance at dens diminishes with distance and is thought to be negligible beyond 1.6 km (1 mi) (76 FR 47010). During the first winter, the area of potential maternal denning habitat occurring within 1.6 km (1 mi) of ice roads and facilities is 76–95 ha depending on alternative (Table 7, Figure 5), with only 3.5–9 ha occurring within 8 km of the coastline where denning is most likely (Table 7, Figure 5). The amount of potential denning habitat within 1.6 km of ice roads and facilities is lowest for Alternative D1 and highest for Alternative A, corresponding with the length and location of ice roads in each alternative (Table 7, Figure 5).

During the second winter, the length of ice roads decreases under Alternatives A and B and increases under Alternative D1 (Table 7, Figure 5). Although ice road lengths are the same for Alternatives A and B (58 km), their routes differ and thus are near slightly different amounts of potential denning habitat. Similar areas of denning habitat (88–89 ha) are within 1.6 km of ice roads and facilities under Alternatives A and B in 2016/2017 (year 2), whereas slightly more (92 ha) habitat is within 1.6 km of ice roads and facilities under Alternative D1. Within 8 km of the coastline, where the likelihood of denning is greater, the amount of potential denning habitat within 1.6 km of the ice roads and facilities ranges from 12 to 15 ha; the areal extent is lowest for Alternative B and equivalent for Alternatives A and D1.

During the operational phase of GMT1 (beginning in winter 2017), short annual ice roads would connect GMT1 to the Alpine annual resupply ice road for Alternatives A and B and a longer ice road would be required for Alternative D1 (Table 4). During operations, the areal extent of potential denning habitat with 1.6 km of ice roads, gravel roads, and pipelines is 28, 30, and 81 ha under alternatives A, B, and D1, respectively, although under all alternatives only 3.5 ha of this occurs within 8 km of the coast, where the likelihood of denning is greater.

Regardless of the alternative selected, few if any polar bear dens are likely to be affected by construction and operation of GMT1 because the Action Area is inland from the coast where polar bears occur infrequently, the construction period is short, and because gravel and ice roads cross relatively small areas of potential denning habitat. In addition, the BLM and Service will require CPAI to adhere to minimization measures as described in the IAP BO (USFWS 2013, Appendix A) and explained in sections captioned *6.2.4 Effects of Best Management Practices and Lease Stipulations* and *6.2.5 Minimization measures pursuant to the Marine Mammal Protection Act* below.

Table 7. Areal extent of potential denning habitat for polar bears within 1.6 km (1 mi) of ice roads and facilities by alternative, year, and proximity to coastline for GMT1 (see Figure 12 for map of combined alternatives). From ABR (2014).

	Ice road length (km)	Potential denning habitat[a] (ha)	Ice road length within 8 km of coast[b] (km)	Potential denning habitat within 8 km of coast[a,b] (ha)
Alternative A				
2015/2016	69	95	7	9
2016/2017	58	89	16	15
Operations	35	28	2	3.5
Alternative B				
2015/2016	72	94	7	9
2016/2017	58	88	16	12
Operations	37	30	2	3.5
Alternative D1				
2015/2016	53	76	7	3.5
2016/2017	58	92	16	15
Operations	39	81	2	3.5

[a]Potential polar bear denning habitats mapped in NE NPR-A by USGS from digital elevation models using IfSAR data (Durner et al. 2013) and on the Colville River delta (Blank 2013)
[b]95% of terrestrial maternal dens along this part of the Beaufort Sea coast occur within 8 km (5 mi) of the coastline (75 FR 76086–76137)
[c]Beginning 4th quarter 2017 for approximately 30 years; includes 1.6 km (1 mi) buffer of gravel footprint, pipelines and annual ice roads. Length calculated from cumulative length of gravel roads, pipelines, plus annual ice roads

6.2.2.2 Non-denning Bears

Transient (non-denning) polar bears tend to move along the coast during the late summer–fall open water season and congregate on barrier islands where whale carcasses and other food is available (Miller et al. 2006, Schliebe et al. 2008). To illustrate, only three polar bear sightings have been recorded around Alpine CD1 and CD2 (approximately the same distance from the coast as GMT1) since 1998 (Figure 5, ABR 2014). Thus, we expect very few polar bears would enter the GMT1 Action Area given its inland location. However, if polar bears pass through the Action Area, human-polar bear interactions possibly leading to deterrence actions may occur. We expect the likelihood of interactions to increase with decreasing distance from the coast. In the IAP BO (USFWS 2013, pp. 82-89) we estimated that about 15% of polar bear interactions in NPR-A would result in deterrence actions and that in most cases, the actions would cause only minor, temporary behavioral changes (e.g., causing the bear to flee). We describe these potential deterrence actions below.

6.2.3 Human-polar Bear Interactions

Information regarding human-polar bear interactions occurring at oil and gas developments across the North Slope indicates that the Proposed Action may result in deterrence actions. CPAI maintains a database of polar bear observations (Appendix F in ABR 2014). The 114 records comprise 155 animals (excluding identifiable multiple observations of the same animals). Of these 114 observations and encounters, 35 (31%) involved deterrence events with 51 individual polar bears deterred. Frequently, deterrence was accomplished with more than one type of deterrent; therefore, the sum of all deterrent types exceeds the total number of deterrence

events: 22 deterrence actions involved vehicles, 15 involved noise (horns, sirens, etc.), and 18 involved firearms with non-lethal rounds (18 with cracker shells, two with bean bag rounds), and one involved a spotlight. None of the deterrence actions for CPAI resulted in severe injury or death of polar bears[1].

Thus, we expect that most deterrence events would not involve the use of projectiles and are likely to cause only minor, temporary behavioral changes (e.g., forcing a bear to leave the area). Potential effects of deterrence actions to individual bears likely vary with a bear's physiological and reproductive condition, and the number, type, and duration of deterrence actions used. In the unlikely event that bears are deterred using more aggressive methods (e.g., projectiles such as bean bags and rubber bullets), those bears may be injured (e.g., pain and bruising).

Very rarely, these deterrence actions may be fatal if the projectiles are used incorrectly. In the IAP BO (USFWS 2013, p. 89), we estimated that up to five deterrence events using projectiles may occur annually as a result of the Proposed Action, with no more than five fatalities to polar bears occurring during the 50-year life of the full development scenario. However, predicting the number of deterrence events for individual projects such as GMT1 is difficult. However, given distance from the coast, we expect the use of projectiles would occur fewer than once annually, with up to two injuries and no fatalities over the life of the project.

6.2.4 Effects of Best Management Practices and Lease Stipulations

As discussed in the IAP BO (USFWS 2013), the BLM would require adherence to almost all of the NPR-A IAP ROD's (BLM 2013) BMPs and lease stipulations, several of which benefit spectacled eiders. In order for either Alternative A or Alternative D1 to be implemented, the BLM would have to grant deviations to A-5, E-7a, E-7(c) and K-1(e). Implementation of Alternative B would require BLM to grant deviations to E-2 and E-7(c). While deviations to E-7(a) and E-7(c) would not impact spectacled eiders, deviations to A-5, E-2, K-1(e), and K-1(g) could slightly increase the risk of oil reaching the marine environment, should a large spill occur. Polar bears use the coastal environment and could transit the Fish Creek area. Polar bears contacting spilled oil could suffer injuries or die.

Based on the large spill scenario analysis in the FSEIS (BLM 2014), large oil spills are unlikely to occur for any alternative. However, the probability of oil reaching the coast is slightly higher for Alternative A than Alternative B, should a large oil spill occur from the pipeline in the ice-free season because the pipeline in Alternative A is slightly closer to the coast, is within a watershed that drains directly into the marine environment, and crosses two rivers. However, selecting Alternative A would not increase the likelihood of a large spill occurring. Thus, the low probability of a large oil spill occurring from a pipeline makes it highly unlikely polar bears would be affected by the deviations associated with selecting Alternative A.

6.2.5 Minimization measures pursuant to the Marine Mammal Protection Act

The Service has issued Incidental Take Regulations (ITRs) for the Beaufort Sea and adjacent areas under the MMPA for oil and gas activities since the early 1990s. Oil and gas companies

[1] One deterrence event in 2011 associated with BP Exploration, Alaska resulted in an unintended fatality of a polar bear.

can obtain Letters of Authorization (LOAs) under the ITRs, and these LOAs require adherence to an approved polar bear interaction plan. CPAI has obtained an LOA pursuant to the Beaufort Sea ITRs that authorizes incidental take of polar bears for its oilfields and activities on the North Slope. The Service also issues LOAs for intentional take of polar bears that authorize specific methods of deterring polar bears, and like LOAs for incidental take, intentional take LOAs require adherence to an approved interaction plan. CPAI has obtained LOAs for their various oilfield projects to date. These LOAs will expire before the end of the development lifespan of this project, but we assume that CPAI will obtain new LOAs in the future. Based on the record of the oil and gas industry as a whole and CPAI in particular, we expect that potential impacts of GMT1 on polar bears will be minimized through adherence to their approved interaction plan.

7 Cumulative Effects

Regulations implementing the ESA (50 CFR §402.02) define "cumulative effects" as the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the Action Area. Within the GMT1 Action Area, future oil and gas development, scientific research, and community growth will likely occur. However, these activities would require Federal permits (e.g., from the BLM and USACE) and separate consultation and therefore are not considered cumulative impacts under the ESA.

The new road and ice roads in Alternative A or B may improve access to areas used by subsistence hunters. The new road may increase access to areas used by waterfowl during the waterfowl subsistence hunting season. Although spectacled eiders are closed to hunting, they are occasionally taken by hunters. The new road and ice roads may also increase access for subsistence hunters to harvest polar bears. Promulgation of regulations that govern the subsistence harvest of migratory birds is a Federal action, as is the management of subsistence harvest of polar bears. These actions require separate consultation under the ESA and therefore are not considered cumulative impacts under the ESA.

8 Conclusion

Section 7(a)(2) of the ESA requires Federal agencies to ensure their activities are not likely to: (1) jeopardize the continued existence of any listed species, or (2) result in the destruction or adverse modification of designated critical habitat. Regulations that implement section 7(a)(2) of the ESA define "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, number, or distribution of that species" (50 CFR 402.02).

As stated in the *Introduction*, we tiered the effects analysis for GMT1 to that in the IAP BO (USFWS 2013, pp. 63-89, 94-96) because we determined that the Proposed Action described for GMT1 is within the scope of the development scenario described in the IAP BO (USFWS 2013, pp. 17-24). Thus, we (1) analyzed effects within the Action Area, and (2) assessed if the conclusion we reached in the IAP BO (USFWS 2013, pp. 98-99) – that the Proposed Action in the IAP BO (USFWS 2013) is not likely to jeopardize the continued existence of spectacled eiders and polar bears – is also appropriate for GMT1.

In evaluating the impacts of the Action to listed species, the Service identified adverse effects that may occur to spectacled eiders and polar bears in the GMT1 Action Area. We analyzed these effects in detail in the *Effects* section of this BO and summarized them below.

8.1 Spectacled Eiders

We discussed in the IAP BO (USFWS 2013, pp. 64-82) that spectacled eiders could be affected by several factors related to satellite oil production developments such as GMT1. In this BO for GMT1, we identified loss of nesting habitat (and associated disturbance and predation) and collisions as the factors most likely to adversely affect this species.

The BLM and USACE determined that 8.23, 8.11, and 7.77 km^2 of nesting habitat for spectacled eiders would be lost due to placement of fill and disturbance (within the 200 m disturbance zone) for GMT1 Alternatives A, B, and D1, respectively. Assuming a 200-m disturbance zone around gravel infrastructure, this habitat loss may result in the production loss of five, four, and four spectacled eider nests for Alternatives A, B, and D1, respectively, for the 32-year life of the project. We also estimated up to one spectacled eider may collide with structures while the drilling rig would be in operation (from 2017-2021).

8.1.1 Summary for Spectacled Eiders

We did not identify new factors for the Proposed Action of GMT1 that could cause adverse effects to spectacled eiders not previously considered in the IAP BO (USFWS 2013). The loss of up to five nests for GMT1 is lower than the 71 nests estimated for all of NPR-A in the IAP BO (USFWS 2013, pp. 68-69). In addition, the loss due to collisions of one spectacled eider during the 32-year project life of GMT1 is lower than the 401 estimated for the 50-year development scenario for NPR-A in the IAP BO (USFWS 2013, pp. 73-75).

8.2 Polar Bears

We discussed in the IAP BO (USFWS 2013, pp. 82-89) that polar bears could be affected by several factors related to satellite oil production developments such as GMT1. In this BO for GMT1, we identified disturbance and human-polar bear interactions leading to deterrence events as the factors most likely to adversely affect this species. Predicting the number of deterrence events for individual projects such as GMT1 is difficult. However, we anticipate the use of projectiles would occur fewer than once annually and up to two times for the 32-year life of the GMT1 development with no deterrence events resulting in deaths.

8.2.1 Summary for Polar bears

We did not identify new factors for the Proposed Action of GMT1 that could cause adverse effects to polar bears not previously considered in the IAP BO (USFWS 2013). The two deterrence events that could cause injury during the 32-year life of GMT1 are fewer than the 10 deterrence events that could lead to injury estimated for all of NPR-A in the IAP BO (USFWS 2013, p. 89). While we identified contact with oil or other toxic chemicals and misuse of firearms as factors that could cause adverse effects in the IAP BO (USFWS 2013, pp. 85-86), we do not expect these factors to cause adverse effects for GMT1.

8.3 Summary

For this BO we must verify that the conclusion for spectacled eiders and polar bears reached in the IAP BO (USFWS 2013, pp. 98-99) is also appropriate for GMT1. After considering the following:

1. The status of spectacled eiders and polar bears has not changed significantly since the IAP BO (USFWS 2013, pp. 25-31, 39-41)[2];
2. The Proposed Action for GMT1 is within the scope of the development scenario described in the IAP BO (USFWS 2013);
3. Proposed deviations would not cause adverse effects to spectacled eiders or polar bears;
4. We did not identify factors that could cause adverse effects to spectacled eiders or polar bears not previously considered in the IAP BO (USFWS 2013, pp. 63-89, 94-96); and
5. The adverse effects identified in this BO are caused by factors previously described in the IAP BO at levels well below the maximum estimated in its Conclusion (USFWS 2013, pp. 96-100),

it is the Service's biological opinion that the conclusion reached in the IAP BO (USFWS 2013, pp. 98-99) – that proposed Action is *not reasonably likely to jeopardize the continued existence of spectacled eiders and polar bears by reducing appreciably the likelihood of their survival and recovery in the wild by reducing their reproduction, numbers, or distribution* – is also the appropriate conclusion for the Proposed Action described for GMT1.

9 Estimated Incidental Take

Biological opinions often have an accompanying Incidental Take Statement. Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, but not for the purpose of, carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Because the BLM and USACE have not yet approved a development project for GMT1 to permit, and estimated effects to spectacled eiders vary among the development alternatives, we

[2] While writing this biological opinion, Bromaghin et al. (2014) pre-released a publication with a new population estimate for the Southern Beaufort Sea stock of polar bears. Previously, the population estimate for this stock was 1,526 polar bears (95% CI: 1,200-1,811; Regehr et al. 2006). The new estimate is 900 polar bears (90% C.I. 606-1,212). Polar bears are listed as threatened throughout their range under the Act; therefore, their status for the purposes of this biological opinion is their rangewide global status. Anticipated effects of the Proposed Action would likely impact only a small proportion of the worldwide population and would not cause population declines.

do not provide an Incidental Take Statement for spectacled eiders at this time. The estimated incidental take for GMT1 for spectacled eiders and polar bears is detailed below.

9.1 Estimated Incidental Take for Spectacled Eiders

9.1.1 Habitat Loss with Associated Increased Disturbance, Displacement, and Predation

Our estimates of incidental take are based on the acreage of gravel fill and the 200-m zone surrounding infrastructure, the lifetime of this infrastructure, and the density of spectacled eiders in the Action Area. Using the methodology described in the *Effects* section, we anticipate the following incidental take for the 32-year life of the project:

- Alternative A (and the USACE's Proposed Action): five nests,
- Alternative B: four nests, or
- Alternative D1: four nests.

9.1.2 Collisions

Our methods for estimating incidental take are described the *Effects* section for spectacled eiders. We estimated up to one spectacled eider may collide with the drilling rig during while it will operate (from 2017-2021). Given the inland location of proposed GMT1 structures compared to the principally marine autumn migration route of eiders and the comparatively small profile of structures within the path of migrating eiders, we likely significantly overestimated incidental take. Additionally, BLM's BMPs will likely reduce collision risk but to an unknown degree; thus, we have not adjusted our incidental take estimates to reflect this likelihood.

9.2 Estimated Incidental Take for Polar Bears

Based on records reported from previous human-polar bear operations, we estimate that:

- Up to two deterrence events that lead to injury (e.g., pain and bruising) during the 32-year life of development, but that do not cause severe injury or death

The process for authorizing take (incidental or intentional) for marine mammals such as polar bears differs from the process of authorizing incidental take of other threatened and endangered species. Although we have enumerated the extent of anticipated incidental take of polar bears, the Service is not authorizing incidental take of polar bears under the ESA in this BO. Consistent with the ESA and regulations at 50 CFR §402.14(i) Appendix (A), incidental take statements for marine mammals are not included in formal consultations until regulations, authorizations, or permits under the MMPA until regulations, authorizations, or permits under the MMPA are in effect. Because such take must first be authorized under the MMPA, incidental take under the ESA that results from actions conducted in compliance with all requirements and stipulations set forth in the MMPA authorization will be considered by the Service to also be authorized under the ESA. CPAI has obtained authorization under the MMPA for take of polar bears for their various oilfield projects on the North Slope to date. These LOAs will expire before the end of the development lifespan of this project, but we assume that CPAI continue to receive LOAs in the future.

10 Reasonable and Prudent Measures & Terms and Conditions

Reasonable and Prudent Measures (RPMs) and their implementing Terms and Conditions (T&Cs) aim to minimize the incidental take anticipated to result from the Proposed Action. As described above, activities resulting from GMT1 may lead to the incidental take of spectacled eiders through habitat loss, disturbance, and collisions. Because the Service expected that adherence to the lease stipulations and BMPs included in the IAP ROD (BLM 2013) would effectively minimize incidental take of spectacled eiders, the Service did not include RPMs and T&Cs in the IAP BO (USFWS 2013). However, the Service will include RPMs and T&Cs in the amended BO once the BLM and USACE select an alternative to permit. Both the USACE and the BLM would be responsible for implementation of the RPMs and T&Cs.

11 Re-initiation Notice

This concludes formal consultation on the Action described. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary BLM or USACE involvement or control over the action has been retained (or is authorized by law). Thus, the BLM and USACE must re-initiate consultation for GMT1 once a development plan is approved. The BLM and USACE must also re-initiate consultation if:

- Project plans for GMT1 are subsequently modified in a manner that causes an effect not considered in this biological opinion; or
- If a new species is listed or critical habitat is designated that may be affected by the Action.

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

12 Literature Cited

ABR. 2014. section 7 consultation for the polar bear, pacific walrus, spectacled eider, Steller's eider, and yellow-billed loon in the GMT1 project area. Prepared for ConocoPhillips Alaska, Inc. Anchorage, Alaska by Charles B. Johnson, Robert M. Burgess, and Jill-Marie Seymour at ABR, Inc.—Environmental Research & Services, Fairbanks, Alaska.

Amstrup, S.C., and C. Gardner. 1994. Polar bear maternity denning in the Beaufort Sea. Journal of Wildlife Management 58:1–10.

Anderson, B.A., R.J. Ritchie, A.A. Stickney, and J.E. Shook. 2007. Avian studies in the Kuparuk Oilfield, Alaska, 2006. Data Summary Report prepared for ConocoPhillips Alaska, Inc. and the Kuparuk River Unit, Anchorage, Alaska. 36pp.

BLM (U.S. Bureau of Land Management). 2004. Alpine Satellite Development Plan Final Environmental Impact Statement. U.S. Department of the Interior, Bureau of Land Management, with assistance from Minerals Management Service, Anchorage, AK.

BLM. 2012. National Petroleum Reserve-Alaska, Integrated Activity Plan/Environmental Impact Statement. Prepared by U.S. Department of the Interior Bureau of Land Management, Anchorage, Alaska

BLM. 2013. National Petroleum Reserve-Alaska, Integrated Activity Plan. Record of Decision. Prepared by U.S. Department of the Interior Bureau of Land Management, Anchorage, Alaska

BLM. 2014. Final Supplemental Environmental Impact Statement. Alpine Satellite Development Plan GMT1 Development Project. U.S. Department of the Interior, Bureau of Land Management, Anchorage, Alaska.

Bromaghin, J.F., T.L. McDonald, I. Stirling, A.E. Derocher, E.S. Richardson, E.V. Regehr, D.C. Douglas, G.M. Durner, T. Atwood, S.C. Amstrup. 2014. Polar bear population dynamics in the southern Beaufort Sea during a period of sea ice decline. Ecological Applications http://dx.doi.org/10.1890/14-1129.1

CPAI (ConocoPhillips, Alaska, Inc.). 2014. Request for Deviations to Lease Stipulations and Best Management Practices, GMT1 Development. Letter to the BLM Regional Office in Alaska.

Durner, G. M., S. C. Amstrup, and A. S. Fischbach. 2003. Habitat characteristics of polar bear terrestrial maternal den sites in Northern Alaska. Arctic 56:55-62.

Götmark F. and M. Ählund. 1984. Do field observers attract nest predators and influence nesting success of common eiders? Journal of Wildlife Management 48(2):381-387.

Harington, C.R. 1968. Denning habits of the polar bear (Ursus maritimus Phipps). Canadian Wildlife Service Report Series No. 5. 33 p.

Johnson, C. B., A. Zusi-Cobb, A. M. Wildman, A. A. Stickney, and B. A. Anderson. 2004. Biological assessment for Spectacled and Steller's eiders in the Alpine Satellite Development Project area. Report for ConocoPhillips Alaska, Inc., Anchorage, AK, and Anadarko Petroleum Corporation Anchorage, AK, by ABR, Inc., Fairbanks, AK. 119 pp.

Johnson, C. B., A. M. Wildman, J. P. Parrett, J. R. Rose, and J. E. Shook. 2006. Avian studies for the Alpine Satellite Development Project, 2005. Unpublished report prepared for ConocoPhillips Alaska, Inc., and Anadarko Petroleum Corporation, Anchorage, AK, by ABR, Inc., Fairbanks, AK. 38 pp.

Larned, W., R. Stehn, and R. Platte. 2012. Waterfowl breeding population survey, Arctic Coastal Plain, Alaska 2011. USFWS. Fish and Wildlife Service, Division of Migratory Bird Management, Anchorage, Alaska. August 21, 2012. 51 pp.

Lentfer, J.W., and R.J. Hensel. 1980. Alaskan polar bear denning. International Conference on Bear Research and Management 3:109–115.

Livezey, B.C. 1980. Effects of selected observer-related factors on fates of duck nests. Wildlife Society Bulletin 8(2):123-128.

Major, R.E. 1989. The effect of human observers on the intensity of nest predation. Ibis 132:608-612.

Mallek, E.J, R. Platte, and R. Stehn. 2007. Aerial breeding pair surveys of the arctic coastal plain of Alaska – 2006. Prepared by U.S. Fish and Wildlife Service, Anchorage, Alaska.

Miller, S., S. Schliebe, and K. Proffitt. 2006. Demographics and behavior of polar bears feeding on bowhead whale carcasses at Barter and Cross islands, Alaska, 2002–2004. Report for Minerals Management Service, Anchorage, Alaska, prepared by U.S. Fish and Wildlife Service, Anchorage, AK. 29 pp.

Regehr, E.V., S.C. Amstrup and I. Stirling. 2006. Polar bear population status in the Southern Beaufort Sea. Report Series 2006-1337, U.S. Department of the Interior, U.S. Geological Survey, Anchorage, Alaska. 20pp.

Schliebe S., K.D. Rode, J.S. Gleason, J. Wilder, K. Proffitt, T.J. Evans, and S. Miller. 2008. Effects of sea ice extent and food availability on spatial and temporal distribution of polar bears during the fall open-water period in the Southern Beaufort Sea. Polar Biology 31: 999-1010. DOI 10.1007/s00300-008-0439-7.

Stehn, R. A., W. W. Larned, and R. M. Platte. 2013. Analysis of aerial survey indices monitoring waterbird populations of the Arctic Coastal Plain, Alaska, 1986–2012. Unpublished report by Migratory Bird Management, U.S. Fish and Wildlife Service, Anchorage and Soldotna, AK. 56 pp.

USFWS (U.S. Fish and Wildlife Service). 2004. Final biological opinion for ConocoPhillips Alaska, Inc.'s (CPAI's) proposed Alpine Satellite Development Project (ASDP) located within the Colville River Delta and the eastern planning area of the National Petroleum Reserve-Alaska (NE NPR-A). Prepared by the Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska.

USFWS. 2013. Biological Opinion for the National Petroleum Reserve – Alaska Integrated Activity Plan, 2013. Prepared by the Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska.

USFWS. 2014a. Programmatic biological opinion for the Bureau of Land Management, activities between June 1 and October 4, 2014 in undeveloped areas of the National Petroleum Reserve-Alaska. Prepared by the Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska.

USFWS. 2014b. Intra-service biological opinion of U.S. Fish and Wildlife Service's issuance of a section 10 permit to ABR, Inc. for studies on the North Slope involving spectacled and Steller's eiders. Prepared by the Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska.

USFWS. 2014c. Intra-service biological opinion for hunting regulations for the 2014 spring/summer harvest. Consultation with the U.S. Fish and Wildlife Service – Migratory Birds Anchorage, Alaska. Prepared by the Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska.

USFWS. 2014d. Biological Opinion for the USFWS Region 7 Polar Bear and Pacific Walrus Deterrence Program, Marine Mammals Management Office Anchorage, Alaska. Prepared by the Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska.

Walker, M.D., C.H. Wahren, R.D. Hollister, [and others]. 2006. Plant community responses to experimental warming across the tundra biome. Proc. National Academy Science. 103:1342-1346.

Yokel, D., D. Huebner, R. Meyers, D. Nigro, and J. Ver Hoef. 2007. Offsetting versus overlapping ice road routes from year to year: impacts to tundra vegetation. BLM Alaska Open File Report 112. 22 pp.

Appendix A: Deviations Requested by CPAI by Alternative

(Text provided by BLM)

In a letter dated October 14, 2014, CPAI formally requested that BLM grant deviations to five stipulations/BMPs (See Final SEIS Appendix F). These deviations are already built into the design of CPAI's proposed project, Alternative A. Project alternatives assume granting of the applicable stipulations/ROP deviations.

Alternative A and Alternative D1 would require that BLM approve the following deviations from Stipulations and Required Operating Procedures (ROP):

1. ROP A-5 (Refueling within 500 feet of water bodies)
    - ROP A-5 prohibits the refueling of equipment within 500 feet of the active flood plains of water bodies.
    - This exception would have to be granted for the construction of the Crea Creek bridge. As the Ublutuoch River bridge is on Kuukpik land where BLM has no authorizations to apply stipulations.

2. Lease Stipulation E-2 (Facilities within 500 feet of water bodies)
    - The objective of Lease Stipulation E-2 is to protect fish-bearing water bodies, water quality, and aquatic habitats. In the 2013 ROD, BLM modified this Lease Stipulation to apply only to water bodies that are fish bearing.
    - Three named lakes (L9819, L9820, and L9824) fall within the 500-foot buffer.

3. E-7(a) and E-7(c) (elevation of pipeline less than 7 feet and less than 500 feet between pipelines and roads). *This deviation would not be needed for Alternative D1.*
    - Listed below are the accepted design practices:
        - Above ground pipelines should be elevated a minimum of 7 feet as measured from the ground to the bottom of the pipeline at vertical support members.
        - A minimum distance of 500 feet between pipelines and roads shall be maintained. Separating roads from pipelines may not be feasible within narrow land corridors between lakes and where pipelines and roads converge on a drill pad. Where it is not feasible to separate pipelines and roads, alternative pipeline routes, designs and possible burial within the road will be considered by the authorizing officer.
    - This alternative would require some lengths of pipeline less than 7 feet in order to bury the pipeline as it enters the pad as proposed in this alternative. .
    - There are places along this route where the pipeline and road cannot be separated by 500 feet due to the terrain characteristics.

4. ROP K-1(e) (Fish Creek setback)
    - A 3-mile setback from the highest high water mark of the creek downstream from the eastern edge of section 31, T11 N, R1 E., UM and a 2 mile setback from the banks highest high watermark further upstream.

- Deviation for 3.1 miles of road and pipeline placed in the Fish Creek setback would have to be approved.

Alternative B would require that BLM approves the following deviations from stipulations and Required Operating Procedures (ROP):

1. Lease Stipulation E-2 (Facilities within 500 feet of water bodies)
    - One named lake (L9824) falls within the 500-foot buffer.
2. E-7(c) (less than 500 feet between pipelines and roads)
    - There are places along this route where the pipeline and road cannot be separated by 500 feet due to the terrain characteristics.