



## **Emerald House Peregrine Exploration Program Public Comment Response February 2022**

### **Background**

The Bureau of Land Management (BLM) completed an Environmental Assessment (EA) for the five-year Peregrine Exploration Program (previously known as the AEA Peregrine Exploration Program) on January 15, 2021 (DOI-BLM-AK-R000-2021-0003-EA). The EA included winter access (by snow roads), drilling and testing of two exploratory wells (Merlin 1 and Harrier 1), two temporary camps, and associated activities (water use, fuel storage and ice pads) in the Emerald House lease block. During its development of the EA, BLM solicited and received public comments on the EA.

Implementation of the five-year Emerald House Peregrine Exploration Program began in the winter of 2020/2021 and consisted of exploratory drilling and testing of 1 well (Merlin 1) and surface activities to access and support exploratory drilling (including snow road and ice pad construction).

On September 17, 2021, prior to Emerald House submitting a Plan of Operations for its winter 2021/2022 proposed operations, the BLM received a letter signed by a group of 14 environmental organizations regarding the five-year Peregrine Exploration Program that began in early 2021. The letter requested the BLM re-examine the Exploration Program and outlined several concerns including threats to the climate, caribou, and subsistence users. The letter also identified the need for additional NEPA before future activities in the Exploration Program area were authorized.

On October 31, 2021, Emerald House submitted a Plan of Operations to the BLM for access and exploratory drilling and testing of one additional well (Merlin 2) in the same lease block as part of its 5-year Exploration Program during the winter of 2021/2022. Analysis of the project and development of a new EA began on November 24, 2021, and the project was posted to the BLM National NEPA Register.

The BLM also received a consolidated letter from a group of 13 environmental organizations on November 30, 2021, outlining concerns regarding the climate and greenhouse gas emissions and the NEPA process. The BLM took into consideration the September 17 and November 30, 2021 letters during development of the EA.

The new Emerald House Peregrine Exploration EA was completed on December 20, 2021 (DOI-BLM-AK-R000-2022-0004-EA) and analyzed drilling and testing the additional exploratory well

(Merlin 2) and associated surface activities during the winter of 2021/2022 in the Peregrine Exploration Program area.

After completion of the EA on December 21, 2021, the BLM received a letter signed by a group of 8 environmental organizations, who had been included on the September 17, 2021 letter, regarding the Peregrine Exploration Program. The BLM also received a letter on January 7, 2022, signed by a group of 9 environmental organizations (also included on the September 17, 2021 letter) expressing concerns regarding the adequacy of the EA.

In response to public interest with the project, the BLM opened a 14-day public comment period on the EA from January 21 through February 4, 2022. During the public comment period, 25 unique public comment submissions were received from environmental organizations and members of the general public. Additionally, a form comment submission was received from Friends of the Earth, containing 24,455 member signatures.

## Summary of Comments

This section provides a summary of the substantive issues raised in the public comments on the new EA and the BLM responses to these issues. Table 1 provides an overview of the topics included in this section and the number of comments received for each.

**Table 1 – Summary of Comments**

Substantive Comment Themes	Number of Comments	Number of Comments
NEPA	37	2
Public Participation	6	
Climate	23	1
Subsistence	3	
Caribou	10	
Endangered Species Act	6	
Marine Mammal Protection Act and Polar Bear	16	
Tribal Consultation	1	
Tundra Travel	1	
Water and Fish	11	
Human Health	4	
Vegetation	4	
Wastewater	4	
<b>Total</b>	<b>126</b>	<b>3</b>

## NEPA

There were numerous comments raising perceived deficiencies in the NEPA process, including inappropriate tiering to the 2020 National Petroleum Reserve in Alaska (NPR-A) Integrated Activity Plan (IAP) Environmental Impact Statement (EIS) and associated Record of Decision (2020 ROD), deficient direct, indirect and cumulative effects analysis, an inadequate range of alternatives, failure to analyze the impacts of the entire five-year program, and the need to develop an Environmental Impact Statement.

### Response

The analysis in the relatively recent 2020 IAP EIS remains adequate for the purposes of tiering the EA from it. In particular, the 2020 IAP EIS's analysis of impacts from exploratory drilling activities remains accurate and is substantively unaffected by new circumstances and information that has arisen since its completion. Additionally, the 2020 ROD, while currently under review by the Department of the Interior, remains in effect and thus the Required Operating Procedures (ROPs) adopted therein are currently applicable and properly apply to the Proposed Action. Regardless, even if the Department of the Interior were to revert to the 2013 NPR-A IAP ROD, its required Best Management Practices (BMPs), as relevant to the Proposed Action, are very similar to the current ROPs and provide substantively comparable protections.

In accordance with 40 CFR 1501.11 and 43 CFR 46.140, the analysis for the EA was tiered off the 2020 NPR-A IAP EIS and ROD, which together with the 2018 Supplemental EIS for the Alpine Satellite Development Plan for the Greater Mooses Tooth 2 Development Project and associated ROD were incorporated in their entirety by reference in accordance with 40 CFR 1501.12 and 43 CFR 46.135. The conditions and environmental effects described in the EISs are still valid.

Chapter 3 of the EA is project specific and analyzes the direct, indirect, and cumulative impacts of exploratory drilling and associated activities (including summer cleanup and inspections) for those resources where the activities could result in impacts beyond what could be considered minimal. Five potentially impacted resources were analyzed in the EA (Environmental Justice, Sociocultural Systems, Subsistence, Fish, and Vegetation). Table 3.1 of the EA identifies the past, present, and reasonably foreseeable projects that were considered and analyzed along with the Proposed Action to determine impacts to those resources potentially impacted by exploration and related activities. Reasonably foreseeable activities are those actions for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trend.

Table 3.1 of the EA lists other North Slope projects scheduled for winter 2021/2022 (i.e., the same winter for which the Merlin 2 well is proposed to be drilled). No actions under the Willow Master Development Plan will occur in winter 2021/2022 given that the project is currently suspended while BLM completes a Supplemental Environmental Impact Statement and associated analysis for the Plan. Resource specialists took into consideration "reasonably foreseeable development" activities, in the cumulative effects analysis of the EA. Section 3.2 of the EA identified that the overall impacts to access, abundance, and availability of subsistence resources (primarily furbearers and caribou) related to past, present, and *reasonably foreseeable*

*energy development projects* would likely be long-term and would persist as long as oil and gas development and operations continue on the North Slope. Activities from the Proposed Action, considered within the context of energy development in the project area, would not be expected to add any new significant impacts (to subsistence users or resources) within broader trends and what have been analyzed in the 2020 NPR-A IAP EIS. Section 3.4 of the EA states that cumulative effects from past, present, and reasonably foreseeable development activities within the area of Proposed Action would not be anticipated to substantially impact fisheries resources. The cumulative effects analysis in the 2020 NPR-A IAP EIS, which the EA is tiered to, discusses, and analyzes reasonably foreseeable development scenarios in the NPR-A, including the Willow Master Development Plan.

The 2020 IAP EIS evaluated various exploration and development related alternatives. As a result, the 2020 ROD includes decisions and ROPs that limit the potential range of exploration program alternatives. The EA is tiered to the broader alternatives analyzed in the 2020 IAP EIS and more specific alternatives evaluated in subsequent exploration EAs, which are incorporated by reference. Since the positioning of potential exploration wells must correspond with those locations where geophysical data would most likely delineate oil and gas reservoirs, variations in exploratory well sites are not typically practicable or economically feasible. The location of snow roads to access well sites is minimized (including in the EA) but this is dependent on water sources as well as the location of avoidance areas (such as sensitive habitats or cultural sites).

The BLM has analyzed many years of winter exploration projects in NPR-A. Within the analyses, various alternatives have been considered and eliminated from detailed analysis. In the winter 2020/2021 Peregrine Exploration Program EA, alternatives considered but eliminated included: airlifting equipment (rejected due to community concerns with aircraft disturbance, and cost) and an alternative Colville River crossing (rejected due to the need to avoid potential impacts to fish and habitat, and lease requirements). In that EA, an alternative considered but eliminated from detailed analysis included authorizing the applicant to drill fewer wells than included in the Plan of Operations or drill fewer wells per year over a more extended time period. This alternative was rejected as the extent of any commercial oil and gas prospects on the leases cannot be determined if the applicant is not allowed to drill the minimum number of wells needed to define prospective oil and gas deposits. Additionally, the enormous costs of exploration dictate that a reasonable operator would not drill unnecessary wells to meet the needs of its exploration program. Further, limiting the number of wells that can be drilled in any given winter and extending that drilling over a longer period of time increases the total sum of impacts.

An NPR-A oil and gas lease provides a lease holder the exclusive right to drill for, extract, remove and dispose of all the oil and gas from the lease tract, subject to conditions aimed at limiting environmental impacts. Restricting environmentally compliant exploration on existing valid leases in the NPR-A is counter to recommendations of the National Energy Policy and the Naval Petroleum Reserves Production Act, as amended.

The five-year Peregrine Exploration Program consists of the three wells (Merlin 1, Harrier 1, and Merlin 2), access, and related activities described and analyzed in the two Peregrine Exploration Program EAs (DOI-BLM-AK-R000-2021-0003-EA and DOI-BLM-AK-R000-2022-0004-EA). Although the EAs evaluated and analyzed the full scope of foreseeable impacts from the Peregrine five-year program as currently proposed, drilling and testing could result in additional

well sites proposed for drilling during the five-year program. To the extent the exploration program may in the future deviate from the proposed actions analyzed in the 2021/2022 EAs, for example by identifying additional proposed exploration wells or overland routes, additional environmental review may be necessary and could result in a supplemental EA being completed.

Table 1.1 of the EA shows all resources considered by BLM specialists during development of the Exploration Program EA. The expected effects from Minimally Impacted resources would be minimal, negligible, or already addressed by standard projections. Minimally Impacted resources would not have the potential for significant impacts. Potentially Impacted resources could result in impacts beyond what could be considered minimal or negligible and were further analyzed in the EA. Five potentially impacted resources (Environmental Justice, Sociocultural Systems, Subsistence, Fish, and Vegetation) were analyzed in Chapter 3. Environmental Justice, Sociocultural Systems and Subsistence were discussed under Issue 1 “*How would winter exploration and associated activities (including summer inspections and cleanup activities) impact subsistence users and local communities?*” Direct and indirect impacts of the Proposed Action along with cumulative effects of other activities (primarily energy development) in the region could alter the distribution and availability of harvestable resources (primarily furbearers) but would not significantly restrict subsistence uses beyond what has been described and analyzed in the 2020 NPR-A IAP EIS and associated Alaska National Interest Lands Conservation Act (ANILCA) Section 810 analysis. The 2020 NPR-A IAP EIS and associated ANILCA Section 810 analysis found that the impacts from fully implementing the IAP may significantly restrict the distribution and availability of subsistence resources (by displacement) as well as the abundance of resources, and access to resources by subsistence users.

Any effects to sensitive fish species at the four lakes of concern would most likely be local, impact only individual fish that occupy those lakes during winter and would not have an impact on the population level of sensitive fish species. The best available information indicates the probability of sensitive fish overwintering in the four lakes of concern would be low and potential impacts to sensitive fish would be minimal. The impacts to vegetation would be expected to be minimized by project design features and NPR-A IAP ROP C-2 that requires at least 6 inches of snow and soils frozen to a depth of 12 inches before snow road and pad construction could begin. Little environmental damage occurred during previous snow and ice road construction using the same protective measures as required for the Exploration Program. Since the impacts to fish and vegetation was found to be minimal, there would be no significant impacts to these resources. An Environmental Impact Statement is not required because no new significant impacts would be expected for Environmental Justice, Sociocultural Systems, and Subsistence, and impacts to all other resources (including fish and vegetation) were found to be minimal and less than significant.

## **Public Participation**

Some commentors expressed concerns about the adequacy of the BLM public participation process.

## **Response**

As is standard practice for NPR-A exploration projects, the winter 2021/2022 Peregrine Exploration Project (i.e., amendment to the 5-year Exploration Program, targeting the Merlin 2 well) was posted to the BLM National NEPA Register on November 24, 2021. The BLM National NEPA Register allows online review and comment of BLM planning and implementation projects and is closely tracked by environmental organizations and other stakeholders.

During development of the new EA, the BLM took into consideration comment letters received on September 17 and November 30, 2021, as well as comments received on the original EA for the Exploration Program completed on January 15, 2021 (DOI-BLM-AK-R000-2021-0003-EA). Due to continuing public interest in the project after the new EA was completed, the BLM accepted public comments on the EA, FONNSI, and Decision Record during a 2-week comment period from January 21 through February 4, 2022.

The BLM closely considered all substantive comments received during the public comment period and determined that no new substantive or relevant information was provided that had not already been considered. The BLM determined that no changes to the EA were warranted based on the additional comments received during the public comment period.

## **Climate**

Numerous comments were received regarding climate including consideration of direct, indirect, and cumulative climate impacts from greenhouse gas emissions due to oil and gas exploration, and the use of relevant climate science.

## **Response**

Section 2.3 of the EA acknowledges that the Exploration Program would result in emissions of greenhouse gases. The BLM evaluated the potential effects of the Exploration Program on climate change by estimating and analyzing potential greenhouse gas emissions based on past oil and gas development, existing development, and cumulative greenhouse gas emissions associated with BLM's oil and gas leasing actions. Compared to emissions from other existing and foreseeable federal oil and gas development, the emissions for the winter 2021/2022 Exploration Program would be approximately 0.000008 percent of the energy related emissions nationally and approximately 0.0012 percent of energy related emissions in the state.

Additional discussion of climate change science and predicted impacts, as well as the reasonably foreseeable and cumulative greenhouse gas emissions associated with BLM's oil and gas leasing actions, are included in the *BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends (2020)* (Annual GHG Report). This report presents the estimated emissions of greenhouse gases attributable to fossil fuels produced on lands and mineral estate managed by the BLM. The Annual GHG Report is incorporated by reference in the EA as an integral part of the analysis for the Exploration Program. A discussion of past, current, and projected future climate change impacts is described in Chapters 8 and 9 of the Annual GHG Report.

Exploration drilling is necessary to verify the presence of oil, but drilling may not result in discovery of potentially producible oil or gas resources. If a discovery is made, it may take years to conduct required studies and to develop design proposals before the project is ready to submit for development approval to the BLM and other agencies. Each phase of the decision-making process would require additional, site-specific environmental review (including analysis of greenhouse gases) and potential mitigation, as well as additional environmental protection measures.

## **Subsistence**

Some commentors expressed concerns with how the Peregrine Exploration Program would impact subsistence users.

## **Response**

Section 3.2 of the EA addresses how exploratory drilling and summer inspections and clean-up activities potentially impacts subsistence users and local communities. The analysis in Section 3.2 found that due to relatively stable harvest rates, and the historically low winter use of the project area for subsistence activities, the effects would not significantly restrict subsistence uses beyond what has been described and analyzed in the 2020 NPR-A IAP EIS. Impacts from summer inspections and cleanup activities using a helicopter could deflect caribou and disturb hunters but would be limited in time and duration (during July).

Winter exploration and summer activities would be anticipated to result in minor to moderate short-term impacts to subsistence users during both the winter and summer seasons, primarily associated with altered distribution and reduced winter availability of subsistence resources in areas where they are traditionally harvested (mainly furbearers).

The ANILCA Section 810 analysis found that there would be no reasonably foreseeable or significant decrease in the abundance of harvestable resources (caribou and furbearers) and no reasonably foreseeable or significant limitations on harvester access (for caribou and furbearers) from the Exploration Program.

## **Caribou**

Several commentors identified impacts to caribou from the Peregrine Exploration Program and that the project could lead to population level impacts to the Teshekpuk Caribou Herd.

## **Response**

Table 1.1 of the EA acknowledges that the project could disturb and displace wildlife from the immediate area of activities but would not reduce population levels or distribution during the winter season. The ANILCA 810 analysis found that there would be no reasonably foreseeable or significant decrease in the abundance of harvestable resources (caribou and furbearers) from the Exploration Program. Exploration activities would occur outside of caribou summer range and displacement of caribou (during summer and winter) would be temporary, lasting only the duration of the project.

Re-examination of the impacts to caribou from the Exploration Program and review of scientific literature did not change the conclusions in the EA. Wildlife, including caribou, would be minimally impacted from the Exploration Program.

## **Endangered Species Act Consultation**

Some commentors identified the requirement to comply with the Endangered Species Act before permitting any activity in the National Petroleum Reserve.

### **Response**

On November 3, 2020, the BLM consulted with the U.S. Fish and Wildlife Service (USFWS) and requested concurrence on a not likely to adversely affect determination for spectacled and Steller's eiders and polar bears for the five-year Emerald House Peregrine Exploration Program. Polar bear critical habitat was also determined to be not likely to be adversely affected. The consultation included access and exploratory drilling and testing on lands managed by the BLM and leased by Emerald House within the NPR-A over a five-year timeframe (2020-2025). On November 4, 2020, The USFWS concurred with the BLM's not likely to adversely affect determination for spectacled and Steller's eiders and polar bears from the five-year Peregrine Exploration Program.

On January 11, 2022, the BLM requested the USFWS reaffirm the not likely to adversely affect determination for spectacled and Steller's eiders and polar bears, and a no effect determination for polar bear critical habitat for the Exploration Program. On January 21, 2022, the USFWS confirmed that the 2020 concurrence with BLM's determination remains valid and concurred that the Exploration Program is not likely to adversely affect spectacled eiders, Steller's eiders or polar bears. The USFWS anticipates that impacts to denning polar bears from the project would be discountable. The USFWS also determined that based on BLM's determination that the proposed project would have "no effect" on designated critical habitat, the obligations of section 7(a)(2) have been met.

Based on the January 21, 2022 USFWS Endangered Species Act concurrence confirmation letter, polar bears may occasionally pass through or den in the Exploration Program area, although their density is very low, and encounters are expected to be infrequent. Disturbance to transient (non-denning) bears would be minor (i.e., limited to changes in behavior that would not be biologically significant) and temporary because bears would be able to respond to human presence or disturbance by departing the area. Furthermore, measures required by BLM's stipulation package and Emerald House's proactive minimization measures (including management of attractants and siting of structures), would minimize potential impacts in the unlikely event a transient polar bear is encountered. Given the very low density of transient polar bears and minor, temporary nature of disturbance from the proposed activities, the USFWS does not anticipate impacts of disturbance to non-denning polar bears or impacts that would have the potential to result in injury or death of a bear. Therefore, disturbance to non-denning polar bears would be insignificant.

Although the potential exists for polar bears to encounter contamination from small fuel spills, given the very low density of polar bears in the Exploration Program area, and spill prevention



precautions identified, the probability of impacts from fuel spills on polar bears would be extremely unlikely and therefore, would be discountable.

On the Beaufort Sea coastline between the Kavik River and Utqiagvik, 95 percent of detected polar bear dens are within 5 miles of the Beaufort Sea coastline (75 FR 76086). Therefore, due to its inland location, ~ 20 miles at the start of the snow road at Ocean Point, and ~ 64 miles inland at the Merlin 2 well, it would be highly unlikely, although possible, that female polar bears may den within the Exploration Program area. However, prior to initiating on-the-ground activities, Emerald House conducted den detection surveys of the Exploration Program area using Aerial Infrared cameras and no suspected dens were detected. In the unlikely event that an undetected den was encountered, denning bears would be susceptible to disturbance, potentially causing females to abandon dens before cubs are able to survive. However, given 1) the location of the program area, which is outside of the area the USFWS would anticipate polar bears to den, 2) the results of multiple Forward Looking Infrared den detection surveys which failed to detect any dens, and 3) the Marine Mammals Management Office separately concluded the probability of encountering, much less, taking, any polar bears would be very low, such that an incidental take authorization under the Marine Mammal Protection Act for Emerald House is not warranted; effects of the Exploration Program on denning polar bears would be extremely unlikely (i.e., discountable). Therefore, the USFWS expects collective effects of the proposed action on polar bears would be insignificant and/or discountable because: 1) the density of polar bears in the Exploration Program area is very low and it is unlikely project activities would encounter a polar bear, 2) in the unlikely event a transient bear was encountered, behavioral effects would be minor and temporary and would not have the potential to result in injury or death of a bear, 3) the Exploration Program area is well inland (> 20 miles) of the 5-mile coastal zone where 95 percent of terrestrial polar bear dens occur such that the probability of encountering a denning bear would be extremely unlikely (i.e., discountable), and 4) Emerald House's minimization measures and BLM's stipulation package, including den detection surveys, denning habitat avoidance, and exclusion zones for any detected den, further serve to avoid and minimize potential impacts in the unlikely event transient or denning polar bears are encountered.

## **Marine Mammal Protection Act and Polar Bear**

Several commentors suggested that polar bears could be negatively impacted by the Exploration Program, the analysis on the impacts to polar bears was inadequate, and an incidental take authorization is required under the Marine Mammal Protection Act before exploration activities could occur.

### **Response**

During discussions between the USFWS and Emerald House in September 2021, the USFWS described very low polar bear densities (and even lower likelihood of denning) within the Peregrine Exploration Project area and believed the likelihood of take of polar bear during this year's project activities would be very low. Emerald House also agreed to adopt and implement several mitigation measures provided by the USFWS to further reduce the likelihood of impacts to polar bears.

On January 7, 2022, the USFWS Marine Mammals Management Office stated that while this year's activities include several minor changes in the Exploration Program initiated in early 2021, none of the changes would discernibly increase the risk of take of polar bears. Given the substantial distance of project activities from the coastline or any other area of routine polar bear use, as well as Emerald House's compliance with the USFWS recommended mitigation measures, the USFWS Marine Mammals Management Office continues to expect a very low probability of encountering, much less taking, any polar bears and determined that requiring Emerald House to obtain a Marine Mammal Protection Act incidental take authorization prior to conducting its Peregrine Exploration Program is not warranted.

Refer to the "Endangered Species Act Consultation" Section for addition details on polar bears and the Peregrine Exploration Program.

## **Tribal Consultation**

A commentor emphasized the need for BLM to provide an opportunity for consultation by affected tribal governments.

### **Response**

The BLM consulted with the Native Village of Nuiqsut (NVN) on the Peregrine Exploration Program in November 2020 and the only questions regarding the project were on the location of the well sites and if BLM would be monitoring exploration activities. Additionally, BLM scheduled a meeting with NVN on November 16, 2021, that was canceled by NVN. Prior to the meeting, BLM shared a map displaying all ice/snow roads planned for the winter 2021/2022 season, including Emerald House's snow roads. In December 2021, the BLM again attempted to schedule a meeting with NVN but was unsuccessful.

The BLM also reported updates on the Peregrine Exploration Program to the North Slope Borough Federal Subsistence Regional Advisory Council during the November 5, 2020, February 9, 2021, and November 4, 2021 meetings. In addition, the project was discussed with the NPR-A Working Group on October 26, 2021 and December 14, 2021.

## **Tundra Travel**

A commentor questioned why tundra travel would be allowed with insufficient snow depths.

### **Response**

Section 2.1.3 of the EA discusses the process of prepacking snow along the snow roads and ice pads. The purpose of prepacking snow is to create a "base" for the road, promote lower tundra soil temperatures, and compress the insulating snow to accelerate freezing of soils before construction of snow roads. Prepacking also serves to capture more snow along the route and keep that snow from blowing away. It is a common practice on the North Slope of Alaska. Prepacking is allowed to occur before the tundra is open for travel because Emerald House would use snow machines or vehicles approved by the Alaska Department of Natural Resources for summer tundra travel. Vehicles approved for summer tundra travel have been tested and

shown to minimize damage to the tundra by the Alaska Department of Natural Resources. All other snow road and ice pad construction and use would only occur when soils are frozen to a depth of 12 inches and there is at least 6 inches of snow cover.

## **Water and Fish**

Several commentors expressed concerns that the Peregrine Exploration Program could have significant impacts on water and fish, that not all lakes identified for water withdrawal were analyzed for potential impacts to fish, and that BLM should analyze seasonal recharge of lakes.

### **Response**

Section 3.4 of the EA addresses how exploration and associated activities could impact fish and aquatic habitats.

As identified in Section 3.4 of the EA, the potential for impacts on sensitive fish overwintering in water source lakes would be increased if liquid water withdrawal exceeds 15 percent of calculated volume deeper than 7 feet (ROP B-2a). Fifteen of the 19 lakes proposed for water withdrawal on BLM managed lands are assumed to have sensitive fish species and water withdrawal from these lakes would not exceed 15 percent of calculated volume deeper than 7 feet. Although fish surveys haven't been completed for these lakes, the assumption that these potential water source lakes are sensitive fish bearing is appropriate because this ensures the most conservative water withdrawal threshold is followed (i.e., 2020 NPR-A ROP B-2a) in the absence of field data documenting fish presence/absence. This is out of an abundance of caution to protect fish species sensitive to low oxygen concentrations that may be present. Since the implementation of water withdrawal guidelines (for example, ROP B-2a through B-2d in the 2020 NPR-A ROD), all available scientific information supports the effectiveness of these management standards in minimizing impacts to fish and fish habitat.

Of the 19 lakes proposed for use on BLM managed lands, water withdrawal could potentially impact overwintering sensitive fish species in lakes P6, P8, P22, and Dog Bone Lake. While lakes P6 and P8 may provide overwintering habitat, the morphological and hydrological characteristics of both lake basins (i.e., shallow depths and limited hydrological connectivity) suggests the quality of this habitat for overwintering would be suboptimal for sensitive fish species. As such, it is unlikely large numbers of sensitive fish species utilize these lakes as overwintering habitats. While it is possible that fish may disperse into these lakes during spring flooding, many of these ephemeral connections are temporary and shallow, making them potentially difficult to navigate for larger-bodied, sensitive species. If sensitive fish did manage to disperse to these lakes during short periods of hydrological connectivity, individual fish would naturally become stranded in these suboptimal overwintering habitats when spring floodwaters receded.

Although Dog Bone Lake and Lake P22 may have an ephemeral connection to surrounding waterbodies, they are near the headwaters of the Kogosukruk River that typically doesn't flow during the winter months (reducing potential overwintering fish habitat). This was supported by a recent telemetry study that tracked seasonal movements of Arctic grayling within the Colville River and its tributaries. The shallow nature of Dog Bone and P22 lakes along with the low

potential of overwintering fish in the Kogosukruk River, suggests that Dog Bone Lake and Lake P22 could not support high numbers, if any, overwintering sensitive fish species.

The best available information indicates the probability of sensitive fish overwintering in these four lake habitats would be low and potential impacts to sensitive fish would be minimal. Project-specific ROPs 15 and 16 would require Emerald House to conduct fish surveys at proposed water source lakes between 5 and 7 feet of depth to inform appropriate thresholds outlined in ROP B-2. The one-time exception from ROP B-2 for lakes P6, P8, P22, and Dog Bone Lake would still meet the intent and objective of ROP B-2 to maintain the natural hydrologic regimes and protect fish species.

As stated in Section 3.4 of the EA, water withdrawal lakes were monitored during a variety of research efforts between 2003 and 2011 to help determine if liquid water use guidelines and ROPs were protective of North Slope fish and aquatic habitats. In addition, a study in the Canadian Arctic that used an experimental approach found that removing 10 percent of total lake volume did not have an effect on total volume-weighted dissolved oxygen, while removing 20 percent had a substantial impact and effectively reduced fish overwintering habitat by about 25 percent. While this indicates that winter liquid water withdrawals can reach a threshold that affects fish, dissolved oxygen changes have not been apparent at current levels of withdrawal on the North Slope. Potential impacts to natural hydrological processes would be minimized because proposed volumes for all water source lakes would be within thresholds that have been demonstrated to naturally replenish during spring break up (i.e., 20 percent of *total* lake volume).

## **Human Health**

Some commentors expressed concerns on the impacts to human health and expressed a need for the EA to analyze how physical and mental health would be impacted by a decline in air quality, climate change, and decreased food security from the Exploration Program along with cumulative effects of other oil and gas activities.

### **Response**

Section 3.4.12 of the 2020 NPR-A IAP EIS, which the EA is tiered to, discusses, and analyzes the impacts to public health from both non-oil and gas and oil and gas activities including mental health, air quality, water quality, contamination of food sources, noise, food security, disease, and climate change. The conditions and environmental effects described in the 2020 NPR-A IAP EIS are still valid.

Section 2.2 of the EA discusses impacts from air emissions. In accordance with 40 CFR 1501.11 and 43 CFR 46.140, the air quality analysis for the EA is tiered off the 2020 NPR-A IAP EIS which addressed direct, indirect, and cumulative impacts of air emissions, together with other past, present, and reasonably foreseeable future actions. The near-field impact assessment was conducted using the EPA regulatory air dispersion model AERMOD, the far-field (regional) impact assessment was conducted using the Comprehensive Air Quality Model with Extensions, and Hazardous Air Pollutants emission impacts were all below the respective Reference Exposure Level and Reference Concentrations. The impacts of greenhouse gas emissions from

future oil and gas development in the NPR-A on climate change was also analyzed. The conditions and environmental effects described in the 2020 NPR-A IAP EIS are still valid.

The Annual Greenhouse Gas (GHG) Report is incorporated by reference in the EA as an integral part of the analysis for the Exploration Program. A discussion of the effects of public health and safety is described in Chapter 9.5 of the Annual GHG Report.

## **Vegetation**

A commentator stated that BLM's vegetative impact analysis does not distinguish between impacts caused by the snow road and armored snow road, or how each vegetation class would be affected differently.

### **Response**

Although the EA explains that the armored snow road would have higher ice content and persist longer in the summer than conventional snow roads, the impact analysis need not separate out the vegetative impacts from construction and use of the armored snow road, snow road, pads, or airstrip. The scale of disturbance would vary along the route, due in part to differences in snow road construction and number of passes, but the overall concerns and potential impacts described in the EA from construction and use of the armored snow road, snow road, pads or the airstrip on vegetation would be similar in magnitude and degree for each of these features.

Summer approved tundra vehicles (approved by the Alaska Department of Natural Resources) would be used to prepack the armored snow road, snow road, pads and airstrip. Vehicles approved for summer tundra travel have been tested and shown to minimize damage to the tundra by the Alaska Department of Natural Resources. All other snow road, ice pad and airstrip construction and use would only occur when soils are frozen to a depth of 12 inches and there is at least 6 inches of snow cover, ensuring proper snow and ice thickness, and minimizing potential impacts to vegetative.

Protective measures to mitigate potential impacts to vegetation from snow roads (armored and conventional), pads and airstrip include delaying prepacking until snow depth reaches an average of six inches, use of tundra approved vehicles for prepacking, avoiding areas with low snow cover, only starting snow road construction once soil temperatures reach 23-degree Fahrenheit (or below) at a depth of 12 inches, and minimizing sharp turns. Use of these protective measures for previous snow road construction has resulted in little to no environmental damage. Additionally, ROP M-2 from the 2020 IAP ROD would help ensure that invasive species would not become established in the proposed project area.

As shown on Table 3.2, 19 percent (81 acres) of the 417-acre area (proposed roads, pads, and airstrip) has vegetation classified as "High Susceptibility to Long-Term Disturbance" (if disturbed with insufficient protective measures). An additional 68 percent (283 acres) of the proposed project area (roads, pads, and airstrip) is classified as vegetation with an "Intermediate Susceptibility to Long-Term Disturbance" rating (Table 3.2). A description of each vegetation cover class as well as the potential impacts to each cover type from disturbance is found in Section 3.3 of the EA.

## **Wastewater**

A commentor questioned if backhauling wastewater was factored in the use of the snow roads and what type of water treatment facilities would be used, and had concerns that wastewater would be discharged onto the tundra or back into lakes.

### **Response**

As shown in Table 2.5 of the EA, up to 13 million gallons of water would be required for operations. This includes approximately 4 million gallons for snow road armoring and river crossing ramps, 6 million gallons to construct six ice pads, 1 million gallons for camp operations, and 2 million gallons for drilling and testing the Merlin 2 well.

Domestic wastewater would be hauled off site for proper disposal or treated with an on-site Wastewater Treatment Module operated by an Alaska Department of Environmental Conservation certified plant operator. All uses of the conventional and armored snow roads were considered in the snow road design and development of the EA (including backhauling of wastewater). As stated in Section 2.1.4 of the EA, both conventional and armored snow roads can accommodate loads up to 115,000 pounds.

Domestic wastewater is expected to average 5,000 gallons per day from envirovacs (restrooms) and camps. Wastewater would be treated on site with a Wastewater Treatment Module and disposed of pursuant to approved permits (AKG572000), or hauled offsite, treated, and disposed of in the North Slope Borough Deadhorse Service Area 10 (NSB SA-10) disposal facility.

Emerald House or their camp operators would work under the Alaska Pollutant Discharge Elimination Systems General Permit (APDES) for North Slope Activities (AKG572000). This permits secondary treatment of domestic wastewater and discharging to surface waters. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the authorized facilities and outlines Best Management Practices that must be followed.

Snowmelt and other run-off from snow roads and ice pads would also be managed through implementation of Best Management Practices required through the APDES general permit (AKG572000).

Up to 19,000 barrels of drilling fluids (including muds) could be generated at the Merlin 2 well site. The drilling fluids would not be discharged to the environment but would be temporarily stored on site until they could be transported for proper offsite disposal (Refer to Sections 2.1.14 and 2.1.15 of the EA).