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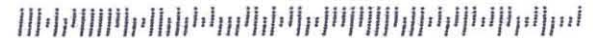
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Nicole Hayes, Project Coordinator
Bureau of Land Management
Attn: Coastal Plain Oil and Gas Leasing Program EIS
222 W. 7th Avenue, #13
Anchorage, AK 99513

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

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Seattle, WA 98101-3140

OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

June 14, 2018

Nicole Hayes, Project Coordinator
Bureau of Land Management
Attn: Coastal Plain Oil and Gas Leasing Program EIS
222 West 7th Avenue, Stop #13
Anchorage, Alaska 99513

Dear Ms. Hayes:

The U.S. Environmental Protection Agency has reviewed the Bureau of Land Management's April 20, 2018, Notice of Intent initiating the scoping process for an Environmental Impact Statement to implement an oil and gas leasing program in the "Coastal Plain" of the Arctic National Wildlife Refuge (EPA Region 10 Project Number 18-0036-BLM). Our comments are provided for your consideration pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 C.F.R. §§ 1500-1508) and Section 309 of the Clean Air Act. The EPA is also supporting the BLM in the EIS development effort as a cooperating agency, subject to available resources. We appreciate the opportunity to provide early input in the analysis of the Coastal Plain Leasing EIS.

We understand the BLM is proposing to implement an oil and gas leasing program within the 1.6 million-acre area of the Arctic Refuge known as the Coastal Plain, in accordance with Section 20001 of the Tax Cuts and Jobs Act of 2017. The EIS will consider and analyze the potential environmental impacts of various leasing alternatives, including the areas to offer for sale and the terms and conditions to be applied to leases and associated oil and gas activities.

The Coastal Plain is remote and lacks existing oil and gas infrastructure. It will therefore be critical for this EIS to consider the full scope of potential direct, indirect, and cumulative impacts of offering leases within the Coastal Plain area. As a first step, we recommend the development of a reasonably foreseeable development scenario, or a range of potential development scenarios. This RFD can then be used to project reasonably foreseeable impacts of future oil and gas development on the leases. Where potential adverse impacts are anticipated, the EIS should also analyze mitigation measures to reduce impacts. Because leasing stipulations must be established before a lease is issued, we support the BLM's plans to use this EIS process to develop appropriate terms and conditions to be applied to leases and associated oil and gas activities, to protect sensitive resources.

Overall we encourage the development of an EIS that evaluates and compares a full range of reasonable alternatives and comprehensively discusses the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action. Our enclosed scoping comments provide our recommendations for analysis of key areas of concern for the EPA, which will be the focus of our review of the project, including impacts to the environment and human health. Identification of these key issues and recommendations are based on our knowledge of the proposed leasing area as well as our experience with oil and gas development projects in Alaska.

We appreciate the opportunity to participate early in the planning process for this project and are looking forward to working with you to develop the EIS. Should you have any questions regarding our comments, please don't hesitate to contact me at (907) 271-1215 or vaughan.molly@epa.gov.

Sincerely,



Molly Vaughan, NEPA Lead Reviewer
Environmental Review and Sediment Management Unit

Enclosure:

1. U.S. Environmental Protection Agency Detailed Scoping Comments for the Coastal Plain Leasing EIS

***EPA Region 10 Detailed Scoping Comments for the
BLM Coastal Plain Leasing Environmental Impact Statement***

Purpose and Need

We recommend the EIS include a clear and concise statement of the underlying purpose and need for the proposed project, consistent with the implementing regulations for NEPA. In presenting the purpose and need, the EIS should reflect not only the BLM's purpose in complying with the Tax Act, but also the broader public interest and need for this project. An appropriately defined purpose and need statement is of critical importance to setting up the analysis of a range of reasonable alternatives in the EIS.

Reasonably Foreseeable Development Scenarios

We recommend that the BLM develop a Reasonably Foreseeable Development Scenario, or range of scenarios, as a first step in the analysis of potential impacts of future oil and gas activity within the proposed leasing areas. We understand that information characterizing oil and gas resources within the Coastal Plain is limited, but recommend that the best available information be utilized as appropriate. For example, this may include developing scenarios for a low, medium and high range of potential development. The various plausible scenarios for oil and gas exploration and development should include transportation and infrastructure options to access areas with potential for oil and gas. Based upon the reasonably foreseeable development scenarios, we recommend that the EIS identify and evaluate the direct, indirect and cumulative impacts associated with exploration, development, production, distribution to market, and abandonment activities. Potential impacts to various resources can be estimated by using information on infrastructure needs and resource impacts of other existing remote North Slope oil and gas exploration and development activities.

Aquatic Resources, Wetlands, and Riparian Areas

We recommend the EIS describe aquatic habitats in the affected environment by resource type using the data sources and classification approaches that provide the greatest resolution possible. The baseline information for aquatic resources should include their functional condition and integrity. Wetlands and streams perform different functions at different rates, and capturing this information is critical for evaluating the potential environmental impacts of the proposed action, alternatives, and reasonably foreseeable actions on these resources.

The areal (i.e., acreage) extent of impacts to aquatic resources should be quantified for both direct and secondary effects. The acreage values for the direct and secondary impact footprints should include the acreage for streams as well as for wetlands, ponds, lakes, mudflats and other waters. In other words, reported acreage losses should represent the total loss of jurisdictional waters. For streams, the loss of channel length should also be quantified by linear feet and/or miles. Channel length values are a more intuitive metric for some, and facilitate different types of analyses than the acreage values. In addition to the areal or linear extent, impacts to aquatic resources should also be quantified by the expected change in the function these resources perform, or change in the condition of the resource.

If a Clean Water Act Section 404 permit is required for future activities within the Coastal Plain, the EPA will review proposed projects for compliance with *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 C.F.R. Part 230), promulgated pursuant to Section

404(b)(1) of the CWA ("404(b)(1) Guidelines"). For wetlands and other special aquatic sites, the 404(b)(1) Guidelines:

- Establish a presumption that upland alternatives are available for non-water dependent activities;
- Require that any permitted discharge into waters of the U.S. be the least environmentally damaging practicable alternative available to achieve the project purpose; and,
- Require that appropriate and practicable steps be taken, in sequence, to: (1) avoid, (2) minimize, and then (3) compensate for unavoidable impacts to aquatic resources.

Water Quality and Quantity

Evaluation of Impacts to Surface Water and Groundwater Quality and Quantity

Water quality is one of the EPA's principal concerns for oil and gas development activities, due to the potential for impacts to both surface water and groundwater. For example, potential water quality impacts may result from accidental leaks or spills, disposal of produced water, and surface disturbance from roads and pads, which may contribute significant sediment to streams. Construction of facilities and access roads may also compact the soil, thus changing hydrology, runoff characteristics, and ecological function of the area, affecting flows and delivery of pollutants to waterbodies and wetlands. The EIS should characterize baseline surface water and groundwater quality, quantity, and interactions; evaluate the direct, indirect, and cumulative impacts of all aspects of the potential oil and gas development on these hydrologic components; and describe mitigation for adverse impacts.

The EPA recommends that the BLM specifically include the following in the water resources analysis for the EIS:

- Characterization of existing groundwater, surface water, springs and wetland resources within the proposed leasing areas, including:
 - Maps of groundwater, surface water, springs and wetland resources in the area to be developed or affected;
 - Baseline data on the extent and quality of groundwater, surface water, springs and wetlands;
 - Information on the quantity and location of all aquifers, including Underground Sources of Drinking Water, recharge zones and source water protection areas;
 - Identification of any CWA § 303(d) listed waterbodies and any existing restoration efforts for these waters; and,
 - Identification and description of all wetlands and surface waters, including ephemeral and intermittent streams, that could be affected by future oil and gas activity; where applicable, acreages, channel lengths, habitat types, values and functions of these waters should be identified.
- Assessment of which waters may be impacted, the sources and nature of potential impacts (both quality and quantity), and specific pollutants likely to impact those waters; this assessment should include comparison to applicable environmental standards (e.g., water quality and drinking water quality standards).
- Consideration of downstream impacts.
- Evaluation of surface water and groundwater use, including maps and source identification of agricultural, domestic, and public water supply wells or intakes.

Mitigation of Potential Water Quality Impacts

The EPA recommends the EIS identify and discuss how surface water and groundwater quality will be protected during future mineral development and how significant impacts will be mitigated. For

example, since future oil and gas activity has the potential to cause or contribute to erosion of soils and subsequent sediment loading to nearby surface waters, we recommend the EIS consider construction design and operation practices that will be used to minimize erosion and control stormwater runoff. Where appropriate, we also recommend considering specific stipulations for avoiding wells and surface disturbing activities in sensitive resources areas. Establishing stipulations during development of the EIS will help to avoid and mitigate potential significant impacts to water resources within the proposed leasing area.

Marine and Nearshore Habitat

Future oil and gas development within the Coastal Plain could have impacts on marine resources and habitat, due to the potential need for seafloor of materials. We therefore recommend that the EIS describe the current quality and capacity of habitat, its use by organisms, particularly marine mammals and fish, and identify known migration routes and timing. If marine habitats would be impacted as a result of marine traffic associated with transport of project supplies, project construction/operation, or discharges (accidental and intentional), the EIS should disclose the impacts to marine and aquatic habitat and the mitigation measures that would be implemented to minimize such impacts.

Air Quality

Oil and gas development includes emissions of Clean Air Act criteria air pollutants and other hazardous air pollutants (HAPs) that can cause or contribute to human health impacts or impacts to Air Quality Related Values (AQRVs) such as visibility, vegetation, water, fish, and wildlife. The EPA recommends the EIS evaluate how future oil and gas exploration and development activities could affect air quality and what measures may be needed to mitigate significant impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality. To address potential air quality impacts, the EIS should consider whether the direct, indirect, or cumulative impacts of project-related air emissions would result in any adverse impact on air quality or air quality related values.

Potential Air Emissions

Potential impacts to air quality from oil and gas exploration and development include:

- Operation of heavy machinery and equipment during construction, drilling, and operations that result in the emission of fossil fuel combustion exhausts (e.g., drilling rig, return mud shakers, pumps, separator motors, heater treaters, generators, boilers, etc.). Such exhausts will include oxides of nitrogen, oxides of sulfur, carbon monoxide, and particulates;
- Multiple hazardous air pollutants are known to be emitted during oil and gas activities, resulting from fuel combustion and fugitive leaks. HAPs, also known as toxic air pollutants or air toxics, are those pollutants that cause or may cause cancer or other serious health effects, such as reproductive or developmental effects, and/or adverse environmental and ecological impacts; Recent studies have increased awareness of concerns with the potential health impacts associated

with HAPs emitted during oil and gas activities.^{1,2,3,4} In addition, the *National Air Toxics Assessment* asserts that numerous human epidemiology studies show increased lung cancer rates associated with diesel exhaust and significant potential for non-cancer health effects.⁵ The EPA recommends the EIS disclose whether HAP emissions would result from project construction and operations, discuss the cancer and non-cancer health effects, and identify sensitive receptor populations and individuals who are likely to be exposed to these emissions;

- Hydrogen sulfide, a toxic gas, often occurs as a natural contaminant in oil and gas producing formations;
- Fugitive dust emissions may be generated from road construction, site clearing, transportation on dirt roads to and from various project sites, and onsite mixing of muds. In addition to human health effects, dust blown from the roadway can settle onto wetlands, vegetation or waterbodies, impairing their health as well;
- Flaring of gas will result in the release of carbon monoxide, nitrogen oxides, and, if the gas is sour, sulfur dioxide. Additional emissions may include products of incomplete combustion;
- Fugitive leaks from pipes, closed tanks, and treatment equipment may contribute to the release of volatile organic compounds to the air, including HAPs and ozone precursors;
- Project emissions may also contribute to the formation of secondary PM_{2.5} and ozone; and,
- Future development may result in impacts from emissions from marine vessels approaching the coast, including cumulative impacts with other sources of air contaminants in the area. We note that the opacity of smoke from marine vessel emissions is regulated by the State of Alaska within three-miles of the coast.

Analysis Recommendations

The EPA, U.S. Department of Agriculture and U.S. Department of Interior entered into a “Memorandum of Understanding Regarding Air Quality Analyses and Mitigation for Federal Oil and Gas Decisions through the National Environmental Policy Act Process” on June 11, 2011, which applies to federal decisions relating to on-shore oil and gas planning, leasing, or field development. We look forward to the BLM using this tool as necessary and appropriate to help ensure an effective and efficient NEPA air quality analysis for this Leasing EIS. We also commend the BLM for the current effort underway to conduct a North Slope Regional Air Quality Model. It is our hope that this modeling analysis can be utilized to streamline the air quality analysis process for this EIS, while providing for a robust consideration of direct, indirect and cumulative air quality impacts of future oil and gas development in the proposed leasing areas.

The EPA recommends that the EIS include an evaluation of the current air quality conditions and trends as well as the direct, indirect, and cumulative impacts from potential activities for:

- Each of the criteria pollutants relevant to the project and their appropriate National Ambient Air Quality Standards (NAAQS), i.e., ozone, particulate matter, carbon monoxide, nitrogen oxides, and sulfur dioxide;

¹ McKenzie *et al.*, Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado, *Environmental Health Perspectives*, April 2014.

² Adgate *et al.*, Potential Public Health Hazards, Exposures and Health Effects from Unconventional Natural Gas Development. *Environmental Science and Technology*, 2014.

³ McKenzie *et al.*, Human Health Risk Assessment of Air Emissions from Development of Unconventional Natural Gas Resources. *Sci Total Environ* 424:79-87.

⁴ Paulik *et al.*, Impact of Natural Gas Extraction on PAH Levels in Ambient Air, *Environmental Science and Technology*, 2015.

⁵ see <http://www.epa.gov/ttn/atw/nata>

- AQRVs in potentially impacted federal Class I areas and any Sensitive Class II Areas identified by State or Federal Land Managers;
- Prevention of Significant Deterioration increment at potentially impacted federal Class I and any Sensitive Class II Areas identified by State or Federal Land Managers; and,
- HAPs and relevant health-based risk thresholds for HAPs including acetaldehyde, benzene, ethyl benzene, ethylene glycol, formaldehyde, methanol, n-hexane, toluene, xylene (mixture), and any other compounds that the BLM identifies as potential hazardous air pollutants in the project area.

We recommend the following steps for the EIS air quality analysis:

1. Characterize the existing conditions to set the context for evaluating project impacts, including:
 - Regional climate and meteorology,
 - Air quality and air quality related values (e.g., visibility),
 - Identification of sensitive receptors in the vicinity (such as communities, federal Class I Areas, and any Sensitive Class II Areas identified by State or Federal Land Managers).
2. Review air quality regulations and any air permitting requirements that apply to the air pollutant sources associated with the project.
3. Develop a reasonably foreseeable development scenario (or range of scenarios, e.g., low, medium, high) for anticipated oil and gas activity in the proposed leasing areas;
4. Provide a comprehensive emissions inventory of criteria pollutants (in tons per year), greenhouse gas (GHG) emissions (in metric tons CO₂ equivalents per year), and significant HAP emissions based on the reasonably foreseeable development scenario(s).
5. If reasonably foreseeable development would result in a substantial increase in emissions, near-field and/or far-field air quality modeling should be conducted to assess potential impacts to air quality and AQRVs.

Mitigation

The EPA recommends that the BLM identify the mitigation measures (including control measures and design features) in the EIS that would apply to future activity in the proposed leasing area in the event that potential adverse impacts to air quality or AQRVs on affected lands are predicted. These measures could include equipment type or design requirements, emission standards or limitations, best management practices (BMPs), dust suppression measures for unpaved roads and construction areas, and add-on control technologies. The EPA also recommends that the BLM identify the mechanisms it will use to ensure implementation of these measures, including leasing stipulations or conditions of approval.

Climate and Greenhouse Gas Emissions

According to the National Climate Assessment (NCA), Alaska's climate has warmed twice as fast as the rest of the nation, bringing widespread impacts including receding sea ice, melting glaciers, thawing permafrost, rising ocean temperatures, and ocean acidification. The NCA also indicates climate change in Alaska will strongly affect Native communities. We recommend that the description of the affected environment include any projected future changes that may affect the proposed project, including the consideration of future climate scenarios, such as those provided by the NCA.⁶ Precipitation projections are also available on a local level from Scenarios Network for Alaska and Arctic Planning.⁷ If projected

⁶ See <http://nca2014.globalchange.gov/>

⁷ See <https://www.snap.uaf.edu/>

changes could exacerbate the environmental impacts of the project, these likely impacts should also be considered as part of the NEPA analysis.

The EPA recommends that the Leasing EIS estimate the direct and indirect GHG emissions that would result from future oil and gas activities. Estimated emissions serve as a useful proxy for assessing effects and comparing alternatives. Examples of tools for estimating GHG emissions can be found on CEQ's website at <https://ceq.doe.gov/guidance/ghg-accounting-tools.html>.

Safety Hazards

Residents of North Slope communities have identified safety as an issue of great concern for oil and gas development. We recommend that the EIS discuss safety, including the location and operation of the various facilities likely to be constructed as well as the capability to respond to events given the remote location. This should include analysis of the potential hazards associated with high-pressure wells and processing facilities.

Construction and operation of oil and gas development projects may cause or be affected by increased seismicity in tectonically active zones. Also, ground movement on nearby faults can cause pipelines to rupture, resulting in discharge of oil, condensates and gas. Therefore, we recommend that the EIS discuss the potential for seismic risk and how this risk will be evaluated, monitored, and managed.

Spill Risk, Response and Prevention

We recommend that the EIS also address the issues of spill and leak detection, prevention, planning, and clean up. As with all development on the North Slope, the EPA has concerns regarding the potential for oil spills and well blowout, and we recognize the challenges of spill response in different seasons in the arctic environment. We recommend that the EIS include both a risk probability analyses for a potential blowout or major oil spill, as well as an evaluation of potential impacts to the inland and coastal environments should such an event occur.

Successful spill response requires thoughtful and comprehensive planning, exercise and implementation. We recommend the EIS identify and analyze the risks associated with potential spills and other emergency response scenarios, including identifying potential impacts to area users and strategies to communicate risks or actual emergencies to those users. We also recommend the EIS address how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations. The discussion should include how effective containment and cleanup operations would be affected by inland/coastal and meteorological conditions that occur in the leasing area and that are predicted to occur throughout the life of the projected activity. These include but are not limited to wind speeds and directions, sea states, ice, temperatures and fog. This will be important information to describe and discuss, especially in light of demonstrated and anticipated changes to the climate in the Arctic region, including the Beaufort Sea area.

Hazardous Materials

We recommend that the EIS address potential direct, indirect and cumulative impacts of hazardous materials management and storage from future oil and gas activities. For hydrocarbon products, the requirements should be consistent with those of the Pipeline and Hazardous Materials Safety Administration, and other applicable federal, state and local requirements. If any pesticides or biocides

will be used during construction, operation, and maintenance of future oil and gas activity, we recommend the EIS address any potential toxic hazards related to the use of such substances, and describe what actions will be taken to assure that impacts by toxic substances released to the environment will be minimized.

In addition, we recommend that the EIS describe measures that will be taken to minimize the chances of an accidental release, emergency measures that will be implemented should such an event occur, and how potential adverse impacts from spills may be mitigated by effective containment and cleanup operations. We also recommend potential impacts to area users be identified, as well as any strategies employed to communicate risks or actual emergencies to those users.

Sociocultural Impacts

It is anticipated that the proposed project will result in employment opportunities for Alaska Native residents, as well generate local and corporate revenues in the region. While employment opportunities and local revenues generally increase a community's standard of living, there can also be negative impacts to families, communities, and cultures, especially in areas where residents are participating in traditional cultural practices. Noise and physical structures may disturb and/or displace subsistence wildlife from the project area. Other project impacts also may affect a community's ability to access traditional and accustomed subsistence use areas. We recommend that the EIS identify the specific communities, federally recognized tribes, and corporations that could be impacted, which will help decision-makers and the public understand the scope of the potential impacts. Given the proximity of the Coastal Plain to the Alaska-Canada border, affected tribes and communities may also include those in Canada.

We recommend that the positive and negative sociocultural impacts associated with future oil and gas activity be fully evaluated and disclosed in the EIS and include, but are not limited to, the following:

- **Socioeconomic Impacts**
 - Impacts associated with economic changes to families, communities, and cultures, including potential changes to a subsistence based traditional economy;
 - The potential decline in the region's economy following closure; and,
 - The replacement costs of traditional foods if access or availability are impacted by the proposed project.
- **Accessibility of Traditional Use Areas**
 - The community traditional use areas for subsistence, harvesting, hunting and trapping, fishing, travelling, camping, and other uses;
 - The potential access limitations to these traditional use areas and their impacts to local communities; and,
 - Coordination with the tribes and communities on options for mitigating impacts associated with accessibility to traditional and accustomed use areas.
- **Compatibility of Traditional Use Areas**
 - Project activities that may conflict with traditional and accustomed uses; and,
 - Coordinate with the affected tribes and communities to identify mitigation options for avoiding and minimizing conflicts between traditional and accustomed subsistence uses with future oil and gas activity.

Environmental Justice and Impacted Communities

In compliance with NEPA and with Executive Order 12898 on Environmental Justice, federal agency actions should be taken to conduct adequate public outreach and participation that ensures the public and Native American tribes understand possible impacts to their communities and trust resources. Executive Order 12898 requires each federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations, low-income populations, and Native American tribes.⁸ The EPA also considers children, the disabled, the elderly, and those of limited English proficiency to be potential Environmental Justice communities due to their unique vulnerabilities.

The CEQ has developed guidance concerning how to address Environmental Justice in the environmental review process.⁹ In accordance with this guidance, the EPA recommends that the EIS address the following points:

- Identify low income, minority, and Alaska Native communities that may be impacted by the project;
- Describe the efforts that have been or will be taken to meaningfully involve and inform affected communities about project decisions and impacts;
- Disclose the results of meaningful involvement efforts, such as community identified impacts;
- Evaluate identified project impacts for their potential to disproportionately impact low income, minority, or Alaska Native communities, relative to a reference community;
- Disclose how potential disproportionate impacts and environmental justice issues have been or will be addressed by the BLM's decision making process;
- Propose mitigation for unavoidable impacts that are likely to occur; and,
- Include a summary conclusion, sometimes referred to as an 'environmental justice determination' that concisely expresses how environmental justice impacts have been appropriately avoided, minimized, or mitigated.

We also recommend that particular attention be given to consideration of the dependence of local communities on local and regional subsistence resources, access to those resources, and perception of the quality of those resources. Additional information and tools for environmental justice analysis can be found on EPA's website at: <https://www.epa.gov/environmentaljustice>.

Health Risk or Impact Analysis

Consistent with Sections 4321 and 4331 of NEPA, and the goals of Executive Orders 12898 and 13045, we recommend the BLM undertake a screening process to determine which aspects of health (including but not limited to public, environmental, mental, social, and cultural health) could be impacted by the proposed project. Depending on the screening results, an analysis of health effects, such as a health risk assessment or Health Impact Assessment, may need to be conducted to determine the direct, indirect, and cumulative impacts to health. This analysis may need as much time to complete as the Draft EIS, so early screening is essential to ensuring a timely analysis. We recommend the BLM partner directly with local, state, tribal, and federal health officials to determine the type of analysis needed to assess health

⁸ EO 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations. February 11, 1994.

⁹ <http://ceq.hss.doe.gov/nepa/regs/ej/justice.pdf>

impacts and conduct the analysis, and to determine appropriate and effective mitigation of potential health impacts.

Scope of Health Assessment in EIS

In terms of the scope of the health assessment, we recommend that the potential for contaminant exposure and resulting risks be evaluated. In addition, we recommend the EIS consider how income from new jobs can result in positive or negative health impacts, for example by increasing socioeconomic status or by generating rapid social and community change. We also recommend considering the health impacts of potential changes to traditional way of life from the project, including reduced reliance on a traditional diet due to lack of access and corresponding increased reliance on substitutes.

Data Collection

To appropriately evaluate health impacts, specific health data that may not be routinely collected as part of the scoping process may be required. To ensure that the necessary data are available for this evaluation, the EPA recommends the BLM involve public health professionals early in the NEPA process. Public health data and expertise for prospective health impact analysis, or for providing input on health issues, may be available from local health departments, tribal health agencies, the Alaska Department of Health and Social Services, or federal public health agencies such as the U.S. Centers for Disease Control and Prevention's National Center for Environmental Health, U.S. Agency for Toxic Substances and Disease Registry, or Indian Health Service.

Methods and Tools

Health Impact Assessment methodology is a common tool that can be used to assess potential health impacts. HIA is a combination of procedures, methods, and tools that enables systematic analysis of potential positive or negative effects of a policy, plan, program, or project on the health of a population, as well as the distribution of those effects within the population.¹⁰ Depending on available data and potential effects, there are different levels of HIA analysis, and we recommend that the BLM involve public health professional mentioned above in determining the appropriate level of analysis. In addition to evaluating impacts, we recommend that the HIA identify the appropriate actions to manage or mitigate health effects from the proposed project.

Guidelines for conducting a HIA are available from various sources.¹¹ The World Health Organization has links to many of these (see <http://www.who.int/hia/about/guides/en/>). The International Finance Corporation has also developed detailed guidelines for conducting a HIA (see <http://www.ifc.org/wps/wcm/connect/a0f1120048855a5a85dcd76a6515bb18/HealthImpact.pdf?MOD=AJPERES>). In addition, the State of Alaska has developed *Technical Guidance for Health Impact Assessment*, also known as the "Alaska HIA Toolkit" (see <http://dhss.alaska.gov/dph/Epi/hia/Documents/AlaskaHIAToolkit.pdf>).

Consultation and Coordination with Tribal Governments and Traditional Ecological Knowledge

Pursuant to Executive Order 13175, Consultation and Coordination with Indian Tribal Governments (November 6, 2000), we recommend that the EIS describe the process and outcome of government-to-

¹⁰ This definition is from the International Association for Impact Assessment (IAIA), which is modified from the World Health Organization's Gothenberg consensus statement (1999).

¹¹ EPA does not endorse or recommend use of any single or particular guidance on HIA. These references are provided as general information and to assist permitting agencies with identifying additional resources on HIA.

government and government-to-corporation, consultation between the BLM and tribal governments, and ANCSA corporations within the project area, issues that were raised, and how those issues were addressed in the EIS analysis.

Due to the traditional uses of the proposed leasing area, we recommend the identification, inclusion, and integration of traditional ecological knowledge into the EIS analysis, as appropriate. Such anthropological work can include the collection of local and traditional knowledge concerning the affected environment, anticipated impacts from the project, and traditional hunting and land use patterns in the area. We recommend that, in addition to reviewing any pertinent traditional ecological knowledge currently available, additional studies be conducted as necessary to clearly identify concerns and potential impacts, including cumulative impacts, from the proposed project and project alternatives. This information should be reviewed and included in the EIS to the extent possible and utilized in the analysis of potential impacts.

Indirect Impacts

We recommend that the EIS include consideration of all reasonably foreseeable indirect effects, which are caused by the action but may be later in time or farther removed in distance. Given the proximity of the Coastal Plain to the Alaska-Canada border, indirect effects may include transboundary effects. For example, the EPA is aware that federal, territorial, and indigenous governments in Canada have expressed concern regarding potential impacts to the Porcupine caribou herd, which migrates between Alaska and Canada.

Mitigation and Monitoring

The EPA recommends the EIS identify the type of activities that would require mitigation measures during future oil and gas exploration or development. In addition, we recommend identifying whether or not implementation of the measure is required by the BLM or any other governmental entity, and what entity will be responsible for implementing the measure. The leasing analysis stage provides a critical opportunity to establish terms and conditions to be applied to future leases in order to protect sensitive resources. If the EIS identifies any potential adverse impacts to human health or environmental resources, we recommend the development of leasing stipulations to protect those resources. We also recommend that an environmental monitoring program be designed for future oil and gas activities, to assess both impacts from the project and whether mitigation measures being implemented are effective.