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WATER DIVISION

OCT 29 2019

Colonel Phillip Borders
Alaska District Engineer
U.S. Army Corps of Engineers
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Colonel Borders:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' Public Notice POA-2013-00396 for a Clean Water Act Section 404 Permit, dated September 13, 2019. According to the PN, the applicant, Alaska Industrial Development and Export Authority, has proposed to construct a new 211-mile-long gravel surfaced roadway connecting the Dalton Highway near milepost 161 to the Ambler Mining District in north-central Alaska to support year-round mineral resource exploration and development. This road would cross several tracts of federal lands, including 26 miles across the Gates of the Arctic National Park and Preserve and 25 miles across lands managed by the Bureau of Land Management.

The PN and Draft Environmental Impact Statement released by the Bureau of Land Management indicate that the discharge of fill material associated with the project may result in substantial impacts to waters of the United States. The proposed project would discharge over 11 million cubic yards of permanent fill material into approximately 2,060 acres of jurisdictional wetlands, as well as 77,004 linear feet of jurisdictional streams. An additional 320 acres of wetlands and 324,115 linear feet of stream channel would be temporarily impacted by land clearing and upwards of 10,837 acres of wetlands and other waterbodies would experience secondary impacts resulting from fugitive dust.

The EPA understands Alaska's desire to develop infrastructure to support industrial and economic development. The EPA supports developing this infrastructure in a way that addresses the development needs of Alaskans while also safeguarding the State's exceptional natural resources. In addition to reviewing the PN, the EPA has actively participated as a cooperating agency in the National Environmental Policy Act process for the Ambler Road Project by providing comments during scoping, on the Preliminary DEIS released in June 2019, and will be submitting a separate letter providing comments pursuant to our responsibilities under NEPA and Section 309 of the Clean Air Act.

The PN states that "The Corps of Engineers is a cooperating agency for the EIS and will use the information to support a permit decision." This letter and the details in the Enclosure outline our recommendations to help ensure the Corps' record contains sufficient information, evaluation, and documentation to support the Corps' permit decision. We hope to continue working with the applicant, the BLM, and the Alaska District Corps of Engineers as a partner in the CWA Section 404 permit process to help develop a robust, defensible permit that meets the project purpose.

Overview of EPA Comments and Recommendations

This letter responds to the CWA Section 404 PN and addresses the adequacy of the PN, DEIS, and supporting documents for evaluating compliance with the restrictions on discharge contained in the CWA 404(b)(1) Guidelines. The Guidelines are the substantive environmental criteria for the evaluation

of proposed discharges of dredged or fill material into waters of the United States, including wetlands, which cannot be permitted unless compliance with the Guidelines has been demonstrated.

We are concerned that the proposed 211-mile road may not be the least environmentally damaging practicable alternative. The road as proposed would support mining exploration and development, but there is no evaluation of potentially environmentally preferable options for fuel transport along the proposed route. Mining exploration activities are practicable without the use of surface transportation. To avoid piecemealing project components and potentially precluding the use of mitigation opportunities and environmentally preferable alternatives, the proposed access road should be evaluated when there is a specific proposal for the development of a mine. The EPA recommends evaluating an access road for CWA Section 404 authorization once a mine project has been permitted, approved, and financed for development to avoid unnecessary environmental impacts and losses associated with the construction of a road solely for continued exploration activities.

The corridor for the proposed road is extensive, traverses through pristine aquatic resources, dissecting wild areas between the Kanuti National Wildlife Refuge and the Gates of the Arctic National Wildlife Park and Preserve, and directly impacts 26 miles of the Kobuk Preserve. Where field wetland mapping verification occurred, nearly 25 percent of the data reviewed by EPA (56 of 234 forms) contained errors, demonstrating a lack of adequate quality assurance/quality control and calling into question the accuracy and precision of the mapping used to assess the impacts to aquatic resources. Data gaps in the delineation of aquatic resources, including an inability to detect small streams, a lack of field data for the eastern 50-miles of the road, and a lack of summary results of validation or revision work, also erode the confidence associated with the desktop mapping. The EPA recommends the completion of a validation assessment, such as the assessment completed for the Alaska LNG project, to determine the precision and accuracy of the current mapping of wetland types and boundaries for the entire route and to enable this wetland mapping to be considered valid and sufficient for use as baseline information for both the EIS and CWA Section 404 permitting processes.

Without adequate mapping of aquatic resources to be impacted, it is unclear how the mitigation sequence will be applied to avoid, minimize and compensate for impacts. The analysis of temporary, secondary and cumulative impacts to aquatic resources lacks site-specific data to allow for a full evaluation of project impacts to the project area and downstream waters. Similarly, there is no guarantee that minimization measures proposed by BLM in the DEIS will apply to lands beyond the 12% of the project area owned by BLM. Furthermore, several standard avoidance and minimization measures for wetlands were not included in the DEIS. We recommend compiling a list of avoidance and minimization measures that will be applied across the entire project area to allow for an evaluation under the Guidelines and subsequent incorporation into the Corps' permit. We recommend that the Corps provide an opportunity for meaningful public comment on all proposed avoidance and minimization measures.

The EPA is also concerned that the Alaska District issued this PN without a compensatory mitigation plan. Given the potential impacts of this large-scale project, which are further discussed in the enclosure, practicable compensatory mitigation should be required to adequately compensate for unavoidable impacts to aquatic resources. We look forward to further discussions with the District to help identify compensatory mitigation opportunities for the proposed Ambler Road Project and other projects in Alaska.

Our review finds that the PN, DEIS, and supporting documents do not contain sufficient information to support a reasonable judgment that the proposed discharges will comply with the Guidelines. The EPA's detailed comments and specific recommendations about how the Corps' record can support a Guidelines

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analysis are described in the enclosure. The PN and the Corps' supporting record, including the EIS, should include sufficient information, evaluation, and documentation to address the requirements of the Guidelines.

Based on our review of currently available information, the concerns articulated above and in the detailed enclosure, the EPA finds that this project, as proposed, may result in substantial and unacceptable impacts to an aquatic resource of national importance, as covered in Part IV, paragraph 3(a) of the 1992 Memorandum of Agreement between the EPA and Department of the Army regarding Clean Water Act Section 404(q). The EPA is identifying the Kobuk River and associated tributaries and wetlands and the Koyukuk River, including tributaries and adjacent wetlands, as aquatic resources of national importance. The EPA also identifies the Nutuvukti fen within the Kobuk River Watershed as an ARNI.

Many of the aquatic resources along the proposed road corridor are of outstanding natural resource value and occur in systems whose ecological functions are intact at their greatest potential. The main stem of the Kobuk River extends through the Kobuk Preserve, the Western Unit of the Gates of the Arctic National Park and Preserve. Within the boundaries of the Kobuk Preserve, the Kobuk River, including a 0.25-mile boundary on either side of the river, has been designated as a wild river under the Wild and Scenic Rivers Act. Similarly, within the boundaries of the Gates of the Arctic National Park and Preserve, the Alatna River and John River, both tributaries of the Koyukuk River, and the North Fork of the Koyukuk River have been designated as Wild and Scenic Rivers for both wild and scenic characteristics. Each of these rivers provide subsistence and recreational uses, including sport hunting, floating and wildlife viewing opportunities.

Both the Kobuk and Koyukuk Rivers and their wetlands and tributaries provide important habitat and migration corridors for resident and anadromous fish species. While data gaps exist for this pristine area, known harvested species within the Kobuk drainage include anadromous chum salmon, arctic grayling and whitefish, including sheefish, and several more. The Kobuk River is well known for supporting sheefish spawning and trophy fishing. The Koyukuk River and its tributaries similarly supports fish species including sheefish and other whitefish largely used for subsistence and sport fishing; Henshaw Creek, a tributary of the Koyukuk River is recognized as the single largest producer of summer chum salmon in the Yukon River basin. Both rivers, their wetlands and tributaries also support caribou, moose, black and brown bears, bird species, native vegetation and other migratory and resident species.

The Nutuvukti fen lies within the Kobuk Watershed and is one of the largest patterned fens in interior Alaska. The fen is created by peat accumulation over centuries, paired with poorly drained soils, and appropriate hydrologic inputs resulting from an ideal setting in the watershed. Its intricate pattern of ridges and pools provides biological diversity and supports plants and other organisms unique to the ecosystem.

The proposed road alignment would directly impact the Kobuk River and the Koyukuk River and many tributaries with road construction, maintenance, and long-term operational activities. The Nutuvukti fen is located approximately 0.25-miles downstream of the proposed alignment and receives hydrologic input from glacial melt which traverses the project area. Impacts to water bodies would result from water extraction activities associated with dust abatement, the development of material sites adjacent to waterways, and the release of hazardous materials and pollutants during operation and management of the road. Construction, standard operations, and inevitable spills are each likely to impact the water quality of these pristine waters, and their tributaries and wetlands.

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Please note that the EPA's ARNI determination does not preclude a favorable permit decision, nor does the designation of an area as an ARNI prohibit or determine permitting outcomes for this project or any future projects. Under the Section 404(q) MOA, in order for the EPA to continue coordination on a project with the District, the EPA must designate that a project may or will have the potential to impact an ARNI. An ARNI designation ensures that a formal discussion process for a proposed project would not be initiated where resources to be impacted are insignificant or the impacts trivial.

We appreciate the coordination you and your staff have provided on this project and look forward to continued engagement. If you have questions about our review, please contact me at (206) 553-1855 or have your staff contact Annie Whitley of my staff at (206) 553-0058. or by email at whitley.annie@epa.gov.

Sincerely,

Angela Chung
for

Daniel D. Opalski
Director

Enclosure

cc:
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Enclosure to EPA's Comment Letter on Public Notice POA-2013-00396

The following are detailed comments submitted by the U.S. Environmental Protection Agency (EPA) in response to the U.S. Army Corps of Engineers Public Notice POA-2013-00396 (PN), applied for by the Alaska Industrial Development Authority.

I. Project Description

The permit application is for the phased construction of a controlled access, year-round, industrial road linking the Ambler Mining District to the Dalton Highway. Phase I of the project would construct a single-lane, gravel pioneer road, approximately16 feet wide on a shallow embankment, to be used seasonally. Phase II would construct a single-lane, gravel roadway, about 20 feet wide over the existing pioneer road to be used for year-round, one-way access. And phase III (full build-out) would be an all-season, two-lane gravel roadway, typically 32 feet wide, over the existing phase II footprint designed to support mining exploration, development and operations, including the hauling of flotation concentrates from future mining projects for export.

In addition to the 211-mile roadway, discharge of fill material is needed to construct 2,903 culverts and 29 bridge crossings, 20 vehicle turnouts, 3 landing strips, 41 gravel extraction sites, construction camps, a fiber optics line and several associated access and maintenance support facilities. The road corridor crosses areas of naturally occurring asbestos, there is a likelihood for construction to generate acid rock drainage, and approximately 92% of the area is underlain by continuous permafrost susceptible to thawing. The project area has very limited urban development and most lands proposed to be impacted have been described as having "wilderness characteristics."

II. Comments Related to Clean Water Act Section 404(b)(I) Guidelines

The Guidelines are the substantive environmental criteria used to evaluate proposed discharges of dredged or fill material.[1] The Guidelines require the Corps to make written factual determinations of the potential short-term or long-term effects of a proposed discharge on the physical, chemical, and biological components of the aquatic environment and "[s]uch factual determinations shall be used in § 230.12 in making findings of compliance or non-compliance with the restrictions in § 230.10."[2]

Based on our review, we find that the PN, DEIS, and supporting documents do not contain sufficient information to address the factual determinations required by 40 C.F.R. § 230.11 and to make a reasonable and defensible judgment that the proposed discharges will comply with the Guidelines under 40 C.F.R. § 230.12.[3] Sections A-D provide our comments regarding information and evaluation relevant to each requirement and recommendations regarding how

[1] 40 C.F.R. § 230.10; 40 C.F.R. § 230.12.
[2] 40 C.F.R. § 230.11.
[3] 40 C.F.R. § 230.12(a)(3)(iv); see also 230.6(c)(explaining that even in the case of short form evaluations "there must still be sufficient information (including consideration of both individual and cumulative impacts) to support the decision of whether to specify the site for disposal of dredged or fill material").

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the Corps' record for this project can be improved to demonstrate compliance with the Guidelines.[4]

A. Determination of Least Environmentally Damaging Practicable Alternative[5]

The Guidelines require that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge, that meets the project purpose, which has less adverse impacts on the aquatic ecosystem.[6] The Corps of Engineers is therefore only able to issue a permit for the least environmentally damaging practicable alternative (LEDPA).[7] Identification of the LEDPA is achieved by performing an alternatives analysis that evaluates the direct, secondary/indirect, and cumulative impacts to jurisdictional waters of the United States (WOTUS) resulting from each alternative considered. Project alternatives that are not practicable and do not meet the project purpose are eliminated. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.[8] Where the activity associated with a discharge is not "water dependent," practicable alternatives that do not involve a discharge to wetlands and other special aquatic sites "...are presumed to be available, unless clearly demonstrated otherwise."[9]

Based on the information provided in the PN and DEIS, the EPA is concerned that the Corps has not considered several potentially practicable alternatives in sufficient detail to respond to Guidelines requirements related to determining the LEDPA. The following comments highlight information relevant to the LEDPA analysis that the Corps should consider.

The applicant's stated purpose in the PN is to increase job opportunities and encourage the economic growth of the state by supporting mineral resource exploration and development in the Ambler Mining District in Northwest Alaska. EPA previously expressed concern during scoping, in Cooperating Agency meetings, and on the Preliminary DEIS, with decoupling the evaluation of Ambler Access Road from the construction and development of a mine, as it prevents a complete evaluation of mineral extraction activities and infrastructure necessary to support a mine. Although mining exploration and development has been identified as the project purpose, evaluation of the road without any specific mining project limits the ability to fully evaluate alternatives, analyze potential impacts, and identify the LEDPA.

In addition, although we appreciate the inclusion of reasonably foreseeable actions in the DEIS, our significant concerns remain relating to identification of the LEDPA and the overall analysis of potential impacts. Reasonably foreseeable actions identified include mine development, associated access roads, fuel needs, and other necessary infrastructure near the Ambler Road terminus and within the Ambler Mining District. Four potential mine projects in Ambler Mining District have been identified in Appendix H and are displayed on Map 2. The DEIS evaluates the cumulative effects likely to result from these projects, including direct impacts to wetlands and

[4] 40 C.F.R. § 230.6(b); 40 C.F.R. § 230.11; and 40 C.F.R. § 230.12(b).
[5] 40 C.F.R. § 230.10(a).
[6] 40 C.F.R. § 230.10.
[7] Provided that it complies with the other portions of the Guidelines.
[8] 40 C.F.R. § 230. 10(a)(2).
[9] 40 C.F.R. § 230. 10(a)(3).

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vegetation that equal "thousands of acres, not including access roads" (pg. H-40). We agree with many of the assumptions used in the DEIS, including the inevitable widespread changes across the project area from these projects, resulting in changes to soil characteristics, hydrology, thawing of permafrost, and wetlands and vegetation from fugitive dust, likely resulting in lost or altered wetland functions (pg. H-42). At the same time, conceding that such impacts are likely to occur is not sufficient to evaluate the total impacts of a project needing authorization under Section 404 of the CWA, nor does it provide the factual basis for determining the LEDPA.

Without a proposal for the development of a mine, avoidance and minimization measures that would support the LEDPA determination have been removed from consideration. Fuel transport pipelines are components of proposed mining projects in remote areas of Alaska (e.g., Donlin, Pebble) and are considered reasonable alternatives to hauling materials via trucks on access roads (e.g., Red Dog Aqqaluk SEIS, Donlin EIS, Pebble Draft EIS). Pipelines would greatly reduce impacts to aquatic resources due to fugitive dust, vehicle emissions, spills from trucks, and human impacts due to truck accidents.

Pipelines to convey fuel were screened out as alternatives in the Ambler Access DEIS, because they do not reasonably support hauling heavy mining equipment (pg. 2-2, G-23). We agree that pipelines cannot be used for hauling mining equipment, but pipelines can be and are used in lieu of more truck hauling to reduce environmental impacts from transport of fuel. The alternatives analysis and EIS should include the construction of one or more pipelines with the access road. The accompanying analysis should discuss any additional infrastructure required to support the pipeline(s) and the anticipated environmental impacts. This information is necessary to evaluate practicable alternatives and determine the LEDPA.

The PN states that Phase III (full-build out) of the road would be developed when "mining activity justifies the need for a two-lane road." It is unclear why road access is necessary for the purpose of mining exploration. Exploration in the Ambler Mineral District is already occurring without road access - as is acknowledged in the DEIS (pg. H-17). Advanced exploration via air access has and continues to occur at remote projects in Alaska. Many exploration projects are not developed into mining projects. To avoid unnecessary impacts associated with the construction of a road and supporting infrastructure for continued exploration activities, road development should not occur until a mine project has been permitted, approved, and financed for development. This would prevent the construction of a road and resulting impacts that might end up being used solely for exploration, when there are less impactful alternatives (such as continued air access). After the road is constructed to support mine development, future exploration projects could use the road. As above, consideration of exploration using air access is necessary in an evaluation of practicable alternatives.

The National Park Service is separately evaluating the proposed project alternatives crossing the Gates of the Arctic National Park and Preserve per ANILCA Section 201(4). An Environmental and Economic Analysis has been developed by the NPS to identify the most desirable route across NPS lands and inform the development of terms and conditions to be included in the NPS Right-of-Way permit. If the most desirable route as determined by the NPS is not also the LEDPA, we request more information from the Corps on how a conclusion of compliance with the Guidelines will be reached to issue a Section 404 permit for this project. For example, the

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DEIS states that if the Secretary of the Interior selects Alternative B as the route through Gates of the Arctic National Park and Preserve, then Alternative A would no longer be reasonable under NEPA. Alternative B is estimated to directly impact 2,415.8 acres of WOTUS versus 2,058.6 acres under Alternative A. This suggests that selection of Alternative B would not be the LEDPA as required by the Guidelines and ultimately the CWA.

B. Evaluating the Potential Effects of the Discharges of Dredged or Fill Material

As discussed above, the proposed discharges identified have the potential for extensive adverse impacts, and thus require more detailed information, evaluation, and documentation to demonstrate compliance with the Guidelines.[10] According to the Guidelines, the Corps "shall determine in writing the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment" by making the factual determination listed in 40 C.F.R. §230.11. Furthermore, the Guidelines require the prediction of cumulative effects to the extent reasonable and practical.[11]

As discussed below, the current record likely underestimates the extent, magnitude, and permanence of the adverse effects of the proposed discharges of dredged or fill material to streams, wetlands, lakes, and ponds, and the fisheries resources they support.

Wetland Mapping

Complete and accurate mapping of the extent of potentially affected aquatic resources (including direct, secondary/indirect and cumulative effects) is necessary to make such factual determinations.[12] Although substantive information has been compiled for this project, the proposed project has changed over time and it is unclear which of the past reports available on the BLM website[13] (e.g., USACE Section 404 Permit Application, from 2016) still reflect the current proposal. The PN contains just four pages of Plan View sheets of the proposed road alignment, material sites, and other project features. These plan view sheets do not document project components in relation to WOTUS or uplands and there is no reference to more detailed plan views in the PN. The applicant's website under Section SF299, Appendix B has 422 pages of detailed plan view map sets from a Corps permit application dated June 22, 2016, which includes locations of WOTUS in relation to project components. However, it is unclear if these map sets reflect the current proposal or if additional changes have been made to the road alignment or location of associated infrastructure. The EPA recommends a revised PN be posted that includes (or at least provides a reference to) accurate information and detailed mapping of the currently proposed project components in relation to WOTUS, permanent and temporary impacts areas, location of culverts, and other project features, so that potentially impacted aquatic resources and minimization measures are clearly documented.

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[10] 40 C.F.R. § 230.12(a)(3)(iv); see also 230.6(c)(explaining that even in the case of short form evaluations "there must still be sufficient information (including consideration of both individual and cumulative impacts) to support the decision of whether to specify the site for disposal of dredged or fill material").

[11] 40 C.F.R. § 230.11(g)(2).

[12] 40 C.F.R. §230.94(c)(5).

[13] Available from https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=111130.

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The EPA has reviewed the May 2014 Preliminary Wetland Delineation and Functions and Values Assessment and the June 2016 Desktop Wetland Delineation report and is concerned about the quality and methods of the data collected. We found numerous potential errors on the 2012 and 2013 data forms, ranging from incomplete forms to conclusions made with contradictory supporting information listed under one or more of the three wetland criteria. Approximately 56 of 234 sheets reviewed by EPA seemed to contain errors or incomplete information, which equates to 24 percent of the field sheets we reviewed. We understand that the Corps previously issued a preliminary jurisdictional determination on the project area proposed in 2016, and that the Corps is reviewing these data forms again now. We have compiled a list of the errors identified and will share that list with the Corps Project Manager to aid in their review.

Furthermore, it is unclear how the field data were used to validate or improve the final wetland mapping. The 2014 Wetland Delineation and Functions and Values Assessment states that "Field data was used to ground truth aerial photograph interpretations of preliminarily mapped communities."[14] No further information is provided regarding a comparison of the field data to the preliminary mapping to demonstrate the relative precision of their preliminary mapping, nor was any further explanation provided of the extent of revisions that were subsequently completed as a result of the field data collection. The lack of an assessment of the field validation work combined with extensive potential errors found in the 2012 and 2013 data forms calls into question the validity, accuracy, and precision of the wetland mapping that is currently available for this project, which undermines the quantification of estimated wetland impacts identified for the routes under evaluation by the Corps, BLM, and NPS.

The 2016 Desktop Wetland Delineation report was produced because the proposed route changed and the eastern 50 miles of the road were not included in the 2014 Preliminary Wetland Delineation and Functions and Values Assessment. The information in the 2016 report was limited to initial preliminary data gathering without field verification. Although the 2016 report states that no deviations from the 1987 Corps of Engineers Wetland Delineation Manual occurred, the required additional steps were not implemented to support the conclusion that Method D.1 (Routine Determination-Onsite Inspection Unnecessary) was the appropriate method to use. The 2016 report provided no information on soil types, plant species, or hydrology to support the wetland determination results. The Manual explicitly states that if the vegetation, soils, and hydrology are not adequately characterized for any portion of the study area, the next step is to proceed to the methodology that requires an onsite inspection. As such, the 2016 Wetland Delineation report does not appear to have followed methods outlined in the Manual for routine delineations where it is determined onsite inspections are unnecessary.

The errors found on the field data forms provided for wetland determination also call into question the applicant's ability to prescribe a "value" to wetlands in the project area. In the absence of accurate baseline mapping of the aquatic resources in the project area, it is unclear how the proposed road route and supporting infrastructure have been aligned to minimize impacts resulting from direct fill or fragmentation. Additional information is needed in the EIS and the 404 record to document where high value wetlands occur and describe how the project has avoided these areas.

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[14] AIDEA. (2014). 2014 Wetland Delineation and Functions and Values Assessment. p. 6

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Based on the information available to date and given the amount of missing and conflicting information provided on the data sheets, we have significant concerns regarding the accuracy of this ground-truthing exercise, the accuracy of the baseline wetland mapping used for this proposed project, and the anticipated project impacts identified to date. It is unclear if additional information was provided by the applicant and approved by the Corps to supplement the May 2014 Preliminary Wetland Delineation and Functions and Values Assessment report. In a cooperating agency meeting (09/23/19) it was suggested by the Corps that additional field work would be necessary in the proposed project area, but the focus of this field work has not been clarified. We believe that additional field data could greatly improve the baseline mapping of wetlands and small streams to better reflect the total proposed impacts to these largely pristine watersheds.

The EPA recommends the completion of a validation assessment to determine the precision and accuracy of the current mapping of wetland types and boundaries for the entire route, including the first 50 miles, to enable this wetland mapping to be considered valid and sufficient for use as baseline information for both the EIS and CWA Section 404 permitting processes. The wetland mapping validation work performed for the Alaska LNG serves as an example of such an assessment. The collection of additional field data may be necessary, including identifying streams less than 12 feet wide,[15] and to complete validation of the available baseline information. We request the opportunity to review any additional field data collected and/or supplemental information provided by the applicant to address field data sheet errors and data gaps. We recommend that the PN and the EIS be updated with accurate wetland delineation information regarding the types and acreage of wetlands impacted by the project and all ancillary features using the field-verified methodology outlined in the 1987 Manual and 2007 Alaska Regional Supplement. Accurate wetland information is necessary to document impacts, compare alternatives, and to help inform the determinations required for compliance with the Guidelines.[16]

Stream Locations & Crossings

The May 2014 Preliminary Wetland Delineation and Functions and Values Assessment report outlines methods used to map WOTUS in the project area. The Limitations to Methods described in this report are substantial. Aerial interpretation of the 68,067-acre Study Area is noted to preclude identification of small drainages (less than 12 feet wide) in densely vegetated habitats, however it is unclear how this limitation has been addressed, particularly when estimating the number of culverts necessary for each alternative. Chapter 3 of the DEIS states that "hundreds of named and unnamed smaller rivers and streams intersect the proposed alternatives, requiring 2,921 to 4,585 additional bridge and culvert crossings" (pg. 3-17); Table 17 of Appendix D estimates 2,869 minor (≤ 3 feet), 15 moderate (≤ 10 feet) and 19 major (≤ 20 feet) culverts are necessary for the proposed road. Given the mapping limitation of not being able to identify streams less than 12-feet wide on the aerial photography, as well as the recognition that additional, adequately-sized crossing structures will be needed, it is likely that the number of and impacts to streams have been under-represented in the EIS and permit application materials. We wanted the Corps to be aware of this current design limitation and provide the following recommendations.

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[15] DOWL. *2014. Preliminary* Wetland Delineation and Functions and Values Assessment.
[16] 40 C.F.R. § 230.10(c).

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We are concerned that the lack of accurately mapped baseline data may also result in unquantified secondary impacts linked to interrupted drainage patterns. We appreciate the design proposal from AIDEA to install culverts at least every 150 feet apart in wetland areas without defined water channels (DEIS, pg. 3-43); however, the road will create a linear barrier and this prescribed measure may not be enough in really wet areas. Changes to natural flow patterns, erosion patterns, natural channel migration, ponding, flooding patterns, and permafrost thawing are all expected to result from the installation of thousands of culverts along the roadway. The PN describes the high prevalence of wetlands throughout the project area and commits to maintaining hydrology through design measures, including the use of best management practices for design and construction to reduce impacts. That said, there will likely need to be more moderate and major culverts installed than are currently disclosed to maintain hydrology in the project area. Additional information is necessary to develop a plan for installing bridges and culverts to minimize impacts to aquatic resources. We recommend the applicant provide updated information on the location of small streams and the estimated number of culverts of each size necessary prior to issuance of the DA permit.

Essential Fish Habitat

The DEIS implies a high degree of uncertainty related to impacts to Essential Fish Habitat and salmon (pg. 3-61). Statements are made that it is likely that more streams and wetlands support Pacific salmon than have been identified to date and that AIDEA would be required to conduct additional surveys during permitting. The DEIS states that fish sampling has not been conducted for most streams in the project area and that additional data collection would be required to compare impacts to salmon and Essential Fish Habitat between alternatives. This lack of data limits the ability to evaluate the impact of the proposed alternatives on salmon and their respective habitat. Section 230.11(e) requires the Corps to determine "the nature and degree of effect that the proposed discharge will have...on the structure and function of the aquatic ecosystem and organisms." We recommend that the result of the additional data collection referred to in the DEIS occur and be provided to the Corps prior to permit issuance so that impacts to streams and salmon can be determined and used in the alternatives analysis. Such information will help validate and support inferred relationships between fish distribution, abundance, and habitat selection.

Material Sites

The Proposed Project Footprint for Project Elements (Table 2A-2) in the DEIS quantifies the acreage of wetland, open water, and uplands that would be impacted by the preferred road alignment, airstrips, and material sites. The projected airstrips would impact 49 acres of wetlands and 1 acre of open waters, and material sites are projected to impact 567 acres of wetlands and 1 acre of open water. It is not clear how much investigation of these material sites has occurred to determine if 1) there are sufficient material volumes, 2) if they contain naturally occurring asbestos (NOA) or acid or metal leaching rock, and 3) if they have been located to avoid and minimize impacts to WOTUS. Sheets 2-4 of the PN identify several material site locations throughout the proposed road alignment; however, the plan views do not identify where these are located in relation to WOTUS. It is unclear if the Corps has access to additional information about these material sites in order to evaluate them fully. In addition, site plan views with acreages or elevation views of the material sites have not been included in the PN. To ensure

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compliance with the Guidelines,[17] we recommend that siting of the road alignment, airstrips, material sites, and any other ancillary development be thoroughly reviewed to ensure that if practicable upland or less damaging alternatives are available, they are sited in these locations.

Loss of Functions and Values
In addition to the number of wetland acres and linear feet of streams and rivers potentially affected, information about the functional impacts on aquatic resources under each alternative is also necessary to provide a basis for comparison. The DEIS states that DOWL provided a wetland functional assessment for a portion of Alternatives A and B and that ABR, Inc. completed a functional assessment for the portions of Alternatives A and B that traverse through Gates of the Arctic National Park and Preserve. Data from these functional assessments were collected applying different methods, and it appears that no data were collected for Alternative C or the eastern 50 miles of Alternatives A and B. The methodology used by DOWL was recorded on data sheets using criteria outlined in the Alaska District Regulatory Guidance letter (RGL), ID No. 09-01. This RGL, using best professional judgment (BPJ) to rate wetlands, was removed from the District's website in 2011 when it was supplemented by new internal guidance. RGL 09-01 contains no instructions for implementing the BPJ method, leading to inconsistent application and interpretation of functional indicators.

Because there are gaps in the alternatives (and areas within alternatives) where functional assessments were conducted and no functional assessment method was consistently applied, there is no meaningful way to compare the functional losses among the alternatives, which would help in identifying the LEDPA and determining appropriate compensatory mitigation. The proposed project is located within the geographic domain of the *Guidebook for Reference Based Assessment of the Functions of Precipitation-driven Wetlands on Discontinuous Permafrost in Interior Alaska* (Operational Draft, 1999), which we recommend using if further functional assessments are completed, such as during the development of appropriate compensatory mitigation.

Secondary & Cumulative Impacts
The DEIS considers mine development reasonably foreseeable action, but does not include reasonable and practical predictions. In addition, the Corps must make a determination under 230.11(e) of the nature and degree that the proposed discharge will have individually and cumulatively on the aquatic ecosystem. Potential cumulative effects are mentioned in general terms in the DEIS (e.g., pages 3-49 to 3-50), with little or no evaluation of these impacts.

The PN states that 320 acres of wetlands and 324,115 linear feet of stream channel would be temporarily impacted by the project; however, no specifics are given on what activities would result in these temporary impacts or the length of time they are expected before they are restored or recover naturally. Of particular concern is that the temporary impacts identified for streams are over four times greater than anticipated permanent stream impacts, and it is not common for temporary impacts to streams to exceed permanent impacts by that much. More information is needed regarding what activities will result in these impacts to determine if there are appropriate avoidance and minimization measure that can be applied to reduce these impacts.

[17] 40 C.F.R. § 230.10(a).

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The Guidelines describe secondary effects as effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of dredge or fill material.[18] Secondary impacts from construction and use of this road to wetlands and other waterbodies are anticipated to be over four times greater than direct impacts to wetlands. This estimate appears to be quantified from applying a 100-meter fugitive dust buffer along the centerline of the proposed route. We concur with much of the assessment provided in the DEIS that characterizes impacts resulting from fugitive dust, yet some improvements could be made to these analyses.

For example, the DEIS states that fugitive dust particulates are often seen within the first 100 meter from the road (pg. 3-43) and wetlands are estimated to be altered within 100 meters, but not beyond 100 meters (pg. 3-73). This information does not appear to be based on modeling of dust deposition specific to environmental conditions and traffic frequency proposed for the road. As a result, this information does not accurately reflect the magnitude and extent of potential impacts due to truck traffic on the road. The DEIS references fugitive dust emissions from the DeLong Mountain Transportation System road having impacts beyond 100 meters (pg. 3-41) and dust impacts to lichen have been found beyond 1000 meters from mining roads (pg. 3-73). Truck traffic proposed for the Ambler Road based on the hypothetical scenario is more than three times greater than DeLong Mountain Transportation System concentrate truck traffic and therefore magnitude of fugitive dust impacts could be different. We recommend that fugitive dust modeling occur and be used to refine the magnitude and extent of fugitive dust deposition and subsequent impacts to wetlands and surface waters impacts for each alternative. Such information is necessary to estimate the secondary impacts to aquatic resources likely to result from the project.

Furthermore, it is unclear how permafrost in the surrounding area may respond to fugitive dust produced from increased truck traffic during mine development and operation over the proposed 50-year life of this road. The proposed project would be located in areas of continuous permafrost and, as stated in the DEIS, potential impacts from road construction include permafrost degradation or warming (e.g., thaw settlement, retrogressive thaw slumps, thermokarsts, soil creep) and the changed drainage patterns that will result in increased sedimentation (erosion and deposition) as permafrost soils thaw. The DEIS also states that road performance deficiencies resulting from thermal instability include shoulder rotation, frost heaving, excess moisture in the road section, pot-holing, ponding, surface and shoulder erosion, subsidence, and rutting and that additional gravel resources would be required for road maintenance and repair (pg. 3-6). The DEIS also states that geotechnical investigations during the design phase would identify those risks and the road would be designed and constructed to avoid and minimize these risks using appropriate and standard road design practices. We recommend that these additional potential impacts be quantified based upon impacts evident from roads constructed in similar environments (e.g., Dalton Highway), to more completely understand the long-term secondary impacts on permafrost and the surrounding environment.

Acid Rock Drainage

The DEIS states that acid rock drainage (ARD) occurs throughout the study area. It is our understanding that field sampling has not been conducted along the proposed alignment to

[18] Section 230.11(h) *Determination of secondary effects on the aquatic ecosystem (NEPA uses the term "indirect")*

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determine site specific locations of NOA and ARD. The DEIS states that corrosion testing during geotechnical investigations for the road and material sites would be required to avoid cuts and use of materials with potential for ARD. Although the material site locations have been preliminary mapped along Alternative A, their locations could change if they contain NOA or acid generating rock. Our concern is that because not enough information is available regarding the suitability of the material sites, information on aquatic impacts as described in the PN and DEIS could change. We believe that sampling should have been conducted prior to identifying these areas as material sites in order to avoid areas that contain NOA or acid generating rock and find alternative sites. As sampling may occur in the future, locations of these sites may change and impacts to WOTUS may currently not be accurately identified.

ARD is produced by oxidation of sulfide materials, which is a chemical reaction that can occur when the minerals are exposed to air and water. Acidic drainage can be a result of naturally occurring processes and land disturbances such as highway construction and mining when acid-forming minerals are exposed at the surface. The acidic conditions can cause metals in the materials to dissolve, which can lead to impairment of water quality and subsequent severe and long-lasting effects to aquatic and terrestrial organisms that use these waters if not mitigated.[19] Because of these impacts, we have additional concerns regarding acid rock drainage as it relates to the Guidelines analysis.

In particular, Section 230.10(c) of the Guidelines states "no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States." The DEIS states that exposure and leaching of acid rock into waterways would substantially degrade habitat quality, alter water chemistry, and affect the health of fish and invertebrate populations. The DEIS also states that AIDEA indicates that cuts in acid rock areas would be avoided, but total avoidance may be difficult to achieve.

Site specific information on the locations of NOA and acid generating rock are needed to avoid these areas, i.e. by changing the location of the road alignment and material sites. Because we are concerned about impacts from acidic water or exposed ARD, we appreciate that Appendix N includes a related mitigation measure on page N-7, "Potential BLM Mitigation Measure: Geotechnical investigations would include corrosion testing to identify areas of potential acid rock drainage and avoid and minimize cuts to these areas." We recommend that this mitigation measure be expanded to include geotechnical investigations for ARD for material sites. We also recommend that the ARD mitigation measures describe the methods that would be implemented to prevent ARD from cuts and materials sites, as well as the decision process and standards for determining when ARD risks would lead to alternative material sites needing to be selected.

C. Mitigation Sequence

The 1990 Memorandum of Agreement regarding Mitigation under CWA Section 404(b)(1) Guidelines between the EPA and the Department of Army established a three-part process,

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[19] *Jennings, S.R., Neuman, D.R. and Blicker, P.S. (2008). "Acid Mine Drainage and Effects on Fish Health and Ecology: A Review". Reclamation Research Group Publication, Bozeman, MT.*

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known as the mitigation sequence (avoid, minimize, and compensate), to help guide mitigation decisions and determine the type and level of mitigation required. This sequence is also embedded in the requirements of the 2008 Final Rule on Compensatory Mitigation[20] and should be followed in that order.

As stated in the PN, information provided in the EIS is to support the Corps' permit decision and should therefore clearly demonstrate application of the mitigation sequence to the project design, layout and applicable best management practices. Appropriate and practicable steps used to avoid, minimize and compensate for any unavoidable impacts must be outlined prior to issuance of a permit, in accordance with both the Guidelines and the 1990 EPA/Corps MOA regarding mitigation.[21]

The PN provides a brief description of the Applicant Proposed Mitigation, which includes mitigation measures to avoid, minimize, and compensate for impacts to WOTUS from activities involving discharges of dredged or fill material. Appendix N of the DEIS includes "Potential BLM Mitigation Measure[s]" and "design feature[s] proposed by AIDEA." However, it is clarified that BLM only has the authority to apply their mitigation measures to BLM land, while "other landowners (e.g., State of Alaska, Alaska Native corporations, National Parks Service) and issuers of permits (e.g., U.S. Army Corps of Engineers, Alaska Department of Fish and Game) would need to decide which of the measures would be required on other parts of the road"(pg. N-1). As such, BMPs adopted solely by BLM would only cover approximately 12% of the 211-mile route (DEIS, pg. 3-83).

While Appendix N of the DEIS includes many mitigation measures that would be appropriate and applicable for inclusion in the DA permit, other standard permit conditions are either missing or not clearly stated in the DEIS, such as stabilizing fill slopes to prevent erosional impacts to the aquatic environment, and specifically wetlands. Appendix N includes a measure to install erosion control measures to minimize sedimentation impacts to fish habitat, but the wetlands section does not include a comparable measure. While we are aware that Alaska Department of Fish and Game has standards for fish passage, to ensure compliance with the Guidelines,[22] bridges or properly sized and designed culverts would need to be installed throughout the road alignment and project areas to maintain pre-construction condition of waters and ensure passage of low and high water flows, accommodate fluctuating water levels, maintain circulation, and sustain movement of aquatic species. Adequate cross drainage should also be installed in all areas where the road crosses wetlands to prevent ponding or drying of adjacent wetlands. Because the PN does not include plans that show where culverts would be installed, it is difficult to determine appropriate avoidance and minimization measures. We request additional avoidance measures be included in the permit regarding required methods to protect wetlands from erosion and to maintain connectivity for aquatic resources within the project area.

Additional information is required to demonstrate that appropriate and practicable steps have been taken to minimize adverse impacts, including specific design measures and best management practices adopted for the entire project area. We recommend compiling a list of

[20] 33 C.F.R. Parts 325 and 332 and 40 C.F.R. Part 230.
[21] 40 C.F.R. §230.10(d).
[22] 40 C.F.R. §230.23 and 40 C.F.R. §230.24

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avoidance and minimization measures that will be applied across the entire project area to allow for an evaluation under the Guidelines and subsequent incorporation into the Corps' permit. The Corps should provide an opportunity for meaningful public comment on all proposed mitigation, including the avoidance and minimization measures.

Several of the design features proposed by AIDEA state that the mitigation relating to the feature "would be determined during the design/permitting phase and incorporated into permit stipulations" (DEIS, pg. N-16). However, implementation of many of these BMPs could result in largely varied temporal impacts. For example, loss of vegetation and impacts to aquatic reasources within the 10-foot construction zone have been identifed as temporary, because a potential BLM mitigation measure includes the revegetation of this zone. Revegetation is proposed by AIDEA to be performed with native plant seed and/or cuttings, while BLM proposes the use of topsoil with live native vegetation as the preferred method (DEIS, pg. N-16). To avoid and minimize impacts to the greatest extent practicable, it is necessary to determine the most successful method for revegetation of the 10-foot construction zone and to implement that method across the project area. When considering just the 211-mile (1,114,080-feet) road alignment (no associated infrastructure) and a 10-foot buffer on either side, this totals over 500 acres of land temporarily impacted. The use of native seeds versus using topsoils with native vegetation in this climate could mean a difference in years for vegetation in this zone to be restored.

We recommend that AIDEA's Revegetation Plan for temporary impacts implement reclamation measures supported by the best available science. For example, it may be feasible to utilize valuable topsoil seed sources within the project area, such as the overburden active layer from proposed gravel mining areas. This active layer facilitates more rapid recolonization of native species, and therefore may decrease temporal loss associated with slower regeneration of vegetation in disturbed areas. Where AIDEA is not required to implement such measures to revegetate "temporarily" disturbed aquatic resources, a rationale should be provided as to why it is not practicable to do so. Furthermore, the PN states that Phase III construction is not expected to begin until approximately 10 years later after completion of Phase II. We recommend the Corps closely examine whether impacts to aquatic resources within the 10-foot construction buffer should instead be considered permanent due to temporal loss.

D. Compensatory Mitigation

The EPA is also concerned that the Alaska District issued this PN without a compensatory mitigation plan. Compensatory mitigation is a critical tool used to meet the longstanding national goal of "no net loss" of wetland acreage and function.[23] The Guidelines require compensatory mitigation to be commensurate with the amount and type of impact associated with the permit.[24] They also specify that "the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions."[25]

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[23] *Compensatory Mitigation for Losses of Aquatic Resources: Final Rule* (40 C.F.R. Part 230, Subpart J).
[24] 40 C.F.R. § 230.93(a).
[25] 40 C.F.R. § 230.93(f)(1).

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Corps and EPA regulations state that "the public notice for the proposed activity must contain a statement explaining how impacts associated with the proposed activity are to be avoided, minimized, and compensated for. This explanation shall address, to the extent that such information is provided in the mitigation statement required by 33 C.F.R. § 325.1 (d)(7) ... the amount, type, and location of any proposed compensatory mitigation, including any out-of-kind compensation, or indicate an intention to use an approved mitigation bank or in-lieu fee program."[26] The Final Compensatory Mitigation Rule states, "Permit applicants are responsible for proposing an appropriate compensatory mitigation option to offset unavoidable impacts."[27]

Importantly, the regulations require that "[t]he level of detail provided in the public notice must be commensurate with the scope and scale of the impacts."[28] The purposes of the public notice requirements are to allow for an opportunity for meaningful input and comment by the public and federal agencies on the proposed mitigation, even at this initial stage.[29]

The compensatory mitigation statement in the PN indicates the applicant is proposing a combination of on-site enhancement efforts such as creating ponds from gravel sites, off-site restoration or preservation, and potential use of wetland mitigation banks in Fairbanks or the Matunuska-Susitna areas. This mitigation statement does not include information regarding specific compensatory mitigation projects (i.e., the amount, type and location) and does not address compensatory mitigation for all of the impacts identified in the DEIS. The mitigation statement included in the public notice should include the types of information discussed in 40 C.F.R. § 230.94(b)(1).

The use of gravel pits for enhancement projects that were previously used as material sites should be considered as minimization measures rather than compensatory mitigation, because reclamation of these sites would likely be required by other authorities. As previously discussed, similar minimization measures should be applied to the construction, operation and closure of material sites across the project area, regardless of land ownership.

Past iterations of this project also considered potential mitigation mechanisms. The CWA Section 404 permit application submitted by AIDEA in June 2016 provides a mitigation statement and estimated mitigation credits required to compensate for unavoidable permanent impacts to aquatic resources. Updates to the 2016 application have increased the total project impacts, as evident in the September 13, 2019 PN and associated DEIS, however, it is unclear whether the mitigation credit/debit estimates provided in the previous application will still be used.

We recommend that mitigation plans containing items described in 40 C.F.R. §§230.94(c)(2) through (c)(14), as described in the *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule* (40 C.F.R. Part 230, Subpart J), be submitted for review by the agencies prior to issuance of a permit and incorporated into the EIS. The Corps should provide an opportunity for meaningful public comment on a compensatory mitigation plan that includes a level of detail

[26] 33 C.F.R. § 332.4(b)(1)/40 C.F.R. § 230.94(b)(1).
[27] 33 C.F.R. §332.3 (a) and 40 C.F.R. § 230.93 (a).
[28] 33 C.F.R. § 332.4(b)(1)/40 C.F.R. § 230.94(b)(1).
[29] 33 C.F.R. § 332.4(b)(1)/40 C.F.R. § 230.94(b)(1).

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"commensurate with the scope and scale of the impacts" as well as the "amount, type, and location" of compensation they could potentially provide. We recommend that a revised PN be issued at a later date when this information has been developed.

We understand that the project area is comprised largely of wetlands and the pristine nature of the surrounding environment may preclude many mitigation opportunities available in more urban environments. However, the EPA is aware of restoration projects, including inactive mine sites, contaminated sites, abandoned mines, and National Wildlife Refuge Allotments in the larger watershed, that should be evaluated as potential compensatory mitigation opportunities. Some of these have been identified in previous letters to the Corps and include clean-up and restoration activities. We recommend focusing on opportunities as close as possible to the project footprint, and then expanding to other areas within the watershed as necessary. It would be beneficial to bring in entities and stakeholders local to the project area to identify additional opportunities that are not well-known or mapped. During the Guidelines compliance analysis, if there appears to be a lack of appropriate and practicable compensatory mitigation options, the Corps should consider not issuing a permit for the proposed activity.[30]

[30] 40 C.F.R. § 230.91 (c)(3).

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