

MEMORANDUM FOR RECORD

SUBJECT: Department of the Army Environmental Assessment and Statement of Findings for the Above-Referenced Standard Individual Permit Application

This document constitutes the Environmental Assessment, Section 404(b)(1) Guidelines Evaluation, Public Interest Review, and Statement of Findings for the subject application.

1.0 Introduction and Overview

Information about the proposal subject to one or more of the United States Army Corps of Engineers' (Corps') regulatory authorities is provided in Section 1, detailed evaluation of the activity is found in Sections 2 through 10 and findings are documented in Section 11 of this memorandum. Further, summary information about the activity including administrative history of actions taken during project evaluation is attached (ORM2 Summary) and incorporated in this memorandum.

1.1 Applicant name

Bartly Kleven, Peak Gold, LLC

1.2 Activity location

The project site is located within Sections 1-3 & 10-16, T. 16 N, R. 13 E.; Sections 1, 2, 6, 7 & 18, T. 16 N, R. 14 E.; Section 6, T. 16 N, R. 15 E.; Sections 23-25 & 34-36, T. 17 N, R. 13 E.; Sections 19-22, 26, 27, 29-36, T. 17 N, R. 14 E.; Sections 13 & 14, T. 17 N, R. 13 E.; Sections 5, 8, 9, & 16-18, T. 17 N, R. 14 E.; Sections 19, 20, 29, & 32, T. 18 N, R. 14 E.; Copper River Meridian; Latitude 63.1834°, Longitude -142.8937°; within lands owned by and proximal to the Native Village of Tetlin, Alaska.

1.3 Description of activity requiring permit

The proposed project would produce gold from land located near and wholly owned by the Native Village of Tetlin utilizing open-pit mining methods and proven recovery processes. The 1,046 acres needed for the project has been leased by the applicant from the Tetlin tribe. Fill would be permanently placed in 5.26 acres of waters of the U.S. via earthwork needed to extract gold-laden ore, deposit waste rock (non-ore bearing rock), and develop the infrastructure necessary to conduct the operation. The waters that would be affected are entirely wetlands; no other types of aquatic resources would be directly affected by the project.

Two new gravel roads would be constructed to access the mine sites. The Manh Choh Twin Road would be built parallel to the Tetlin Village Road from the Alaska Highway intersection to approximately 5 miles southward where it would meet the Manh Choh Site Road, which would be built to lead southwest to the two designated mine sites in the Tetlin Hills, approximately 12 miles west of the Native Village of Tetlin. Several material sites would be established along the roads to extract sand and gravel needed

to construct project roads and pads. The project would include a minor re-alignment of a section of Tetlin Village Road, but this road would not be used to service mine operations.

Traffic within the project area would be coordinated with the Tetlin tribe to establish appropriate traffic controls. Public access control points including physical barriers and signs warning of the active mining would be established where pre-existing roads and trails enter the active mining areas to ensure public safety is maintained.

Ore would be segregated from waste rock (non-ore bearing rock) within the two planned mining pits at the project site. Ore would be hauled by off-road haul trucks to the planned ore transfer site within the project area where the ore would be loaded on to highway capable vehicles for transport to the Fort Knox Mine, located near Fairbanks. No milling or tailings disposal would occur at the project site. Ore extraction would proceed for 4.5 years. Reclamation would commence immediately after mining is complete.

In summary, the Manh Choh Project would consist of the following components:

- Main Pit and the North Pit
- Main Waste Rock Discharge Area and the North Waste Rock Discharge Area, which will have separate stockpiles during operations for separate material types
- Overburden stockpile
- Marginal Low Grade Ore Stockpile
- Explosives storage area (also known as the powder magazine)
- Access road and adjacent material sites

Facilities would be reclaimed either concurrently during mining or after mining is completed. Reclamation would involve the following:

- Partially backfilling the Main Pit with materials from the waste rock discharge areas;
- Backfilling the North Pit to above the pit crest (North Pit Backfill) with materials off the waste rock discharge areas;
- Narrowing roads to two-lane access, pulling down berms, and scarifying and seeding the reclaimed edges;
- Removal of materials from the Marginal Low Grade Ore Stockpile and placement in a waste rock discharge area, if not hauled to the Fort Knox mine for processing;
- Regrading waste rock discharge areas to a 3H:1V slope, placing two feet of growth media cover, and reseeding with an approved native plant seed mix; and
- Removing constructed infrastructure.

1.3.1 Proposed avoidance and minimization measures

The positions of the proposed roads, pads and materials sites are oriented to avoid and minimize direct impacts to wetlands and other waters as much as practicable. As a result, the project would place fill in only 5.26 acres of wetlands and would completely avoid placing fill in streams or other waterbodies. Aquatic resource impacts would be further minimized by the following:

- Ore would be hauled to Fort Knox for gold processing and thus, no rock crushing, cyanide application or tailings storage would occur at the project site, avoiding potential direct and indirect impacts to aquatic resources that would result from these activities.
- Existing gravel road sections, gravel pads and trenches established during the mine surveys would be utilized by the project as much as practicable to reduce additional impacts.
- Erosion control and soil stabilization measures would be implemented according to the Stormwater Pollution Prevention Plan that would be submitted to the Alaska Department of Environmental Conservation for general permits needed under Section 402 of the Clean Water Act. These measures would include installing erosion control blankets, constructing infiltration trenches, slope shaping, and seeding for sustainable embankment stabilization.
- Culverts would be installed in roads and pads, where appropriate, to minimize erosion potential and maintain hydrologic connectivity.
- All runoff from the mine sites and waste rock disposal areas would be conveyed to on-site treatment before discharge. Treatment would primarily occur by microfiltration followed by reverse osmosis and would be sized to handle peak flows from the mine. Treated water would be used to supply a wash bay to be established near the mine pits and/or discharged to a ditch/infiltration gallery. Runoff from the wash bay would be stored in the holding ponds and used for dust control.
- Dust control management measures would be implemented including watering dust-prone areas, covering loads carried by haul trucks, and limiting vehicle speeds. Water for dust control would be derived from the holding ponds and from wells positioned along the Mine Access Road.
- Upon terminating mine operations, the mine surface disturbance would be reclaimed and closed according to Alaska Statute 27.19 and all applicable regulations. Reclamation and associated revegetation of the disturbed areas will induce several indirect benefits to aquatic resources including suppressed erosion and sedimentation.
- After mine closure, the waste rock discharge areas would be recontoured and capped to minimize the potential to leach acidic metal ions from the waste rock.
- Any material sites that encounter groundwater during excavation may be developed into a pond and wetland fringe during reclamation; however, all material sites are within uplands and hydrologic modeling indicates that their excavation would not likely intersect with any appreciable amounts of groundwater.

1.3.2 Proposed compensatory mitigation

Peak Gold LLC submitted a Permittee-Responsible Mitigation (PRM) plan designed to compensate for the proposed impacts to aquatic resources. A PRM plan was necessary as there are no mitigation bank credits and no in-lieu fee providers in the service area. The PRM entails replacing dysfunctional culverts at three locations along the Tetlin Village Road to improve hydrologic connectivity with downstream wetlands and waters, reduce erosion and sedimentation, augment a suite of wetland and stream functions including the passage of aquatic organisms.

1.4 Existing conditions and any applicable project history

The project site is 1,046 acres within lands owned by the Native Village of Tetlin south of the Richardson Highway. The mining area is in the Tetlin Hills situated approximately 10 miles southeast of Tok and 12 miles west of Tetlin. The Tetlin Village Road, which leads south from the Alaska Highway approximately six miles east of Tok, provides access to the project area. The project site includes areas needed to construct the Manh Choh Twin Road, which would parallel the Tetlin Village Road for the first five miles, the Manh Choh Site Road, which would lead southwest into the Tetlin Hills, and the mine site, waste rock discharge area and other supporting facilities.

The project is located on primarily forested lands within the 23-million-acre Interior Alaska Lowlands Major Land Resource Area (MLRA; USDA 2006). The project site includes alluvial terraces at approximately 1,500 feet above sea level along the proposed Twin Road and the moderately steep Tetlin Hills reaching approximately 3,200 feet above sea level where the ore extraction would occur.

Geological, hydrological, and biological surveys as well as other types of investigations in preparation for this project were conducted 2012-2021. Some of these surveys and their associated impacts to waters of the U.S. were authorized under Nationwide Permit 6 – Survey Activities.

The majority of the project within the Yukon-Tanana Terrane, a regionally extensive package of greenschist to amphibolite facies metamorphic rocks. Most of the project area escaped Pleistocene continental glaciation and is covered by a variable thickness of aeolian silt ranging up to 10 meters (33 feet) thick with extensive oxidation occurring some 60 to 90 meters (approximately 200 to 300 feet) below surface. The majority of the bedrock in the area is a quartz muscovite \pm biotite schist unit containing conformable layers of amphibolite schist / greenstone.

Within the broad alluvial plain where the existing Tetlin Village Road and the proposed Twin Road are located, wetlands occur on relatively flat ground with permafrost and/or persistent seasonal frost. These wetlands are primarily dominated by black spruce trees that are stunted by prolonged soil saturation and cold soil. Within the Tetlin Hills portion of the project area, wetlands are confined to the toe slopes and the valley bottoms of the steep, narrow drainages. These wetlands are primarily Slope wetlands of two general types: i) riparian wetlands dominated by alder and/or willow along streams or swales leading to streams; and ii) non-riparian wetlands dominated by black spruce and/or ericaceous shrubs that may or may not be contiguous with the riparian wetlands.

Most of the project area was burned during the 1990 Tok River Wildfire and is undergoing second growth; standing dead trees and downed wood with saplings and semi-mature trees are common throughout the project area. Nearly 70 percent of the 6,024-acre wetland delineation study area encompassing the project area was classified as Deciduous Shrub and Sapling Regeneration, a plant community comprised of aspen (*Populus tremuloides*) and birch (*Betula neoalaskana*) saplings and/or willow (*Salix* spp.), alder (*Alnus* spp.) and glandular birch (*Betula glandulosa*) shrubs.

The extent of wetlands may have declined after the fire due to removal organic matter and vegetation that had insulated the persistent frost that had likely been present in these areas. Further, near-surface saturation within remnant wetlands that had burned may be less frequent and/or persistent compared to conditions before the fire. Those portions of the project area that apparently did not burn during the fire include most of the black spruce dominated Flats wetlands along the proposed Twin Road and the small patches of white spruce dominated forested uplands in concave areas along the ridge tops.

Seasonally flowing, first order streams occur within the Tetlin Hills part of the project area. Perennial stream segments begin downslope, outside of the project area. No streams are present in the vicinity of the proposed Twin Road.

Streams within the project area include tributaries of Thunder Creek in the western part of the Tetlin Hills portion of the project area as well as tributaries of Eagle (Tors) Creek are located are within the eastern part of the Tetlin Hills portion of the project area. Thunder Creek is within the Tok River subwatershed. The Tok River, a perennial tributary to the Tanana River, is over one mile west of the western boundary of the project area. Eagle (Tors) Creek is within the Tetlin Lake subwatershed. Tetlin Lake, which is over 17,000 acres and is connected to the Tanana River via the Tetlin River, is approximately 5 miles east of the project area.

Within the Tetlin Hills, groundwater flow is extremely low because of the dry conditions and limited recharge potential. Any groundwater flow that does occur is localized and mostly percolates to the surface through fractures, faults, and related small-scale structures on the flanks of the Tetlin Hills. The limited soil thickness and low bedrock hydraulic conductivity within further reduces recharge. Thus, most precipitation in this portion of the project area becomes surface runoff.

Avian surveys conducted in the project area during early June 2020 recorded 38 bird species. All but two of these species were landbirds. Observations of shorebirds were limited to one Wilson's snipe (*Gallinago delicata*) and observations of waterbirds were limited to one Trumpeter swan (*Cygnus buccinator*) in flight. No bald eagles or golden eagles were observed.

1.4.1 Jurisdictional Determination

Is this project supported by a jurisdictional determination? Yes, Preliminary

Jurisdictional Determination

1.5 Permit authority

Table 1 – Permit Authority	
Section 10 of the Rivers and Harbors Act (33 USC 403)	
Section 404 of the Clean Water Act (33 USC 1344)	X
Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 USC 1413)	

2.0 Scope of review for National Environmental Policy Act (i.e., scope of analysis), Section 7 of the Endangered Species Act (i.e., action area), and Section 106 of the National Historic Preservation Act (i.e., permit area)

2.1 Determination of scope of analysis for National Environmental Policy Act (NEPA)

The scope of analysis always includes the specific activity requiring a Department of the Army permit that is located within the Corps' geographic jurisdiction. In addition, we have applied the four factors test found in 33 CFR Part 325, Appendix B to determine if there are portions of the larger project beyond the limits of the Corps' geographic jurisdiction where the federal involvement is sufficient to turn an essentially private action into a federal action.

Based on our application of the guidance in Appendix B, we have determined that the scope of analysis for this review includes the Corps geographic jurisdiction and upland portions beyond the Corps geographic jurisdiction.

Final description of scope of analysis: The scope of analysis entails the 1,046-acre project area including 5.26 acres of jurisdictional wetlands and streams. It extends across the entire 1,046-acre project area due to the wide distribution of wetlands, and thereby meets the criteria identified in 33 CFR 325 Appendix B for extending the scope beyond the Corps geographic jurisdiction.

2.2 Determination of the Corps' action area for Section 7 of the Endangered Species Act (ESA) :

The project would have no effect on species protected under the Endangered Species Act as there are no listed species or critical habitat within the vicinity of the project site.

2.3 Determination of Corps' permit area for Section 106 of the National Historic Preservation Act (NHPA)

The permit area includes those areas comprising waters of the United States that will be directly affected by the proposed work or structures, as well as activities outside of waters of the U.S. because all three tests identified in 33 CFR 325, Appendix C(g)(1) have been met.

Final description of the permit area: The scope of analysis entails the 1,046-acre project area including 5.26 acres of jurisdictional wetlands. The scope of analysis extends across the entire project area due to the wide distribution of wetlands; wetlands would be traversed by both access roads and would be filled upon construction of the mine sites, the waste rock discharge area and associated facilities. The undertaking thereby meets the criteria in 33 CFR 325 Appendix C for expanding the permit area beyond the identified jurisdictional waters.

3.0 Purpose and Need

3.1 Project purpose and need

Project purpose and need for the project as provided by the applicant and reviewed by the Corps:

The applicant's stated purpose is to profitably produce gold from land owned by the Native Village of Tetlin utilizing open-pit mining methods and existing proven recovery processes. The need for the project is for the Native Village of Tetlin and Peak Gold, LLC a legal corporation operating in Alaska, to benefit Native peoples and shareholders in a joint partnership to mine the Manh Choh Project, hauling the ore to Fort Knox for processing to meet global demand.

There are many and various needs for this project including:

1. The need to provide employment in Tok and the Tetlin Village. These communities and others in the surrounding area have purportedly been lacking employment opportunities for decades;
2. The need to provide employment in Alaska, which was in recession 2015 through 2019 and had significant job losses in 2020 from the COVID-19 pandemic;
3. The need to produce gold, the demand and price per ounce of which remains relatively high compared to historical values. Worldwide, the amount of gold bought annually has roughly tripled since the early 1970s. According to the World Gold Council, the demand for gold and gold-based liquidities rose by 34 percent in Q1 of 2022 compared to Q1 of 2021, at least in part due to the value of gold as a hedge against inflation, which rose sharply in the latter half of 2021. Adjusted for inflation, the August 2022 price per ounce of gold is over three times the value it had been in 2001.

3.2 Basic project purpose, as determined by the Corps:

To extract gold utilizing open-pit mining methods and proven recovery processes.

3.3 Water dependency determination

The activity does not require access or proximity to or siting within a special aquatic site

to fulfill its basic purpose. Therefore, the activity is not water dependent.

3.4 Overall project purpose

Overall project purpose, as determined by the Corps:

To meet the public's need for producing gold utilizing safe and proven mining methods at the mineral deposit located within the Tetlin Hills.

4.0 Coordination

4.1 Public Notice Results

The results of coordinating the proposal on public notice are identified below, including a summary of issues raised, any applicant response and the Corps' evaluation of concerns.

Were comments received in response to the public notice? Yes

Was a public meeting and/or hearing requested, and if so, was one conducted?

Yes, a public meeting/hearing was requested but was not held.

Comments received in response to public notice:

Comment 1: The U.S. Environmental Protection Agency (EPA) is concerned about potential secondary (indirect) impacts on water quality of streams and rivers draining the project site from construction and use of the two proposed gravel access roads. The EPA has learned from direct observation and review of published literature that gravel roads may become sources of sediment for aquatic areas, especially if those roads are poorly designed, poorly constructed, constructed without following Best Management Practices to reduce erosion, not well maintained and/or subject to heavy use.

Applicant's Response:

No streams are being crossed or directly affected by the proposed construction of the mine facilities including access roads. Peak Gold accounted for potential secondary impacts on water quality from gravel access roads into the project design, construction, and maintenance. The design, construction, monitoring, and maintenance will together minimize erosion and impacts to nearby aquatic areas. Roads were routed specifically to avoid impacts to wetlands and other water bodies. Monitoring by Alaska Certified Erosion and Sediment Control Lead (CESCL) personnel (CGP Permit AKR100000, Appendix C, Qualified Person) will ensure any potential issues are identified and addressed promptly. Contingencies such as grading, material pickup, and implementation of new BMPs are available to address potential erosive conditions if required.

The proposed roads have been designed to avoid wetlands and streams. The Manh Choh Twin Road and Manh Choh Site Access Road would be constructed of local material capable of handling daily traffic. The proposed fill has undergone testing for

suitability and load capability. Analysis has confirmed the proposed road construction material is clean fill and adequate for the proposed task. Building the roads with competent clean fill would ensure road prism stability.

Manh Choh Mine's exploration project currently operates under the Alaska Pollutant Discharge Elimination System (APDES) permit system (Multi-Sector General Permit for Storm Water Discharges (MSGP) Permit AKR60000 Authorization Number AKR06GA93. As a result, the project's storm management abides by a Storm Water Pollution Prevention Plan (SWPPP) that has been approved by the Alaska Department of Environmental Conservation. As of August 2022, the applicant has applied for a General Permit for Discharges from Large and Small Construction Activities (CGP) Permit AKR100000, which requires an expanded and modified SWPPP. The applicant would also modify the existing SWPPP as part of its application for an amended MSGP for mining operation and reclamation activities. Although storm water management would evolve with the project, it would serve to control erosion and sedimentation in accordance with the SWPPPs, which would also include schedules and procedures for monitoring and maintenance.

Storm water management practices would include:

- i) diversions (e.g., runoff interceptor trenches, check dams, or swales), siltation or filter berms, filter or silt fences, straw waddles, filter strips, sediment barriers, and/or sediment basins;
- ii) soil stabilization through vegetative and non-vegetative techniques such as jute and/or synthetic netting, slope shaping, retaining structures and riprap, and systems such as infiltration trenches and/or basins;
- iii) dust control management measures to minimize fugitive dust including watering dust-prone areas, minimizing vehicular traffic, covering loads carried by haul trucks, and limiting vehicle speeds
- iv) revegetating disturbed areas with seed recommended for the region by ADNR's A Revegetation Manual for Alaska, 2008

The Manh Choh Project would also require spill prevention and response procedures in accordance with the APDES MSGP Permit AKR060000, as amended for mine operation.

Ore hauling trucks would be limited to the Twin Road (covered road-legal highway trucks), and the Site Road (non-road legal mine trucks) to the loading facility at the base of the hill. This approach would minimize driving hazards and reduce wear and tear of the Site Road.

Further, all vehicles would be cleaned prior to entering and exiting Tetlin Hills portion of the project site to minimize spread of invasive and potentially invasive plants and other organisms.

The site is monitored and managed using personnel that have Alaska Certified Erosion and Sediment Control Lead (CESCL) certification which requires passing an initial two-

day (16-hour) training class with one-day (8-hour) refresher training required every three years (<https://www.ak-cescl.com>). During operation, the site would be inspected daily by CESCL-certified staff. Appropriate corrective actions would be undertaken immediately if problems with drainage, sediment, or containment are noted during inspection of access roads or mine site.

Through the established stormwater permitting process, there would be a defined boundary that no material or sediment can leave the site. Staff would monitor this boundary. If erosion or sedimentation is noticed, then remediation would take place. Potential solutions may include grading, material pickup, and implementation of new BMPs.

The Alaska Highway system roads from the intersections of the Alaska Highway and the Tetlin Village Road and Twin Road to the intersection of the Steese Highway and the existing Fort Knox Mine access road are paved and do not produce dust from highway traffic. Therefore, the §404 Permit Application, §404 Permit Application Supplemental Information, and the Environmental Information Document does not address direct and secondary impacts on the watersheds of the Tok and Tanana Rivers since the paved Alaska highways are not gravel. However, loaded highway trucks would be covered to minimize dust emissions.

Corps' Evaluation: The Alaska District concurs that the applicant's plans would minimize potential secondary impacts to water quality including impacts that would result from deterioration of the proposed access roads. The proposed roads would not traverse any streams or rivers and would be designed, constructed and maintained to support the anticipated truck traffic and minimize erosion of the roads or the adjacent landscape.

Although the construction, maintenance and use of gravel or dirt roads may be a large source of sediment to streams and other aquatic areas, the proposed road design and active monitoring and maintenance would likely avoid and minimize secondary impacts to the extent practicable. The road bed would be protected from erosion through implementation of design that leads to long-term stability and replenishment with high-quality aggregate, as needed. Daily monitoring by trained personnel should identify erosion and sedimentation issues before they become too problematic and thereby enable implementation of readily achievable solutions.

The applicant intends to modify the existing Storm Water Pollution Prevention Plan (SWPPP) that it currently abides for the exploration activities such it would be suited for project construction and operation. The modified SWPPP would entail several erosion and sedimentation control measures including storm water retention basins, ditch check dams, interception and diversion ditches, water bars, brush berms, and surface grading as well as procedures for monitoring. Further, the applicant intends to further minimize secondary impacts by minimizing ground-disturbing activities, revegetating disturbed areas according to state guidance, covering ore loads during transport, suppressing fugitive dust on the access roads, and other measures.

The project would utilize Best Management Practices (BMPs) for embankment

stabilization, including contouring and seeding. The project would also follow BMPs for waste rock and growth media stockpile stabilization including contouring and seeding grasses to reduce erosion and potential sedimentation of wetland areas.

Comment 2: The EPA has concerns about the potential impacts to natural drainage patterns from the proposed construction of the two new gravel access roads. The EPA indicates that the applicant has not clearly identified the design and number of culverts that would be needed to maintain the existing hydrologic regime of the waters crossed by the roads. They also cite that the application does not refer to any contingencies for repair or emergency activities that may be needed within regulated aquatic environments.

If authorized, how would Peak Gold, LLC design, construct and maintain stream and wetland crossings for the proposed gravel access roads so that natural drainage patterns would be maintained? What contingencies are planned to address aquatic resource crossings if they impede flows or otherwise alter natural drainage patterns? What monitoring would occur to determine whether contingencies should be implemented?

Applicant's Response:

The Manh Choh Twin Road and the Site Access Road do not cross any perennial, intermittent or ephemeral streams as demonstrated in the §404 Permit Application Supplemental Information submitted with the §404 Permit Application on December 31, 2021 shown on sheets 1 through 31 of Appendix 1. No access roads to material pits, lay down areas, or other mine components requires a road crossing a stream.

On the Manh Choh Twin Road, culverts are planned for 60 swales to maintain natural drainage patterns and hydrologic connection. The culvert locations were selected by a hydraulic engineer to ensure maintenance of natural drainage. Culvert typical drawings are supplied in §404 Permit Application Supplemental Information sheet drawing 32 of 36 found in Appendix 1. Culvert locations are also shown in the Alaska Department of Fish and Game's (ADF&G) Fish Habitat Permit FH22-III-0019 issued on January 14, 2022, and amended on February 11, 2022.

The Manh Choh Site Access Road is designed to pass two haul trucks with outside safety berms on slopes to meet Mine Safety and Health Administration (MSHA) standards. The mine access road has also been designed to meet grade and width requirements for the proposed off road haul trucks. The Site Access Road is located on side hill slopes and then ridge tops. Surface drainage patterns would be maintained by the road placement in uplands (mainly uphill from nearby streams or wetlands) and use of road ditches and culverts. All culvert sites would be located and constructed to ensure proper placement for cross surface drainage patterns.

At the mine site, drainage collection ditches would be placed below the pits and waste rock to contain surface water flow and ensure discharge to proper drainages. Mine contact water would be contained and treated for discharge. Surface flow would not

connect from the mine downstream to surface drainage. All surface water flow off the mine area would go into sediment ponds and infiltration galleries to protect surface water quality below the mine site.

Storm and surface water would be managed and monitored at the Project (mine and access roads) using personnel that are CESCL qualified. The access road and mine site would be inspected daily by CESCL qualified personnel. Inspections would reveal ponding on the upslope side of roads or culverts, erosion, or excessive sedimentation. Corrective actions would be undertaken immediately if problems are noted at culverts, if there is excessive erosion, sedimentation, or water flow drainage changes deviating from the norm on access roads or at the mine.

Solutions to address swale crossing locations or drainage issues can include cleaning culvert inlets and outlets, cleaning of sediment basins, stabilizing sediment or cuts with mulch, rock, riprap, vegetation, or mats, repairing sediment barriers, surface grade changes, replacing failed culverts or structures. Road maintenance and proper surface water management is critical to the operation of the Project. The Project depends on the ability to move ore from the mine to a processing facility on stable, safe, operational roads. All noted repairs and deficiencies would be scheduled and addressed by the Peak Gold Operations & Maintenance staff.

Maintenance and Contingencies are also discussed in Peak Gold Response #1. The applicant would maintain a list of all state and federal permits in the Environmental Office. The list will detail permit numbers, permit conditions, monitoring requirements, renewal dates, and responsible agency. A current contact, phone number, and email will be maintained as a BMP.

Corps' Evaluation: The applicant's response corroborates the submitted plans indicating that culverts would be constructed in quantity and quality to maintain hydrologic connectivity, or at least approximate natural drainage patterns, and thereby minimize erosion and sedimentation of jurisdictional waters. The response satisfactorily addresses the concerns about management of constructed road operation including maintenance of culverts, ditches and other drainage features as well as implementation of contingencies.

Comment 3: The EPA is concerned that there has been neither any quantification of functional loss from the proposed impacts to aquatic resources nor any quantification of functional gain from the proposed compensatory mitigation. Further, they assert that, "The proposed mitigation does not appear to provide sufficient offset of the proposed impacts to WOTUS."

Applicant's Response: The Manh Choh project is in an area where neither mitigation bank credits, nor in-lieu fees entities are available. Therefore, to provide mitigation for the project, permittee-responsible mitigation (PRM) was proposed, based on the steps outlined in the USACE 2008 Mitigation Rule.

Detailed investigation of potential Permittee Responsible Mitigation (PRM) sites was undertaken in and outside of the watersheds wherein the proposed project would occur. As noted in the PRM plan submitted to USACE with the Section 404 permit application on December 31, 2021, options for PRM in the area are limited. No opportunities for creation of wetlands and/or ponds were identified.

The PRM follows the watershed approach, §404 sequencing, and flexibility outlined by EPA and USACE in their June 15, 2018, Memorandum of Agreement on Mitigation for Wetlands in Alaska. The proposed PRM restores and enhances higher value wetlands and improve and expand potential fish bearing stream habitat and their associated floodplains near the project, thus benefiting the aquatic resources of the watershed and sufficiently compensating for the unavoidable loss of aquatic resources due to project impacts.

The proposed mitigation would offset the wetland impacts at the Manh Choh project site, which total only 5.26 acres. Wetlands classified as Flats according to the Hydrogeomorphic approach comprise 3.8 acres of the impact total; these wetlands only occur along the Manh Choh Twin Road corridor. These wetlands are already degraded due to proximity to the existing Tetlin Village Road and the long-term impacts of the 1990 fire; soil saturation in these wetlands appears to have become less frequent and extensive as it likely had been prior to the fire. The remaining 1.4 acres include Slope wetlands along the Site Access Road corridor and the others at the mine site, which is positioned at the top of the ridge.

The proposed PRM projects involve replacement of existing poorly functioning culverts within the Manh Choh Village Road beyond where the Twin Road would be constructed. Correctly engineered culverts would be installed to improve hydrologic and ecological connectivity and limit ponding and sedimentation near the road crossings. Replacing the culverts will improve the hydrologic connectivity of the wetlands and reduce sedimentation, improving functions including nutrient cycling, sediment stabilization and removal, water storage, and aquatic and terrestrial habitat support. Alaska Department of Fish and Game (ADF&G) approves of the culvert replacements, indicating that slimy sculpin may be present in the intermittent stream that is hindered by the inadequate culverts at PRM Site #1.

The Alaska Wetland Assessment Method (AKWAM) was used to determine the debits incurred by the proposed impact and the credits gained by the proposed mitigation.

The AKWAM-based evaluation of the Flat HGM wetlands impacted by the project (score = 0.325) multiplied by the number of acres (3.8) = 1.235 debits. The AKWAM-based evaluation of the Slope HGM wetlands impacted by the project (score = 0.65) multiplied by the number of acres (1.4) = 0.91 debits. In total, to offset the wetland impacts of the project, the PRM sites would need a functional lift equal to or greater than 2.145.

As shown in the AKWAM evaluation for PRM Sites #1 and #2, the proposed PRM projects improve the functionality of Slope and Riverine wetlands adjacent to streams impacted by existing culverts near the proposed project area. The evaluation of the

Riverine HGM wetlands functionally improved (lift) by the project is determined by evaluating the present condition upstream and downstream, then determining the functional lift after PRM is completed for both upstream and downstream wetlands. Credits from these PRM projects were determined using AKWAM and the credits were adjusted due to minor risk factor (1.25) using the 2018 Alaska District: Credit Debit Methodology.

PRM #1

At PRM Area 1 the stream channel will improve with culvert replacements. Culvert replacement provides opportunity for expanded fish and other aquatic species habitat upstream for at least 1,000 feet. On the upstream side of the road, ponding and sediment load will be reduced. Downstream regular stream flow will be established for up to 900 feet or more. Wetlands adjacent to the stream (up to 22 acres) will receive additional nutrient contributions, surface and subsurface water, while maintaining hydrophytic vegetation/habitat communities and reducing the encroachment of upland and invasive plant species. Proper culverts will also reduce the chance that in high water events stream water overtops the roadway, which would wash additional sediment into the wetland.

Upstream 5 acres goes from 0.62 to 0.63.

Difference between current and future condition-Delta = 0.01

Adjusted Delta = $0.01/1.25 = 0.008$

Credits = 5 acres * .008 = 0.04

Downstream 22 acres goes from 0.53 to 0.68

Difference between current and future condition Delta = 0.15

Adjusted Delta = $0.01/1.25 = 0.12$

Credits = 22 acres * 0.12 = 2.64

Total credits generated = 2.68 at PRM #1.

PRM Area 2

At PRM Area 2 the culvert replacement and upgrades will allow continued flow downstream to the tributaries of Tetlin Lake. This will reduce ponding and sedimentation upstream that has impacted approximately 0.15 acres. Aufeis forms at this location due to the slope of the wetland and the ponding of the water at the roadway. Aufeis contributes to the erosion of the site and sedimentation downstream.

With the properly size culverts in place the upstream wetlands will revegetate into a more natural state. Downstream, sediment loads will be reduced over the length of the 3,000 feet to the tributary below. With less sediment, this small channel will stabilize. Wetland vegetation in the swale will recover/regrow.

The evaluation of the Slope HGM wetlands functionally improved (lift) by the project is determined by evaluating the present condition upstream and downstream, then determining the functional lift after PRM is completed for both upstream and downstream wetlands.

Upstream 0.5 acres goes from 0.6375 to 0.7

Delta = 0.0625

Adjusted Delta = $0.0625/1.25 = 0.05$

Credits = $0.5 \times 0.05 = 0.025$

Downstream 1.5 acres goes from 0.5375 to 0.6625

Delta = 0.125

Adjusted Delta = $0.125/1.25 = 0.1$

Credits = $1.5 \times 0.1 = 0.15$

Total credits generated = 0.175 at PRM area 2. Total credits generated by the PRM plan = 2.855

Thus, the credits derived by functional lift of the wetlands adjacent to the culverts that would be replaced total 2.855 credits, which exceeds the 2.145 debits to be incurred by project construction. The PRM plan provides a benefit to the watershed while adequately compensating for project impacts.

PRM Sites #1 and #2 were selected because they exhibit some of the problems identified by EPA in Comment 1, paragraph 2. The Tetlin Village Road receives minimal maintenance outside of snowplowing. The roadbed is reduced to fine silts over the course of the summer. With culvert replacement the roadbed at these locations will be removed and replaced with better materials. Culverts will be properly embedded into the substrate, in particular at the lower stream location to allow fish passage.

As suggested by the USACE, Stream Quantification Tool and Debit Calculator (V1.0) User Manual, for the Alaskan Interior, June 2021 (https://stream-mechanics.com/wpcontent/uploads/2021/06/AK-SQT-v1_FINAL_User-Manual_20210521.pdf) was used to determine functionality of existing stream reaches and for predicting the proposed conditions. However, the SQT-INT method did not demonstrate improvement for either PRM #1 or #2.

Corps' Evaluation: The Alaska District shared the same concerns expressed by EPA that the applicant had neither quantified functional loss from the proposed impacts nor quantified functional gain from the proposed compensatory mitigation, and that the proposed mitigation does not appear to provide sufficient offset of the proposed impacts to jurisdictional waters. Subsequent to the conveyance of this comment and our shared concern, the applicant conducted a wetlands functions assessment using AKWAM to quantify expected decline to wetland function from the project construction and the expected gains to wetland function from the proposed compensatory mitigation.

Upon review of the results of the AKWAM assessment, the Alaska District determined that revisions must be made to more accurately reflect the anticipated uplift in functional performance as a result of the proposed mitigation. Most importantly, the wetland area downstream of PRM #1 that would benefit from culvert replacement is only about 15 acres. Other more minor modifications included changes to scores resulting from revised expectations of wetland condition following culvert replacement. As a result, the credit calculated from the proposed mitigation was 1.95, which is slightly less than the

2.145 needed to fully offset the anticipated impacts.

After further discussion and investigation, the applicant proposed a third mitigation project (PRM Site #3), which entails replacement of another dysfunctional culvert within the Tetlin Village Road. The culvert at this location conveys flow within an unnamed perennial stream leading to the Tetlin River; although flow in this channel typically leads from Sun Lake to the Tetlin River, it purportedly can reverse direction during break-up. The 5-foot diameter culvert is somewhat perched and much smaller than the active channel width, which is estimated at 15 feet, and appears to be a partial barrier to several fish species known to be present in Tetlin Lake including include northern pike (*Esox lucius*), arctic grayling (*Thymallus arcticus*), longnose sucker (*Catostomus catostomus*), burbot (*Lota lota*), and humpback whitefish (*Coregonus pidschian*), a locally important subsistence harvest fish.

The replacement culverts for this crossing have been designed following stream simulation principles. The low-flow culvert would be an 8-foot diameter culvert and an additional 4-foot diameter overflow culvert positioned within the channel crossing, but slightly above the 8-foot diameter culvert. These culverts are anticipated to convey flood flows (e.g., 100-year event) as well as low flows, relieve the local flow constriction, reduce impacts to adjacent stream habitat, and enable passage of fish and other organisms. The low flow culvert would be embedded sufficient to provide spatial continuum of habitat suitable for native aquatic organisms, further improving passage and habitat quality.

Upon suggestion by the Corps Alaska District, the applicant used the SQT-INT, a regionally specific stream condition assessment method, to quantify the expected functional gains from the proposed mitigation project. Based on anticipated improvements to hydraulics and geomorphology, the SQT-INT assessment results indicate an uplift of 39.0 functional feet, a considerable amount. However, the SQT-INT assessment did not fully capture the anticipated improvements to ecological integrity of the unnamed stream nor did it recognize the potential importance of improving habitat for fish upon which the local tribe depends for subsistence. Nonetheless, it is clear that the PRM #3 would substantially improve conditions of the adjacent aquatic resources and provide benefits to the Tetlin community.

The combined value of the proposed compensatory mitigation would adequately offset the impacts anticipated from the proposed construction.

Comment 4: The USFWS is concerned that there is no proposed means to maintain floodplain integrity and connectivity at the stream crossings for the proposed gravel access roads or at the culvert replacements for the proposed compensatory mitigation. Floodplain integrity and connectivity is typically maintained at stream crossings by the installation of channel-spanning bridges or appropriately designed culverts. Roadway-stream crossings must optimize longitudinal (upstream-downstream) connectivity, groundwater connectivity as well as floodplain connectivity to create a functional passageway for aquatic organisms at a variety of flows. If bridging a stream is not

feasible, then installing a culvert that mimics stream reach characteristics is the best means for providing connectivity.

How would Peak Gold, LLC maintain floodplain integrity and connectivity at the proposed crossing structures for the new gravel access roads? Is Peak Gold LLC planning to re-establish floodplain integrity and connectivity at the stream crossings targeted for improvement via the proposed compensatory mitigation. If so, then how would this be accomplished?

Applicant's Response: No streams or floodplains would be crossed by the Manh Choh Twin Road, the Manh Choh Site Access Road, or any project access road. Culverts would be placed in the newly constructed access roads and replaced in the Tetlin Native Village Road to maintain drainage patterns and floodplain integrity. The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of (e.g., perched culvert outwash gravels and or excessive water velocities) shall be restored to the satisfaction of the ADF&G Habitat Section.

Peak Gold will maintain floodplain integrity and connectivity at proposed crossings by locating and designing culverts based on a hydraulic engineer investigation. The swales will be culverted; bridging swales is not practicable for dry, short, and shallow crossings. The culverts are designed to convey flows during the projected large flow events.

Peak Gold will maintain floodplain integrity and connectivity at the stream crossings targeted for improvement via the proposed compensatory mitigation plan by replacing dysfunctional culverts with those that would be at appropriate elevations, embedded in the channel substrate, and enlarged to convey higher flows and prevent incision or other forms of channel degradation.

The integrity of streams and associated floodplains in the project vicinity would be further protected by regular inspection and maintenance of all culverts on all roads in the project area. If it is determined that drainage in locations proximal to the roads is insufficient, then new culverts and/or more appropriately designed replacement culverts may be installed.

Corps' Evaluation: As stated by the applicant, the proposed access roads would not cross any streams and thus would not directly affect floodplains. The proposed culverts for the Manh Choh Twin Road and the Manh Choh Site Access Road would convey flow within wetlands and in upland areas where surface flow may periodically occur. These culverts are of sufficient quantity and design to maintain hydrologic connectivity, and at least approximate natural drainage patterns.

The proposed compensatory mitigation would improve conveyance for three crossings of the Tetlin Village Road where existing culverts are undersized and have caused (or at least exacerbated) erosion and sedimentation in the adjacent aquatic resources. As explained above, the culvert at the PRM #3 site, which is the only stream crossing of the

three mitigation sites, would be replaced with a large low-flow culvert and an additional high-flow culvert. By re-establishing hydrologic connectivity, these improvements would relieve flow constriction, reduce erosion and sedimentation, and enable the adjacent wetlands and streams to attain a more natural flow regime. These benefits would enable the aquatic resources to better perform a diversity of functions and eventually maintain and possibly re-establish more natural forms including floodplains and periodically inundated wetland fringes.

Additional discussion of submitted comments, applicant response and/or Corps' evaluation: On May 11, 2022, EPA received the applicant's responses to EPA's public notice comments and additional applicant responses on June 30, 2022. Upon request, EPA received additional information from the applicant since the closure of the public notice comment period and provided supplemental responses based on their review of the additional information. Their supplemental responses are summarized below:

EPA expressed that they remain concerned that the Manh Choh Mine Project has the potential to adversely impact additional waters of the United States downgradient of the mine site over time. More specifically, EPA is concerned that perennial streams in the project vicinity would be subject to increased transport of dissolved arsenic during and after mining activities due to the proposed plans for water and waste rock management. Allowing for the discharge of polluted, contact water to groundwater has the potential to cause or contribute to water quality exceedances in downgradient waters that already have recorded water quality exceedances on multiple occasions.

EPA also expressed concerns about the level of uncertainty associated with the modelling provided by the applicant and the disclosed potential for metal and arsenic pollution from the project. They believe that assumptions used in the modeling may have led to an underestimate of the potential for groundwater contamination. EPA is also concerned that infiltration through waste rock both during and after mine closure could lead to groundwater contamination and that measures should be implemented to reduce this possibility. EPA believes it is practicable to reduce the potential for infiltration beneath the proposed waste rock discharge areas and consequential contamination of groundwater by establishing low-permeability foundations of compacted fine-grained materials during site preparation.

EPA also expressed concerns about the potential for contact water in the perimeter ditches to infiltrate, the siting of holding ponds in waters, and the use of contact water and treated effluent for dust control unless sampling indicates that it would not alter the chemistry of potential receiving waters. EPA recommends that the Corps require as a condition of the permit that the applicant develop an adaptive management plan that identifies how seepage from the pits will be collected for treatment if the groundwater or surface water monitoring indicates that groundwater chemistry has been altered by the contact water.

The increase in average annual daily traffic resulting from the proposed hauling to the Fort Knox Mine is likely to have an adverse effect on air quality within the nonattainment

area for PM_{2.5} according to National Ambient Air Quality Standards; this nonattainment area includes a portion of the Fairbanks North Star Borough encompassing both Fairbanks and North Pole. EPA recommends that the Corps consider and disclose the air quality impacts that would result from the proposed use of heavy duty vehicles in the nonattainment area and suggests that the applicant consider and identify mitigation measures.

Applicant's Response: The applicant states that after accounting for inputs from mine contact water, mixing with native groundwater and attenuation processes, the average predicted groundwater discharge concentration would be less than the ADEC limit of 0.01 mg/L. Arsenic concentrations in groundwater discharge do not increase constituent loading in Tors Creek, which will remain constant through the year due to natural runoff water quality. Although groundwater discharges may seasonally increase constituent loading in Hillside Creek, arsenic concentrations will remain below regulatory limits.

Formal quality control and quality assurance procedures for the project studies on which the water quality assessments were made are consistent with industry best practices and are based on specific requirements laid out by ADEC and the EPA.

Based on the site-wide water balance and high porosity of the waste rock, waste rock piles are not expected to saturate and pore water will not reach bedrock within the timescale of mining. It is assumed, however, that long-term flow-through and percolation of pore water would lead downward into underlying bedrock. Nonetheless, surface and groundwater data gathered indicate that sorption of arsenic is a natural phenomenon in groundwater at site. It should be appreciated that a large portion of the bedrock is partly broken down, resulting in an abundance of sites potentially available for sorption, particularly within the mica-rich schistose rock mass.

The applicant determined that the potentially acid generating fraction of the waste rock placed in the bottom of South Pit is better encapsulated by keeping it submerged under saturated groundwater conditions, and those conditions would be best maintained by partially backfilling the pit. Containing pit wall runoff and recharge within the pit footprint ensures the backfill remains submerged. In contrast, fully backfilling the pit will reduce the water balance, preventing saturation of the waste rock.

Foundation liners below waste rock discharge areas to further reduce percolation of groundwater were not recommended due to the potential for creating unstable slopes, the inherently low permeability of unsaturated waste rock, and the planned reclamation of perimeter ditches during mine closure to prevent contact water being exposed above ground.

The perimeter ditches will be excavated within poorly graded silt-rich soils, which would inhibit infiltration. Impermeable liners will be installed within ditches and holding ponds in locations where they occur within or near wetlands. The holding ponds are designed to be long and narrow to reduce direct disturbance within or near jurisdictional waters. Allowing contact water to infiltrate within upland areas enables the attenuation processes in soil and bedrock groundwater, reducing the potential for contamination of

nearby streams and other waterbodies.

The applicant stated that any waters that are to be applied to roads will be tested for compliance with limits established under the terms of issued permits, as mentioned in Section 3.1 of the water management plan. On receipt of permits, including the Alaska Pollutant Discharge Elimination System permits needed for the project, the water management plan will be updated to include the explicit monitoring requirements of those permits. In addition, the water management plan will be updated to include details of monitoring and mitigation measures to identify and address any deviation from the predicted behavior of constituents that may migrate to waters during mine operations and closure.

Corps' Evaluation: The Alaska District acknowledges that the applicant followed assurance procedures for the project studies upon which the water quality assessments were made and that these assessments are consistent with industry best practices. We concur that the applicant's plans would minimize potential secondary impacts to water quality including potential contamination by arsenic and other constituents of the ore body that may be released by the proposed mining. Lastly, we acknowledge that the applicant intends to monitor, and potentially further mitigate the release of, constituents that may harm or degrade nearby waters during mine operations and closure.

As described in Section 4.3, the Alaska District's scope of analysis for this proposed action entails the 1,046-acre project area including 5.26 acres of jurisdictional wetlands. Thus the air quality impacts and other impacts that may occur as a result of the ore hauling to the Fort Knox Mine is outside this scope of analysis.

4.2 Additional issues raised by the Corps

N/A

4.3 Comments regarding activities and/or effects outside of the Corps' scope of review: There were many comments requesting permit denial based on the anticipated impacts to traffic, safety, air quality, and water quality from the proposed hauling of ore from the Manh Choh Mine to the Fort Knox Mine where it would be processed. The haul route is over 240 miles long and hauling would be frequent: two to four haul trucks would leave the mine site every hour of every day for approximately 4.5 years. Thus, there were many comments suggesting that the Corps' scope of analysis should include the highways and other public roads that would be used for hauling. Some comments advocated for including within the scope of analysis those portions of Fort Knox where Manh Choh tailings would be deposited and the economic fraction would be milled and chemically treated. Several of these comments also requested a public hearing to review the project and address the impacts that would occur outside of the proposed project area.

In accordance with 33 CFR 325, Appendix B, paragraph 7(b), the geographic extent and intensity of our SOA under NEPA will be commensurate with the amount of Federal "control and responsibility" over the project and the strength of the relationship between the project impacts and the regulated portion of the activity. The project is privately

funded, would occur on privately owned land, and would not likely require any other authorization except that which would be issued by the USACE for the proposed fill placement in 5.26 acres of jurisdictional wetlands. Although the wetlands only extend across 0.5 percent of the total project area, they are sufficiently distributed throughout the project area that the regulated activity is not merely a link in a corridor. Moreover, there are aspects of the upland portions of the project area in the immediate vicinity of the regulated activity which affect the location and configuration of the regulated activity; these aspects include the slope of the ground where the access roads would be constructed and the presence of the gold deposit where the mining area would be established.

The scope of analysis for this project does not include the highways or any other roads that would be used for hauling ore outside of the designated project area. It also excludes any part of the Fort Knox mine where the ore would be processed. The aquatic resource impacts anticipated to occur in these areas would be minor and would have a weak connection to the regulated part of the proposed activity. No part of the highway hauling or ore processing proposed for this project would involve any discharge of dredged or fill material into waters of the U.S. Consideration of the four factors in 33 CFR 325, Appendix B, paragraph 7(b) leads to the conclusion that there is no reason for expanding the SOA beyond the project area as described in the application submitted December 31, 2021. Thus, the proposed highway hauling and transport of other goods in support of the project are non-federal activities that would not affect the location or extent of the regulated activity and are therefore not subject to review by the USACE Alaska District.

The public interest review entails consideration of a broad array of impacts from both the construction and operation of a proposed activity, as specified in 33 CFR 320.4. For every public interest review conducted by the Alaska District, we have used the same SOA as that which was applied for the NEPA analysis. Thus, the Alaska District has constrained its public interest review for the Manh Choh Mine to the project area as described above and will not consider impacts that may be caused by hauling ore by highway to the Fort Knox Mine mill.

An email exchange with the Alaska Department of Transportation and Public Facilities affirmed that their planned improvements to the Richardson Highway between Delta Junction and North Pole (MP 266-341) would have independent utility from the proposed hauling for the mine. Details about the plan are found online at <https://dot.alaska.gov/nreg/richardsonpassinglanes>. The website indicates that the project purpose is “to reduce traffic congestion and increase safety.” In his February 15, 2022 email, Jason Sakalaskas of the ADOT&PF wrote the following: “The purpose of this project as stated is correct and this project will benefit all public travelers who travel this route. This project was identified as a need and was already included in our Statewide Transportation Improvement Plan (STIP) prior to the reference Kinross or Haul. We are evaluating the haul route and re-arranging our planned capital projects to be as prepared as possible with new infrastructure improvements.”

5.0 Alternatives Analysis

(33 CFR Part 325 Appendix B, 40 CFR 230.5(c) and 40 CFR 1501.5(c)). An evaluation of alternatives is required under NEPA for all jurisdictional activities. NEPA requires discussion of a reasonable range of alternatives, including the no action alternative, and the effects of those alternatives. An evaluation of alternatives is required under the Section 404(b)(1) Guidelines for projects that include the discharge of dredged or fill material to waters of the United States. Under the Section 404(b)(1) Guidelines, practicability of alternatives is taken into consideration and no alternative may be permitted if there is a less environmentally damaging practicable alternative.

5.1 Site selection/screening criteria

In order to be practicable, an alternative must be available, achieve the overall project purpose (as defined by the Corps after considering the applicant's needs and type of project being proposed), and be feasible when considering cost, logistics and existing technology.

Criteria for evaluating alternatives as evaluated and determined by the Corps:

1. Logistics: The project site must be specific to the mineral deposit located on a ridge within the Tetlin Hills.
 2. Cost: The project must have reasonable development costs in accordance with industry standards at the time of development.
- Description of alternatives

5.2.1 No action alternative

The no action alternative would prevent achievement of project objectives. No action would be equivalent to a Department of the Army permit denial or a project that would not cause impacts to jurisdictional waters, which is not practicable.

5.2.2 Off-site alternatives

Off-site alternative 1: No off-site alternatives were considered given the specific location of the deposit.

5.2.3 On-site alternatives

On-site alternative 1 (applicant's preferred alternative): The proposed alternative entails constructing and operating an open pit gold mine at the defined deposit in the Tetlin Hills. This alternative would include constructing access roads, excavating ore in two pits within a few hundred feet of each other, constructing waste rock discharge area adjacent to each pit, constructing overburden storage, an ore transfer site, explosives storage, and associated infrastructure. This alternative meets the criteria identified in Section 5.1 of this document.

On-site alternative 2: Multiple access routes to the mine site were studied in detail. A proposed route across the Tok River was studied and rejected. One reason for rejection was to avoid disturbing the intact riverbank, riparian areas and wetlands along the Tok River. The applicant determined that routing access roads across a perennial, fish-bearing stream and potentially introducing sediment and causing other impacts would have unacceptable environmental effects; building a bridge would not be economically feasible. Compared to the proposed alternative, the applicant found that this alternative would have greater potential impacts to most resources with no reduced impact to any resource category. It is clear that this alternative would have incurred much greater direct and indirect effects upon aquatic resources and likely greater impacts to other environmental resources.

On-site alternative 3: The potential alternative to include constructing an ore processing mill, tailings disposal facilities, power plant sufficient to run the mill, and associated infrastructure would have caused much greater impacts to jurisdictional waters and other environmental resources compared to the proposed alternative. The applicant determined that this alternative was not feasible, mainly due to the logistics and cost of constructing a suitably sized power plant. In addition, water resource development would be required for mill operations and on-site cyanide use would pose the potential for hazardous releases to the environment. Construction of a mill and a permanent tailing storage facility would have much greater footprint and a wide array of impacts to both land and water resources. Compared to the proposed alternative, this alternative would have much greater impacts to aquatic resources and possibly other environmental resources due to the much larger construction footprint and the need for power generation and the associated water management.

On-site alternative 4: Under this alternative, access to the proposed mine site would start at approximately mile 9 of the Tetlin Village Road, following better topography towards the proposed mine area. This alternative would have a longer route to the mine site with steeper sections and thereby would have posed a greater risk for mine-related traffic. Further, this alternative would have posed a greater safety risk due to the longer length of co-mingled mine and Tetlin village traffic. Compared to the proposed alternative, the applicant found that this alternative would have greater potential impacts to most resources with no decreased impact to any resource category.

On-site alternative 5: Under this alternative, the Tetlin Village Road would have been widened to accommodate traffic for both the village and the mine. The proposed action, in contrast, proposes to build a parallel twin road to separate the traffic. Co-use of the same road would have resulted in less impacts to some resources (e.g., wetlands), but would have negative potential safety and quality of life impacts to Tetlin Village residents by increasing the potential for vehicle collisions.

On-site alternative 6: After leaving the Manh Choh Twin Road at mile post 5, alternative road routes were considered for access to the mine site from the base of the Tetlin Hills because the existing access road is too steep for safe travel by haul trucks. One of the potential alternative routes was also determined too steep for mining equipment and discarded. On-site investigations demonstrated that other alternative routes would either

cross a wetland complex or would cross streams. Compared to the proposed alternative, the routes for these alternatives are longer, would require greater earthwork (e.g., more cut and fill), and would cause greater impacts to aquatic resources and potentially to historical sites.

5.3 Alternatives evaluation under the Section 404(b)(1) Guidelines and NEPA

The No Action alternative would not meet project objectives and would not create the economic opportunities for the Tetlin tribe, the Tok area and the region.

The applicant's preferred alternative would meet project objectives, is practicable, and meets the screening criteria addressed in Section 5.1.

5.4 Least environmentally damaging practicable alternative under the Section 404(b)(1) Guidelines

The applicant's preferred alternative is the least environmentally damaging practicable alternative. Although the project would require permanently filling 5.26 acres of jurisdictional wetlands, these wetlands predominantly perform functions at no more than moderate levels due in part to their partially degraded state as a result of the 1990 fire, their relatively dry moisture regime, their infrequent flooding or ponding, and, for the 3.8 acres of Flats wetlands, their proximity to the ongoing disturbance associated with the Tetlin Village Road. The proposed access roads and other facilities would avoid streams entirely while minimizing fill in wetlands. Minimization measures outlined in Section 1.3.1 and the conditions of the Section 401 Water Quality Certification issued for the project on August 29, 2022 would limit secondary impacts to jurisdictional waters as much as practicable.

6.0 Evaluation for Compliance with the Section 404(b)(1) Guidelines

The following sequence of evaluation is consistent with 40 CFR 230.5

6.1 Practicable alternatives

Practicable alternatives to the proposed discharge consistent with 40 CFR 230.5(c) are evaluated in Section 5

The statements below summarize the analysis of alternatives:

In summary, based on the analysis in Section 5 above, the no-action alternative, which would not involve discharge into waters of the United States, is not practicable.

For those projects that would discharge into a special aquatic site and are not water dependent, the applicant has demonstrated there are no practicable alternatives that do not involve special aquatic sites.

It has been determined that there are no alternatives to the proposed discharge that would be less environmentally damaging (Subpart B, 40 CFR 230.10(a)).

The proposed discharge in this evaluation is the practicable alternative with the least adverse impact on the aquatic ecosystem, and it does not have other significant environmental consequences.

6.2 Candidate disposal site delineation (Subpart B, 40 CFR 230.11(f))

Each disposal site shall be specified through the application of these Section 404(b)(1) Guidelines:

The proposed aquatic resources impact consists of 5.26 acres of wetlands that are not within proximity to any waterbodies.

6.3 Potential impacts on physical and chemical characteristics of the aquatic ecosystem (Subpart C 40 CFR 230.20-40 CFR 230.25)

The following has been considered in evaluating the potential impacts on physical and chemical characteristics (see Table 2):

Table 2 – Potential Impacts on Physical and Chemical Characteristics						
Physical and Chemical Characteristics	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Major Effect
Substrate			X			
Suspended particulates/ turbidity				X		
Water			X			
Current patterns and water circulation			X			
Normal water fluctuations		X				
Salinity gradients		X				

Discussion: The project's ongoing and anticipated storm water management, the avoidance and minimization of impacts to aquatic resources including the proposed minimization measures outlined in Section 1.3.1, and the very small amount of impervious surfaces to be created would result in mostly negligible or no effects upon the physical and chemical characteristics addressed in Table 2. Release of fine sediment during large flow events is likely to occur during both construction and operation and thereby cause minor, short effect increases in suspended particulates/turbidity of nearby waters.

6.4 Potential impacts on the living communities or human uses (Subparts D, E and F)

6.4.1 Potential impacts on the biological characteristics of the aquatic ecosystem (Subpart D 40 CFR 230.30)

The following has been considered in evaluating the potential impacts on biological characteristics (see Table 3):

Table 3 – Potential Impacts on Biological Characteristics						
Biological Characteristics	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Major Effect
Threatened and endangered species	X					
Fish, crustaceans, mollusk, and other aquatic organisms			X		X	
Other wildlife				X		

Discussion: No threatened or endangered species are in the project vicinity. The project would have a minor, long-term effect on fish and other aquatic organisms as a result of the proposed compensatory mitigation, which entails replacing dysfunctional culverts at three locations along the Tetlin Village Road to improve hydrologic connectivity with downstream wetlands and waters, reduce erosion and sedimentation, augment a suite of wetland and stream functions including the passage of aquatic organisms. The proposed mine construction and operation would likely have very little effect on fish and other organisms due to the avoidance of direct impacts to streams or other waterbodies, the small extent of wetlands to be lost, and the minimization measures that would be implemented during construction, operation and reclamation. PRM entails

The project would have a minor, short-term effect on other wildlife. The relatively large footprint and the dramatic increase in human activity would likely displace habitat for some common species such as red squirrel (*Tamiasciurus hudsonicus*), Swainson's thrush (*Catharus ustulatus*) and white-crowned sparrow (*Zonotrichia leucophrys*) and suppress inhabitation by some sensitive species such as black bear (*Ursus americanus*), interior Alaskan wolf (*Canis lupus pambasileus*), and moose (*Alces alces*). However, these effects would occur over a relatively short period given the 4.5 years of anticipated mine life and the anticipated mine closure and reclamation.

6.4.2 Potential impacts on special aquatic sites (Subpart E 40 CFR 230.40)

The following has been considered in evaluating the potential impacts on special aquatic sites (see Table 4):

Table 4 – Potential Impacts on Special Aquatic Sites						
Special Aquatic Sites	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Major Effect
Sanctuaries and refuges	X					
Wetlands					X	
Mud flats	X					
Vegetated shallows	X					
Coral reefs	X					
Riffle pool complexes		X				

Discussion: Wetlands are the only types of special aquatic sites situated within the project area and the project vicinity. Although the fill placed in the 5.26 acres of wetlands would be permanent, the effect to aquatic resources would be relatively low due to the widespread extent of intact wetlands and other waters in the vicinity. The avoidance and minimization measures would further reduce the project's indirect impacts to wetlands and would fully neutralize the indirect effects upon riffle pool complexes present in the Tok River, the Tetlin River, and other nearby rivers and streams.

6.4.3 Potential impacts on human use characteristics (Subpart F 40 CFR 230.50)

The following has been considered in evaluating the potential impacts on human use characteristics (see Table 5):

Table 5 – Potential Impacts on Human Use Characteristics						
Human Use Characteristics	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Major Effect
Municipal and private water supplies			X			
Recreational and commercial fisheries		X				
Water-related recreation		X				
Aesthetics			X			
Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves		X				

Discussion: Water for dust suppression in the mining area would primarily be derived

from the two proposed holding ponds to be situated adjacent to each mining pit. The holding ponds would receive runoff a perimeter collection ditch that would encircle the site area and intercept all contact water. Water for dust suppression in the remaining portions of the project area would primarily be derived from wells situated along the Mine Access Road. These wells may require Temporary Water Use Authorizations or water rights from the State. Thus, the project would have no direct effects upon municipal and private water supplies.

Indirect effects, mainly increases in personal use of private water supplies from increased residency in the vicinity, would be negligible given that the increased residency would not greatly exceed recent maximums; from 2010 through 2020, the population of Tetlin declined by 21 (17%) while Tok's population declined by 68 (5.4%).

The project would have no effect upon recreational and/or commercial fisheries in the vicinity. Except for the expected benefit from the proposed compensatory mitigation, the project is not anticipated to effect fish populations in nearby rivers and streams. The proposed compensatory mitigation, which includes replacing a dysfunctional culvert at a fish-bearing stream in close proximity to the Tetlin Village, would enhance fish health and populations and thereby improve the local sustenance fishery.

No water-related recreation would be affected by the project given the avoidance of direct impacts to streams or other waterbodies and the minimization measures to be implemented.

Impacts to visual quality would be minimal given the small numbers of potential onlookers and the long distance from the mine site to the Alaska Highway where most of the viewing public would gain sightlines. During mine construction and operation, vegetation clearing and the addition of the larger mine components such as the waste rock discharge area would slightly compromise the natural aesthetic beyond what has already occurred from the construction of exploration roads. Although audial quality within the project area during construction and operation would be slightly degraded from the noise of trucks and other heavy machinery and daily blasting, these impacts would mainly be experienced by those who travel the Tetlin Village Road and some people travelling on the Alaskan Highway in proximity to its intersection with the proposed Twin Road. Except when atmospheric conditions could enhance noise transmission, project operations would not be audible to most human receivers within 10 miles (Tok, Tetlin Village, To River Recreation Area, and Butch Kuth Avenue). The proposed mine would help to mitigate noise by using late model and well maintained highway haul trucks for the trips to and from Fort Knox and by training drivers to operate the truck in an efficient manner that also reduces noise levels, such as restricting the use of engine compression breaks (i.e., Jake breaks) to emergency situations. Overall, impacts to aesthetics would be minimal given the project's remoteness, the relatively short duration of the mine-life, the noise mitigation measures, and the site recontouring and revegetation that would occur as a result of the proposed reclamation.

The project is not anticipated to have any impact upon parks or preserves. The northwestern edge of the Tetlin National Wildlife Refuge, the nearest preserve to the

project site, is about 20 miles to the east.

The project would not require any changes to zoning or land use.

6.5 Pre-testing evaluation (Subpart G, 40 CFR 230.60)

The following has been considered in evaluating the biological availability of possible contaminants in dredged or fill material (see Table 6):

Table 6 – Possible Contaminants in Dredged/Fill Material	
Physical substrate characteristics	X
Hydrography in relation to known or anticipated sources of contaminants	X
Results from previous testing of the material or similar material in the vicinity of the project	
Known, significant sources of persistent pesticides from land runoff or percolation	
Spill records for petroleum products or designated (Section 331 of the Clean Water Act hazardous substances	
Other public records or significant introduction of contaminants from industries, municipalities, or other sources	
Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	

Discussion: There is no mixing zone as all fill would be placed in wetlands, not waters.

Neither the sand, gravel and riprap comprising the fill within the project site nor the materials to be used for additional fill within the project site are not known to be and are unlikely to be contaminated by hazardous wastes or other toxic substances.

No contaminants are known to occur within the project site and no contamination or fuel spills during mine exploration activities have been reported.

The only known contamination in the project vicinity is just north of the Alaska Highway approximately 1.5 miles west of the proposed Twin Road/highway intersection. According to the ADEC Contaminated Sites Database, release of an unknown amount of petrochemicals occurred from a vehicle striking the valve on December 15, 1967. The contaminated site is Gate Valve 52, located at Campground Space #14 within the Tok River State Recreation Site. A groundwater monitoring work plan was approved for this site in July 2022.

It has been determined that testing is not required because the proposed material is not likely to be a carrier of contaminants because it is comprised of sand, gravel or other naturally occurring inert material.

6.6 Evaluation and testing (Subpart G, 40 CFR 230.61)

Discussion: Neither the sand, gravel and riprap comprising the fill within the project site nor the materials to be used for additional fill within the project site are not known to be and are unlikely to be contaminated by hazardous wastes or other toxic substances. Thus, no evaluation or testing of these materials will be required.

6.7 Actions to minimize adverse impacts (Subpart H)

The following actions, as appropriate, have been taken through application of 40 CFR 230.70-230.77 to ensure no more than minimal adverse effects of the proposed discharge (see Table 7):

Table 7 – Actions to Ensure Adverse Effects are Minimized	
Actions concerning the location of the discharge	X
Actions concerning the material to be discharged	X
Actions controlling the material after discharge	X
Actions affecting the method of dispersion	X
Actions affecting plant and animal populations	X
Actions affecting human use	X
Actions related to technology	
Other actions	

Discussion: The project design including the minimization measures discussed in Section 1.3 would greatly reduce impacts to the environment beyond the project area. These measures would minimize the project footprint, minimize erosion and associated sedimentation, minimize potential impacts to water quality, and minimize impacts to vegetation and wildlife. Impacts to human use of the project area would be minimized after mine closure via reclamation.

6.8 Factual Determinations (Subpart B, 40 CFR 230.11)

The following determinations are made based on the applicable information above, including actions to minimize effects and consideration for contaminants (see Table 8):

Table 8 – Factual Determinations of Potential Impacts						
Site	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Major Effect
Physical substrate				X		
Water circulation, fluctuation and salinity			X			
Suspended particulates/turbidity			X			
Contaminants			X			
Aquatic ecosystem and organisms			X			

Table 8 – Factual Determinations of Potential Impacts						
Site	N/A	No Effect	Negligible Effect	Minor Effect (Short Term)	Minor Effect (Long Term)	Major Effect
Proposed disposal site			X			
Cumulative effects on the aquatic ecosystem			X			
Secondary effects on the aquatic ecosystem			X			

Discussion: As discussed in Section 6.3, the project would have only negligible effects upon the physical and chemical conditions of the project area and its vicinity due to relatively small amount of wetlands to be lost and the minimization measures to be implemented during construction. As addressed in Section 6.4, the project would have very little effect on fish and other aquatic organisms due to the avoidance of any direct impacts to streams or other waterbodies, the minimization measures that would be implemented during construction and operation, and the minimal minor effect that the project would have upon the hydrologic regime, erosion and sedimentation, and water quality in the vicinity. The cumulative effects of the project are expected to be negligible given the storm water management, the relatively short mine-life and the proposed reclamation. In addition, the proposed compensatory mitigation would improve aquatic resources in two of the three subwatersheds to be directly affected by project construction and operation.

6.9 Findings of compliance or non-compliance with the restrictions on discharges (40 CFR 230.10(a-d) and 230.12)

Based on the information above, including the factual determinations, the proposed discharge has been evaluated to determine whether any of the restrictions on discharge would occur (see Table 9):

Table 9 – Compliance with Restrictions on Discharge		
Subject	Yes	No
1. Is there a practicable alternative to the proposed discharge that would be less damaging to the environment (any alternative with less aquatic resource effects, or an alternative with more aquatic resource effects that avoids other significant adverse environmental consequences?)		X
2. Will the discharge cause or contribute to violations of any applicable water quality standards?		X
3. Will the discharge violate any toxic effluent standards (under Section 307 of the Clean Water Act)?		X
4. Will the discharge jeopardize the continued existence of endangered or threatened species or their critical habitat?		X

Table 9 – Compliance with Restrictions on Discharge		
Subject	Yes	No
5. Will the discharge violate standards set by the Department of Commerce to protect marine sanctuaries?		X
6. Will the discharge cause or contribute to significant degradation of waters of the United States?		X
7. Have all appropriate and practicable steps (Subpart H, 40 CFR 230.70) been taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem?	X	

Discussion: All appropriate and practicable steps have been taken to minimize potential adverse effects as documented above.

7.0 General Public Interest Review (33 CFR 320.4 and Regulatory Guidance Letter 84-09)

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest as stated at 33 CFR 320.4(a). To the extent appropriate, the public interest review below also includes consideration of additional policies as described in 33 CFR 320.4(b) through (r). The benefits which reasonably may be expected to accrue from the proposal are balanced against its reasonably foreseeable detriments.

7.1 Public interest factors review

All public interest factors have been reviewed and those that are relevant to the proposal are considered and discussed in additional detail (see Table 10):

Table 10 – Public Interest Factors						
Factor	None	Detrimental	Neutral (mitigated)	Negligible	Beneficial	Not Applicable
1. Conservation: The project would have very little impact on supply or consumption of water, energy or other resources.				X		
2. Economics: Employment for construction, operation and reclamation/closure would result in a minor and somewhat localized benefit to economic activity in the project vicinity.					X	
3. Aesthetics: Impacts to aesthetics would be minimal given the project's remoteness, the relatively short duration of the mine-life, proposed noise mitigation measures, and the site recontouring and revegetation that would occur as a result of the proposed reclamation.				X		

Table 10 – Public Interest Factors						
Factor	None	Detrimental	Neutral (mitigated)	Negligible	Beneficial	Not Applicable
4. General Environmental Concerns: Construction and operation of the project would avoid and minimize anticipated resource impacts to the extent practicable, compensate for unavoidable impacts to aquatic resources, and conduct reclamation after mine closure.				X		
5. Wetlands: The project would permanently eliminate a relatively small extent of wetlands and cause minimal secondary effects to nearby wetlands and waters. Off-site wetlands and streams would be ecologically enhanced by the proposed compensatory mitigation and thereby neutralizing the detriment from the proposed impacts.			X			
6. Historic Properties: As explained in Section 9.3, the Alaska State Historic Preservation Office concurred with the Alaska District determination of an Adverse Effect due to the proposed fill placement in an area with a historic site eligible for listing in the National Register of Historic Places. The Memorandum of Agreement documenting the adverse effect and its proposed mitigation was signed by all parties including the Native Village of Tetlin and was filed by the Advisory Council on Historic Preservation.			X			
7. Fish and Wildlife Values: The project would have a very minor impact upon fish and wildlife due to the anticipated minor effect upon waters in the vicinity as a result of the proposed avoidance and minimization, the relatively short mine-life, the proposed compensatory mitigation and the proposed reclamation.				X		
8. Flood Hazards: As a result of the proposed avoidance and minimization measures, the project would neutralize the potential interruption to natural flow patterns and the associated potential for increased flooding.			X			
9. Floodplain Values: The local hydrologic regime, water quality, ecological integrity, and cultural resources would be affected very little by the proposed project due to the proposed avoidance and minimization measures.				X		
10. Land Use: The proposed project would not cause a change in land use.	X					
11. Navigation: The proposed project would not cause a change in navigation.	X					

Table 10 – Public Interest Factors						
Factor	None	Detrimental	Neutral (mitigated)	Negligible	Beneficial	Not Applicable
12. Shoreline Erosion and Accretion: The project would have no effect on shorelines due its distance from any waterbodies and the proposed minimization measures.	X					
13. Recreation: The proposed project would have a negligible effect on recreation as the land encompassing the project site is owned by the Native Village of Tetlin, the inhabitants of which would continue to utilize other lands owned by the tribe for recreation (as well as other purposes) and would regain access to the project site for recreation after mine closure and reclamation.				X		
14. Water Supply and Conservation: The project would have no effect on water supply and conservation.	X					
15. Water Quality: The project would have a minor effect on water quality due to the proposed avoidance and minimization measures and the terms and conditions of the Water Quality Certification issued by the Alaska Department of Environmental Conservation.				X		
16. Energy Needs: The proposed project would not cause a change in energy needs.	X					
17. Safety: The project would have no effect on the safety of impoundment structures or water-borne activities.	X					
18. Food and Fiber Production: The project would have no effect on food and fiber production.	X					
19. Mineral Needs: The project would have a beneficial effect on satisfying the need for gold. As addressed in Section 3.1, the demand for gold and its price per ounce have both been rising over the past few decades. Alaska is estimated to contain 3.5 percent of the world's unmined gold.					X	
20. Consideration of Property Ownership: The project would have no effect on property ownership as the Native Village of Tetlin would retain ownership over all land encompassing the project site.	X					

Table 10 – Public Interest Factors						
Factor	None	Detrimental	Neutral (mitigated)	Negligible	Beneficial	Not Applicable
21. Needs and Welfare of the People: The project would implement traffic controls and other measures to ensure safety at the facility and minimize the noise, dust and other potential impacts on the public. The project would boost employment and incidental business to the surrounding and regional employment, which would outweigh the relatively minor and readily mitigated detriments to public welfare.					X	

Additional discussion of effects on factors above: N/A

7.2 Public and private need

The relative extent of the public and private need for the proposed structure or work:
The project would satisfy the need to conduct industrial activity that would generate a regionally important source of direct and indirect employment, produce a profit for Peak Gold, LLC, and alleviate the global demand for gold.

7.3 Resource use unresolved conflicts

If there are unresolved conflicts as to resource use, explain how the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work was considered.

There were no unresolved conflicts identified as to resource use.

7.4 Beneficial and/or detrimental effects on the public and private use

The extent and permanence of the beneficial and/or detrimental effects that the proposed work is likely to have on the public and private use to which the area is suited is described below:

Detrimental effects are expected to be minimal and permanent.

Beneficial effects are expected to be minimal and permanent.

The detrimental effects include permanent loss of a relatively small extent of wetlands and waters with low to moderate functionality and a small increase in the expanse of area covered by compacted gravel, sand and waste rock. The beneficial effects include a large source of employment for the locality and the region, and potentially improved

aquatic habitat through the compensatory mitigation.

7.5 Climate Change

The proposed activities within the Corps' federal control and responsibility likely will result in a negligible release of greenhouse gases into the atmosphere when compared to global greenhouse gas emissions. Greenhouse gas emissions have been shown to contribute to climate change. Aquatic resources can be sources and/or sinks of greenhouse gases. For instance, some aquatic resources sequester carbon dioxide whereas others release methane; therefore, authorized impacts to aquatic resources can result in either an increase or decrease in atmospheric greenhouse gas. These impacts are considered de minimis. Greenhouse gas emissions associated with the Corps' federal action may also occur from the combustion of fossil fuels associated with the operation of construction equipment, increases in traffic, etc. The Corps has no authority to regulate emissions that result from the combustion of fossil fuels. These are subject to federal regulations under the Clean Air Act and/or the Corporate Average Fuel Economy (CAFE) Program. Greenhouse gas emissions from the Corps' action have been weighed against national goals of energy independence, national security, and economic development and determined not contrary to the public interest.

7.6 Consideration of cumulative impacts

Cumulative impacts are the result of the combined effects of multiple activities that occur in a particular waterbody that persist over time. Cumulative impacts can accrue to a waterbody in a number of ways. Cumulative impacts occur when there are repetitive permitted activities at a specific waterbody over time, and the resources in that waterbody are not able to fully recover between each occurrence of a permitted activity. Cumulative impacts can also occur as a result of multiple permitted activities occurring in a waterbody over time. Cumulative impacts can also be evaluated at watershed scale, by considering multiple permitted activities occurring in that watershed over time. This section of the decision document may include a discussion of activities permitted through Department of the Army authorizations that have occurred in the waterbody or watershed over time, and how the proposed activity discussed in this decision document will contribute to cumulative effects to that waterbody or watershed and whether that contribution to cumulative impacts, as evaluated against the current environmental baseline, would be determined to be "not contrary to the public interest."

Cumulative effects of the proposed project are considered minimal due to the relatively small extent of direct impact, the abundance of wetlands and other waters in the affected subwatersheds, the proposed mitigation (avoidance, minimization and compensation), and the proposed reclamation.

8.0 Mitigation

(33 CFR 320.4(r), 33 CFR Part 332, 40 CFR 230.70-77, 40 CFR 1508.1(s))

8.1 Avoidance and minimization

Avoidance and Minimization: When evaluating a proposal including regulated activities in waters of the United States, consideration must be given to avoiding and minimizing effects to those waters. Avoidance and minimization are described in Section 1 above.

Describe other mitigative actions including project modifications implemented to minimize adverse project impacts? (see 33 CFR 320.4(r)(1)(i))

No other project modifications have been identified that may be feasible and helpful for meeting the applicant's purpose and need.

8.2 Compensatory mitigation requirement

Is compensatory mitigation required to offset environmental losses resulting from proposed unavoidable impacts to waters of the United States? Yes

Provide rationale: In accordance with 33 CFR § 320.4, 33 CFR § 332 and 40 CFR § 230, the Alaska District will require compensatory mitigation for the proposed aquatic resource impacts that would be caused by the discharge of fill for the construction and operation of the Manh Choh mine. Although the proposed action would avoid and minimize impacts, the unavoidable impact to jurisdictional waters is specifically identifiable, very likely to occur and more than minimal.

8.3 Type and location of compensatory mitigation

8.3.1 Mitigation bank service area

Is the impact in the service area of an approved mitigation bank? No

If yes, does the mitigation bank have the appropriate number and resource type of credits available? No, see Section 8.3.4 for discussion regarding the use of the mitigation hierarchy.

8.3.2 In-lieu fee program service area

Is the impact in the service area of an approved in-lieu fee program? No

8.3.3 Compensatory mitigation

Selected compensatory mitigation type/location(s) (see Table 11):

Table 11 – Mitigation Type and Location	
Mitigation bank credits	
In-lieu fee program credits	
Permittee-responsible mitigation under a watershed approach	
Permittee-responsible mitigation, on-site and in-kind	
Permittee-responsible mitigation, off-site and/or out-of-kind	X

8.3.4 Mitigation hierarchy

Does the selected compensatory mitigation option deviate from the order of the options presented in 33 CFR 332.3(b)(2)-(6)? Yes

If yes, provide rationale for the deviation, including the likelihood for ecological success and sustainability, location of the compensation site relative to the impact site and their significance within the watershed, and/or the costs of the compensatory mitigation project (see 33 CFR §332.3(a)(1)): Although the compensatory mitigation does not adhere to the watershed approach in that it does not consider sources of watershed impairment, trends of aquatic resource loss or conversion, or habitat requirements of rare or important species, it would improve performance of a suite of functions that would be lost through project construction and would be able to sustain the improved functionality in the long term given its location away from the proposed mine or any other areas slated for resource extraction or development

8.3.5 Watershed approach

Does the selected compensatory mitigation option follow a watershed approach? No Is the impact in a watershed with a watershed plan? No

8.4 Amount of compensatory mitigation

The proposed compensatory mitigation would engender at least 2.15 credits, which is approximately the same amount of debits to be incurred by the proposed impact to aquatic resources.

Rationale for required compensatory mitigation amount:

Using the same aquatic assessment method as had been used to quantify debits to be incurred by the proposed impact, it was determined that the quantity of credits to be derived by the initially proposed compensatory mitigation would be slightly less than what would be needed to fully offset the impact. This calculation did not account for the anticipated secondary impacts to jurisdictional waters because these impacts would likely be neutralized by the proposed minimization measures. The initially proposed mitigation consisted of two separate culvert replacement projects that would benefit hydrologic connectivity and related functions of adjacent wetlands. As explained in Section 4.1, the applicant subsequently proposed a third mitigation project, which would improve conditions in a fish-bearing stream that connects two large lakes that are important to local subsistence fishing; the anticipated benefits to stream function were quantified using a regionally specific stream condition assessment method. The Alaska District determined that the combination of the three projects would fully offset the proposed impacts if the mitigation is implemented as designed and eventually meets or exceeds all performance standards.

8.5 Permittee-Responsible Mitigation

For permittee-responsible mitigation identified in 8.3.3 above, the final mitigation plan

must include the items described in 33 CFR 332.4(c)(2) through (c)(14) at a level of detail commensurate with the scale and scope of the impacts. As an alternative, the district engineer may determine that it would be more appropriate to address any of the items described in (c)(2) through (c)(14) as permit conditions, instead of components of a compensatory mitigation plan. Presence of sufficient information related to each of these requirements in the applicant's mitigation plan is indicated by "Yes" in Table 12. "No" indicates absence or insufficient information in the plan, in which case, additional rationale must be provided below on how these requirements will be addressed through special conditions or why a special condition is not required:

Table 12 – Permittee-Responsible Mitigation Plan Requirements		
Requirement	Yes	No
Objectives	X	
Site selection	X	
Site protection instrument	X	
Baseline information	X	
Determination of credits	X	
Mitigation work plan	X	
Maintenance plan	X	
Performance standards	X	
Monitoring requirements	X	
Long-term management plan	X	
Adaptive management plan	X	
Financial assurances	X	
Other information:		

For any "No", provide rationale on how the subject component(s) of the compensatory mitigation plan will be addressed as special conditions or why no special conditions are required:

9.0 Compliance with Other Laws, Policies and Requirements

9.1 Section 7(a)(2) of the Endangered Species Act (ESA)

Refer to Section 2.2 for description of the Corps' action area for Section 7 of the ESA.

9.1.1 Lead federal agency for Section 7 of the ESA

Has another federal agency been identified as the lead agency for complying with Section 7 of the ESA with the Corps designated as a cooperating agency and has that consultation been completed? No

9.1.2 Listed/proposed species and/or designated/proposed critical habitat

Are there listed or proposed species and/or designated critical habitat or proposed critical habitat that may be present or in the vicinity of the Corps' action area? No. The Corps has determined that it has fulfilled its responsibilities under Section 7(a)(2) of the ESA

Effect determination(s), including no effect, for all known species/habitat, and basis for determination(s): No effect

9.1.3 Section 7 ESA consultation N/A

9.1.4 Consultation with either the National Marine Fisheries Service and/or the United States Fish and Wildlife Service was initiated and completed as required, for any determinations other than “no effect” (see the attached ORM2 Summary sheet for begin date, end date and closure method of the consultation)

9.2 Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), Essential Fish Habitat (EFH)

N/A, there is no essential fish habitat in this district's area of responsibility. Magnuson-Stevens Act

Did the proposed project require review under the Magnuson-Stevens Act? No

9.2.2 National Marine Fisheries Service consultation

Consultation with the National Marine Fisheries Service was initiated and completed as required (see the attached ORM2 Summary sheet for begin date, end date and closure method of the consultation) N/A

9.3 Section 106 of the NHPA

Refer to Section 2.3 for permit area determination.

9.3.1 Lead federal agency for Section 106 of the NHPA

Has another federal agency been identified as the lead federal agency for complying with Section 106 of the NHPA with the Corps designated as a cooperating agency and has that consultation been completed? No

9.3.2 Historic properties

Known historic properties present? Yes

The Corps has reviewed the documentation provided by the agency and determined it is sufficient to confirm Section 106 compliance for this permit authorization, and additional consultation is not necessary.

Effect determination and basis for that determination: Adverse Effect due to unavoidable fill placement in an area with a historic site eligible for listing in the National Register of Historic Places. The historic site entails a prehistoric camp site containing evidence of toolmaking. The project undertaking's area of potential effects consists of the 1,046-acre mine lease area including the proposed Twin Road between the mine and Alaska

Highway, and all associated material source sites and ancillary Manh Choh Mine facilities. Although several eligible historic sites would be avoided, one is situated within a proposed waste rock discharge area, the location of which could not be adjusted.

9.3.3 Consultation with the appropriate agencies, tribes and/or other parties for effect determinations

Consultation was initiated and completed with the appropriate agencies, tribes and/or other parties for any determinations other than “no potential to cause effects.” (see the attached ORM2 Summary sheet for begin date, end date and closure method of the consultation)

On February 10, 2022, the Alaska State Historic Preservation Office concurred with the finding of Adverse Effect. On June 8, 2022, the Advisory Council of Historic Preservation informed the Alaska District that their participation in the consultation to resolve the adverse effect was not necessary. It was determined that a Memorandum of Agreement must be prepared to document the adverse effect, establish a plan to mitigate the adverse effect, establish a plan to avoid other historic sites, establish a plan to resolve any disputes, and stipulate how the agreement would be enacted and terminated. The mitigation would entail comprehensively documenting the site, salvaging items recovered by the investigation, and handing all items recovered to the Tetlin tribe. By August 24, 2022, all signatories to the Memorandum of Agreement (the Alaska District; Peak Gold, LLC; the Native Village of Tetlin; and the Alaska State Historic Preservation Office) had signed the document. On August 30, 2022, the Advisory Council of Historic Preservation informed the Alaska District that it had accepted and filed the Memorandum of Agreement.

9.4 Tribal Trust Responsibilities

9.4.1 Tribal government-to-government consultation

Was government-to-government consultation conducted with federally-recognized tribe(s)? No

Provide a description of any consultation (s) conducted including results and how concerns were addressed. N/A

9.4.2 Other Tribal consultation

Other Tribal consultation including any discussion of Tribal Treaty rights? Yes. On February 1, 2022, the Alaska District sent letters to the Tetlin Tribal Council, the Tetlin Village Corporation, and the Tanana Chiefs Conference to confirm their understanding of the proposed impact and the plan to mitigate the proposed adverse effects. The letters served to invite consultation with the tribe and the associated stakeholders. None of these entities responded to the letters.

9.5 Section 401 of the Clean Water Act – Water Quality Certification (WQC)

9.5.1 Section 401 WQC requirement

Is a Section 401 WQC required, and if so, has the certification been issued or waived?

An individual WQC is required and has been granted.

On August 29, 2022, the Alaska Department of Environmental Conservation issued a Section 401 Water Quality Certification to the applicant for work in or affecting navigable waters of the U.S. associated with the proposed project. The Certificate did not cause any modifications to the project plan and will not require any other special conditions applied to the permit.

9.5.2 401(a)(2) Process

If the certifying authority granted an individual WQC, did the United States Environmental Protection Agency make a determination that the discharge 'may affect' water quality in a neighboring jurisdiction? No

9.6 Coastal Zone Management Act (CZMA)

9.6.1 Coastal Zone Management Consistency under Section 307c of the CZMA: By operation of Alaska State law, the federally approved Alaska Coastal Management Program expired on July 1, 2011, resulting in a withdrawal from participation in the Coastal Zone Management Act's (CZMA) National Coastal Management Program. The CZMA Federal consistency provision, section 307, no longer applies in Alaska. Federal Register Notice published July 7, 2011, Volume 76 N. 130, page 39857

9.7 Wild and Scenic Rivers Act

9.7.1 National Wild and Scenic River System

Is the project located in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system? No

9.8 Effects on Corps Civil Works Projects (33 USC 408)

9.8.1 Permission requirements under Section 14 of the Rivers and Harbors Act (33 USC 408)

Does the applicant also require permission under Section 14 of the Rivers and Harbors Act (33 USC 408) because the activity, in whole or in part, would alter, occupy, or use a Corps Civil Works project?

No, there are no federal projects in or near the vicinity of the proposal.

9.9 Corps Wetland Policy (33 CFR 320.4(b))

9.9.1 Wetland Impacts

Does the project propose to impact wetlands? Yes

9.9.2 Wetland impact public interest review

Based on the public interest review herein, the beneficial effects of the project outweigh the detrimental impacts of the project.

9.10 Other (as needed)

9.11 Compliance Statement

The Corps has determined that it has fulfilled its responsibilities under the following laws, regulations, policies, and guidance:

Table 13 – Compliance with Federal Laws and Responsibilities		
Laws, Regulations, Policies, and Guidance	Yes	N/A
Section 7(a) (2) of the ESA		X
EFH provisions of the Magnuson-Stevens Act		X
Section 106 of the NHPA	X	
Tribal Trust	X	
Section 401 of the Clean Water Act	X	
CZMA		X
Wild and Scenic Rivers Act		X
Section 408 - 33 USC 408		X
Corps Wetland Policy (33 CFR 320.4(b))	X	
Other: N/A		X

10.0 Special Conditions

10.1 Special condition(s) requirement(s)

Are special conditions required to ensure minimal effects, ensure the authorized activity is not contrary to the public interest and/or ensure compliance of the activity with any of the laws above? Yes

10.2 Required special condition(s)

Special Condition 1: Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems, and other measures to ensure that the current hydrologic regime is not altered in ways that would introduce excessive erosion, sedimentation, ponding or drying.

Rationale: This condition is required to minimize impacts to adjacent wetlands and other waters of the U.S. as a result of the permitted project (33 CFR 320.4(b) and (l) and 40 CFR 230.41).

Special Condition 2: Dust control management measures must be implemented including regularly watering dust-prone areas, covering loads carried by haul trucks, and limiting vehicle speeds.

Rationale: This condition is required to prevent adverse impacts to wetlands and other waters of the U.S. outside of the permitted project area (33 CFR 320.4(b) and (d), 40 CFR 230.11(c) and (d), and 40 CFR 230.60)).

Special Condition 3: Concurrent with the proposed action, the permittee shall implement the project Permittee-Responsible Mitigation Plan dated August 2022 and attached to this permit.

Rationale: This condition is required to compensate for resource losses important to the human and aquatic environment (33 CFR 320.4(r)(1), 33 CFR 332.1, 33 CFR 332.3(a)(1) and (b)(3), and 40 CFR 230.41).

Special Condition 4: The permittee shall abide by the Memorandum of Agreement among the United States Army Corps of Engineers, Alaska District; the State Historic Preservation Officer; the Native Village of Tetlin; and Peak Gold, LLC regarding the Manh Choh Project.

Rationale: This condition is required to prevent and mitigate adverse impacts to historic sites eligible for listing in the National Register of Historic Places pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations and under 33 Code of Federal Regulations Part 325, Appendix C.

Special Condition 5: The permittee shall minimize the potential to import and/or spread propagules of invasive plant species in the project area or the immediate vicinity by removing any attached dirt, debris, or foreign material from surface areas of equipment, haul vehicles, and heavy machinery, as appropriate, at a designated wash station within one mile of the Twin Road/Alaska Highway intersection.

Rationale: This condition is required to prevent adverse impacts to wetlands and other waters of the U.S. outside of the permitted project area (33 CFR 320.4(b) and (d), 40 CFR 230.21(b), and 40 CFR 230.73(c)).

11.0 Findings and Determinations

11.1 Section 176(c) of the Clean Air Act General Conformity Rule Review:

The proposed permit action has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under this permit will not exceed *de minimis* levels of direct or indirect emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps'

continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

11.2 Presidential Executive Orders (EO)

11.2.1 EO 11988, Floodplain Management

This action is neither located within nor would have any impacts on floodplains or flooding.

11.2.2 EO 12898, Environmental Justice

Based upon available information, the Corps has determined that portions of the proposed project within our federal control and responsibility would not have a disproportionately high and adverse human health or environmental effect on minority populations, low income populations, and/or disadvantaged communities historically marginalized or overburdened by pollution that may be present in the vicinity of the project.

11.2.3 EO 13112, Invasive Species, as amended by EO 13751

No invasive species are known to occur in the project vicinity. Special Condition 5 of the permit requires cleaning vehicles and other equipment to minimize the potential to import and/or spread propagules of invasive plant species in the project vicinity.

11.2.4 EO 13212 and EO 13302, Energy Supply and Availability

The proposal is not one that will increase the production, transmission, or conservation of energy, or strengthen pipeline safety.

11.3 Findings of No Significant Impact

Having reviewed the information provided by the applicant and all interested parties and an assessment of the environmental impacts, I find that this permit action will not have a significant impact on the quality of the human environment. Therefore, an environmental impact statement will not be required.

11.4 Compliance with the Section 404(b)(1) Guidelines

The proposed discharge complies with the Guidelines, with the inclusion of the appropriate and practicable special conditions to minimize pollution or adverse effects to the affected ecosystem.

11.5 Public interest determination

Having reviewed and considered the information above, I find that the proposed project is not contrary to the public interest. The permit will be issued with appropriate

conditions included to ensure minimal effects, ensure the authorized activity is not contrary to the public interest and/or ensure compliance of the activity with any of the authorities identified in Section 9.

PREPARED BY:

Greg Mazer

Greg Mazer

Date: September 1, 2022

REVIEWED BY:

Shane McCoy

Shane McCoy, South Section
Chief

Date: September 1, 2022

APPROVED BY:

Shane McCoy

Shane McCoy, South Section
Chief

Date: September 2, 2022