Attachment 2 – Responses to USACE 20220401 Inquiries

KINROSS Manh Choh
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Peak Gold, LLC Responses to USACE April 1, 2022, Information Request Letter

US Army Corps of Engineers (USACE) Question 1. The 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.

Roads contribute sediment to streams by mass wasting events as well as more steady and subtle surface erosion of the road prism and subsequent transport of material to nearby channels. Road prism integrity; coarseness of the aggregate stability of ditches, back cuts, and fill slopes; and distance between cross drains are important road design and construction factors of gravel road construction relevant to gravel road design and construction relevant to preventing roads from becoming major sources of sediment. Timely maintenance to maintain structural integrity and minimize deep rutting can be important to suppressing rates of road decay and erosion, especially for roads under heavy use. Traffic can press gravel into the subgrade or break it down, making the road more susceptible to erosion. Increased sediment production from heavy traffic can persist even after traffic has ceased. A large proportion of the eroded sediment introduced to streams from gravel roads is typically finer than two millimeters and excessive amounts of this fine-grained material is harmful to fish and to water quality.

If authorized, how would Peak Gold, LLC design, construct, and maintain the proposed gravel access roads to suppress erosion of the roads and subsequent sedimentation of nearby aquatic areas to the maximum extent practicable? What contingencies are planned to remedy sections of roads that become erosive or develop the potential to become erosive? What monitoring would occur to determine whether such contingencies should be implemented.

Peak Gold, LLC (Peak Gold) Response 1:

No streams are being crossed by the Manh Choh Twin Road or the Manh Choh Site Access Road and shown in the figures of Appendix 1. Neither road crosses a perennial, intermittent or ephemeral stream. No access roads to any gravel pits, lay down areas, or mine facility cross a stream.

Peak Gold actively worked to address 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 impacts to nearby aquatic areas. Road design and construction will minimize risk of erosion. Roads were routed specifically to avoid

impacts to wetlands and other water bodies. Monitoring with Alaska Certified Erosion and Sediment Control Lead qualified personnel 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.

Design

The project incorporated erosion and sedimentation controls into the project design. The roads were routed specifically to avoid impacts to wetlands and other waterbodies. Road side slopes, material composition, and design features have been specifically designed to minimize erosion from the road prism.

Erosion and sedimentation are also actively managed throughout Alaska by the Alaska Pollutant Discharge Elimination System (APDES) permit system (Multi-Sector General Permit for Storm Water Discharges (MSGP) Permit AKR60000 and General Permit for Discharges from Large and Small Construction Activities (CGP) Permit AKR100000) and Storm Water Pollution Prevention Plans (SWPPP). The Manh Choh's exploration project currently operates under MSGP Permit AKR60000 Authorization Number AKR06GA93. The project will apply for a CGP for construction, and an MSGP for operation. The existing SWPPP will be amended and implemented for the Project's mining activities and will include potential pollutant sources, storm water control measures (e.g., storm water retention basins, ditch check dams, interception and diversion ditches, water bars, brush berms, surface grading), schedules and procedures for monitoring, with associated maps and figures. These plans will be prepared and implemented to control erosion and sedimentation during construction activities.

Construction

During construction activities, Peak Gold plans to suppress erosion and sedimentation by selecting these Best Management Practices (BMPs) in accordance with the CGP Permit AKR100000 required SWPPP. The CGP SWPPP has not been developed at this time; however, it will be developed and implemented before construction activities begin at the Manh Choh Mine, Site Road, and Twin Road.

- *Stormwater Pollution Prevention Plan*
    - *Best Management Practices (BMPs) will be used to limit erosion and reduce sediment in precipitation runoff from Project facilities and disturbed areas during construction, operations, and reclamation.*
    - *Specific BMPs include, but will not be limited to:*
        - *Erosion and sediment control structures such as 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;*

        - *Collection and conveyance structures, such as rock lined ditches and/or swales;*
        - *Vegetative soil stabilization practices such as seeding, mulching, and/or brush layering and matting;*
        - *Non-vegetative soil stabilization practices such as rock and gravel mulches, jute and/or synthetic netting;*
        - *Slope stabilization practices such as slope shaping, and the use of retaining structures and riprap; and*
        - *Infiltration systems such as infiltration trenches and/or basins.*
    - *Following construction activities, areas such as cut and fill slopes and embankments and growth media/cover stockpiles will be seeded as soon as practicable and safe. Concurrent reclamation will be maximized to the extent practicable to accelerate revegetation of disturbed areas. All sediment and erosion control measures will be routinely inspected, and maintenance/repairs performed, as needed.*
- *Dust*
    - *Implement dust control management measures to minimize the presence of fugitive dust, including:*
        - *Minimizing vehicular traffic and limiting vehicle speeds on haul roads, as much as practicable.*
        - *Applying water for dust suppression.*
- *Vegetation*
    - *Ground disturbing activities are minimized, and disturbed areas are re-vegetated with seed recommended for the region by Alaska Department of Natural Resources (ADNR)'s A Revegetation Manual for Alaska (ADNR 2008);*
    - *Equipment will be cleaned prior to entering and exiting the Tetlin Hills portion of the project site to minimize spread of vegetative materials;*
    - *Erosion and sediment control materials would be from locally produced products to minimize potential importation of new propagules from outside Alaska.*
    - *Ore hauling trucks will be limited to the Twin Road (covered road-legal highway trucks) and the Site Road (non-road legal mine trucks).*
- *Traffic*
    - *Speed limits will be based on site- specific safety requirements and will be set based on factors such as ramp slopes, ramp widths, and curve radius.*
    - *Prior to ground disturbance associated with the Twin Road, the project would coordinate with Tetlin to establish appropriate traffic controls.*
    - *Public access control points will be established where pre-existing roads and trails enter the active mining areas to ensure public safety is maintained. These control points will be at the Project boundary and will consist of a combination of signs warning of the active mining and other physical barriers to restrict access.*

Maintenance

The project plans to suppress erosion and sedimentation by selecting these BMPs.

- *Dust*
  - *Implement dust control management measures to minimize the presence of fugitive dust, including:*
    - *Applying water or chemical dust suppressant to haul roads and disturbed area where appropriate.*
- *Stormwater Pollution Prevention Plan*
    - *BMPs will be maintained in accordance with each specified schedule in the SWPPP.*

Monitoring

The site is monitored and managed using qualified personnel that have Alaska Certified Erosion and Sediment Control Lead (CESCL) certification. CESCL certification 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). Monitoring by CESCL qualified personnel (CGP Permit AKR100000, Appendix C, Qualified Person) will ensure any potential issues are identified and addressed promptly.

The site will be inspected daily by staff with CESCL qualifications. Appropriate corrective actions will be undertaken immediately if problems with drainage, sediment, or containment are noted during inspection of access roads or mine site.

Throughout the life of the project, staff will monitor the gravel roads for evidence of erosion and sedimentation. Through the established stormwater permitting process, there will be a defined boundary that no material or sediment can leave the site. Staff will monitor this boundary. If erosion or sedimentation is noticed, then remediation will take place.

Contingencies

Staff will conduct monitoring to note erosion or sedimentation. If any is found, the remediation will be designed to fit the specific site and problem. Potential solutions may include grading, material pickup, and implementation of new BMPs.

Tetlin Village Road Dust

The Tetlin Village Road is a non-public private gravel road that provides access to Tetlin Village from Alaska Highway 2. With the construction of the Twin Road, the Tetlin Village Road will not be used by any Manh Choh Project traffic. Fugitive dust from the Village's private traffic will be similar to that of the pre-Manh Choh Project. However, should wetlands be impacted by significant fugitive dust from the Tetlin Village Road use, discussions with the Native Village of

Tetlin (property owner) will be conducted to determine what actions should be taken and implemented.

USACE Question 2. The EPA also 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?

Peak Gold Response 2:

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 cross culvert natural drainage will continue. Culvert typicals are supplied in §404 Permit Application Supplemental Information sheet drawing 32 of 36 found in Appendix 1. Also see 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 (Appendix 2) for culvert locations (Appendix 3).

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. Road typicals are shown on §404 Permit Application Supplemental Information sheets 33 and 34 of 36 found in Appendix 1. The Site Access Road is located on side hill slopes and then ridge tops. Surface drainage patterns will be maintained by the road placement (in uplands, above streams or wetland swales downhill) and use of road ditches and cross drainage flow culverts. No streams will be crossed or affected by this construction. Natural drainage patterns will be maintained by placing culverts in the Manh Choh Site Access Road route based on a hydraulic engineer investigation. All culvert sites will be located and constructed to ensure proper placement for cross surface drainage patterns. Culvert typicals are supplied in §404 Permit Application Supplemental Information, sheet 32 of 36 found in Appendix 1.

No plans or design locations for culverts were submitted in the USACE permit application because cross drainage structures require a permit from USACE (if in Waters of the United States (WOTUS)) and ADF&G (if in fish streams), neither of which apply for the Manh Choh Roads.

The Manh Choh Mine is located on a ridge; hydrologic surface flow will not be interrupted by excavating mine pits or placing roads on the ridge. At the mine site, drainage collection ditches will be placed below the pits and waste rock to contain surface water flow and ensure discharge to proper drainages. Mine contact water must be contained and treated for discharge. Surface flow will not connect from the mine downstream to surface drainage. All surface water flow off the mine area will go into sediment ponds and infiltration galleries to protect surface water quality below the mine site. A Drainage Ditch section is shown in §404 Permit Application Supplemental Information, sheet 36 of 36 found in Appendix 1.

The mine footprint including roads was minimized by not having mill facilities on site. No ore-processing mill, tailings disposal facility, or facility-sized power plant and associated infrastructure are planned.

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 maintain intact riverbank and riparian zones along the Tok River. It was deemed unacceptable to route the access road across a flowing stream and potentially introduce sediment in runoff. Access routes were selected that avoided stream and flowing water crossings while minimizing fill in wetlands.

Storm and surface water will be managed and monitored at the Project (mine and access roads) using personnel that are CESCL qualified. The access road and mine site will be inspected daily by CESCL qualified personnel. Inspections will reveal ponding on the upslope side of roads or culverts, erosion, or excessive sedimentation. Corrective actions will 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 will be scheduled and addressed by the Peak Gold Operations & Maintenance staff.

Maintenance and Contingencies are also discussed in Peak Gold Response #1.

Peak Gold will 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.

USACE Question 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." (see p.8 of the EPA letter).

Application of standardized, region-specific, rapid procedures for estimating the functions and values of wetlands and streams greatly improves the feasibility of and justification for debit and credit accounting for projects permitted by the USACE. The 2008 Mitigation Rule and related policies have compelled the USACE to place greater reliance on functions assessments and/or condition assessments to quantify debits and credits instead of mainly using dimensional quantifications of wetland area and/or stream length for determining the extent of proposed impact and the appropriateness of the proposed compensatory mitigation. Further, quantification via functions/condition assessment enables the USACE to make a specific accounting for the effects of time lag, risk and ecological significance upon the amount of credits awarded for proposed compensatory mitigation. Time lag is the delay between the onset of the proposed impacts and the realization of the full benefits of the proposed compensatory mitigation.

How would Peak Gold, LLC quantify the proposed functional loss from the proposed impacts and the functional lift from the proposed compensatory mitigation? How would the results of these analyses be used to determine whether the proposed compensatory mitigation would sufficiently offset the proposed aquatic resource impacts? Alternatively, in lieu of demonstrating that the mitigation would offset the proposed impacts, how would Peak Gold, LLC demonstrate that the proposed mitigation would serve the aquatic resource needs of the watershed?

The Alaska District hereby suggests that you utilize an appropriate methodology, such as the Stream Quantification Tool for Interior Alaska (SQT-INT), to assess the anticipated functional gain from the proposed compensatory mitigation. The SQT was developed for single thread, wadable streams in non-glacial alluvial and colluvial valleys in the Alaskan Interior. Appropriate use of this tool would clarify the anticipated functional lift, lead to the identification of performance standards to assess mitigation success and help determine whether the proposed compensation is commensurate with the proposed impacts and/or serve the aquatic resource needs of the watershed.

Assessing functional loss expected from the proposed wetland impacts with a quantitative method such as the Wetland Ecosystems Services Protocol for Interior Alaska (WESPAK-INT) could provide insights that may benefit future assessments in the project vicinity. At the very least, a qualitative functions assessment predicated upon best professional judgement would clarify the anticipated functional loss and help determine whether the proposed compensation is commensurate with the proposed impacts.

In accordance with the 2008 Mitigation Rule, Peak Gold, LLC must either demonstrate that the proposed compensatory mitigation would sufficiently offset the proposed aquatic resource impacts or demonstrate that it would serve the aquatic resource needs of the watershed. The basis for authorization of out-of- kind compensatory mitigation must be documented in the administrative record.

Unfortunately, direct comparison of the results of a wetland assessment with those of a stream assessment is not possible given the inherent differences in the ways that wetlands and streams function in the landscape. Nonetheless, some comparisons may be made qualitatively. For instance, the aquatic connectivity of the wetlands in the project vicinity would be compromised as a result of the proposed construction, mining activity and reduced wetland area whereas the aquatic connectivity of the streams that would be improved by the proposed compensatory mitigation; how would overall aquatic connectivity of the watershed be affected as a result?

Out-of-kind compensatory mitigation may be authorized if it would measurably and sustainably improve aquatic resources in a watershed. The improvement should at least partly compensate for historical, ongoing and/or potential impacts to aquatic resource conditions. If Peak Gold is not able to demonstrate that the mitigation would sufficiently offset the proposed impacts, then how would it demonstrate that the mitigation would improve aquatic resources in ways that would address historical, ongoing and/or potential water resource degradation in the watershed?

Peak Gold Response 3:

Detailed investigation of potential Permittee Responsible Mitigation (PRM) sites was undertaken in and outside of the impacted watershed. The three proposed PRM projects restore and enhance 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 PRM projects follow 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 wetland impacts at the Manh Choh project site total 5.2 acres. Black spruce wetlands total 3.8 acres and were found along the Manh Choh Twin Road corridor. The remaining 1.4 acres included one swale along the Twin Road corridor and impacts within the mine site at the top of the hill. Additionally, the mine site impacts an 80-foot non-RPW seep that emerges and then re-infiltrates. Although technically a stream, functionally this feature is equivalent to a Slope-HGM wetland.

Functional Assessments are typically used in Alaska to determine credits needed to offset unavoidable impacts to wetlands and waters. 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.

As noted in the PRM plan submitted to USACE with the §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.

Three PRM project sites are proposed for mitigation. Rather than creation of aquatic resources, the projects involve replacement of existing poorly functioning culverts with correctly engineered culverts. This will ensure connectivity through the culverts whenever flow is present, and limit ponding and sedimentation near the culverts.

Through their many years of Alaska-based wetland delineation, functional, assessment, permitting, and mitigation experience, the Stantec team has found that a rough hierarchy exists in functional scores, with the highest scores typically found in Riverine and Slope HGM wetlands due to stream inlets and outlets with the ability to export nutrients, the presence of and fluctuation of surface water, and the diversity of vegetation providing better productivity and habitat values. Depressional and Flat HGM wetlands, especially those without inlets and outlets, perform fewer functions and typically score lower than Slope and Riverine HGM wetlands.

ALASKA WETLANDS ASSESSMENT METHOD

The Alaska Wetland Assessment Method (AKWAM) functional assessments (Appendix 4) were used to evaluate functional losses and gains from the proposed project and the PRM sites. For credits, after the AKWAM score was determined, the credits were adjusted due to minor risk factor (1.25) using the 2018 Alaska District: Credit Debit Methodology. The risk of these projects was determined to be low; if an initial culvert replacement fails to meet project goals and/or standards, the short- and long-term management of the project would involve rehabilitating or reconstructing the culverts until the project has met standards.

Function Lost in Impacted Wetlands

As shown in the project Preliminary Jurisdictional Determination report and the Section 404 permit application, the majority of impacted wetlands are classified as Flat HGM and occur along the Manh Choh Twin Road (3.8 acres). These wetlands are already degraded due to proximity to the existing Tetlin Village Road and the long-term impacts of the 1990 fire. Road maintenance, fire breaks, and the clearing of burned wood after the fire have degraded adjacent wetlands. The black spruce wetlands impacted by the Twin Road are likely drying out due to changes in the

flooding regime/location of flooding of the Tanana and Tok Rivers, but also due to the 1990 fire. During the two seasons of wetland work, the soils in all wetlands sampled along this road corridor were not saturated nor had water tables. Hydrology was based on secondary indicators, with the compact silt soils showing gleyed coloring. Because there are no streams flowing into or out of the impacted spruce wetlands, functional scores are lower than the Slope and Riverine HGM wetlands proposed for functional lift in the mitigation plan.

The evaluation of the Flat HGM wetlands impacted by the project resulted in a functional score of 0.325 multiplied by the number of acres (3.8) = 1.235 debits.

Wetlands impacted near the mine site are primarily Slope HGM and total 1.4 acres. These exist at the very top of watersheds and are higher value than the Flat HGM wetlands impacted. Impacts from the project occur at the top of the wetlands, no fragmentation will occur.

The evaluation of the Slope HGM wetlands impacted by the project resulted in a functional score of 0.65 multiplied by the number of acres (1.4) = 0.91 debits.

In total, to off-set the wetland impacts of the project, the PRM sites would need a functional lift equal to or greater than 2.145.

Functions Gained in PRM Wetlands

As shown in the AKWAM evaluation, the proposed PRM Area 1 and 2 projects improve the functionality of Slope and Riverine HGM wetlands adjacent to streams impacted by existing culverts near the proposed project area. 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 replacement, and also states in the Fish Habitat Permit FH22-III-0019 (Appendix 2) that slimy sculpin may be present in the intermittent stream that is hindered by the inadequate culverts at the lower mitigation site.

<u>PRM Area 1</u>

At PRM Area 1 the stream channel will improve with culvert replacements. Culvert replacement provides opportunity for expanded fish (if present) and aquatic species habitat upstream for at least 1,000ft. 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 steam (15acres) 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.

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.

Upstream 5 acres improves from a functional score of 0.622 to 0.633.
Difference between current and future condition-Delta = 0.01
Adjusted Delta = 0.01/1.25 = 0.008
Credits = 5 acres.008 = 0.044*

Downstream 15 acres improves from a functional score of 0.533 to 0.677
Difference between current and future condition Delta = 0.14
Adjusted Delta = 0.14/1.25 = 0.112
*Credits = 15 acres*0.112 = 1.73*

Total credits generated = 1.777 at PRM area 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 properly sized culvert(s) 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 improves from a functional score of 0.6375 to 0.7
Delta = 0.0625
Adjusted Delta = 0.0625/1.25 = 0.05
Credits = 0.5 acres.05 = 0.025*

Downstream 1.5 acres improves from a functional score of 0.5375 to 0.6625
Delta = 0.125

Adjusted Delta = 0.125/1.25 = 0.1
*Credits = 1.5 acres*0.1 = 0.15*

Total credits generated = 0.175 at PRM area 2.

PRM Area 3

The PRM Area 3 location was chosen based on comments from residents of Tetlin Village. Sun Lake, which is northwest of Tetlin Village, hosts resident fish. The culvert under the access road flows to Tetlin River, however, the culvert is perched so during low water fish passage is difficult or impossible. The residents rely on fish for subsistence; this project would increase access for fish to Sun Lake, improving/expanding fish habitat. Resident fish harvested by the community include pike, whitefish, arctic grayling, northern sucker, and burbot. Some or all of these species may use Sun Lake and its outlet during parts of their life cycle.

The Alaska Department of Fish and Game maintains the Fish Passage Inventory Database for many streams along the road system in Alaska. Culverts are graded based on numerous factors; however, the three critical variables are stream gradient, outfall height, and constriction ratio.

The culvert was evaluated based on the site visit and review of the photographs below. As a low gradient stream, an improved culvert will not change the gradient, however, the new culvert will be embedded, and have a more natural substrate. The perched outfall will no longer be an obstacle to fish passage and the constriction ratio, currently estimated at 0.5:1, will improve with a properly sized culvert.

Neither AKWAM nor the SQT captures the importance of providing proper fish passage through culverts, nor the expanded habitat available to fish. For the three areas proposed in the PRM plan, PRM Area 3 is qualitatively the most important for fish, other aquatic species, and for the residents of Tetlin Village.

At PRM Area 3 the stream channel will improve with culvert replacements. Culvert replacement would provide perennial access for fish and aquatic species to the 68-acre Sun Lake. Wetland fringe around Sun Lake (up to 10.3 acres) will provide habitat for fish and other aquatic species.

A Fish Habitat Permit will be applied for the culvert replacement project at PRM Area 3 from the ADF&G, and work will not begin until the permit is issued.

No wetlands are functionally lifted upstream or downstream; downstream wetlands receive water perennially from the Tetlin River.

As recommended by USACE in their April 1, 2022 letter (in response to USFWS floodplain comments), Peak Gold will design and construct the stream crossings to not only convey typical

flows as well as large flood flows (e.g., 100- year event), but also utilize a stream simulation approach to support aquatic organisms within and immediately adjacent to the crossing as much as practicable. Such an approach will include establishing channel conditions within and adjacent to the crossing that are laterally and vertically stable, support a self-sustaining low-flow channel, include elements that provide hydraulic roughness as well as habitat, and facilitate water dispersal over a floodplain during high flow events.

Overall Gain for the Watershed

Peak Gold's three PRM projects restore and rehabilitate higher value wetlands and waters near the project impacts resulting in an expected net benefit to the watershed and aquatic resources. The PRM plan provides a benefit to the watershed while adequately compensating for project impacts.

The three PRM sites (Appendix 5) were selected because they exhibit some or all of the problems identified by EPA as stated in USACE Question 1, paragraph 2 for gravel roads. 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 imbedded into the substrate to allow fish passage if present. The reconstruction of the roadbed, drainage ditches, and culvert replacement will all be done to elevate issues at the wetland crossings, many noted in the EPA comments above.

Wetland losses for the project total 2.145 debits. Credits through functional lift in higher value wetlands total 1.952 (Table 1). Although the proposed credits do not quite match the debits, additional improvements to subsistence use fisheries, reduced environmental pollution from roadbed erosion, and community safety were not captured by the functional assessment tool but are arguably just as valuable as the functions that were measured.

Table 1. AKWAM Credit-Debit Summary

PRM Area	***AKWAM Wetland Credits***
PRM Area 1	*1.777*
PRM Area 2	*0.175*
PRM Area 3	*NA*
Total	*1.952*

STREAM QUANTIFICATION TOOL

As suggested by the USACE, Stream Quantification Tool (SQT) and Debit Calculator (V1.0) User Manual, for the Alaskan Interior, June 2021 (https://stream-mechanics.com/wp-content/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. Results using the SQT method are:

PRM Area 1

This project lowers and enlarges the culverts to ensure upstream and downstream connectivity whenever flow is present. This will provide improvements to the Functional Category "Hydraulics." The current hydraulics in the culverts when flow is present are "Functioning at Risk" with a score of 0.38. The PRM project improves flow dynamics for approximately 450 feet, and results in a Category score of 1.00 "Functioning."

PRM Area 2

The only metric expected to change in the SQT is "Concentrated Flow Points." By removing the sediment source from erosion caused by aufeis formation, concentrated flow points in the reach is being reduced from 1 to 0. This results in a Functional Lift of 0.10 to the Hydrology Functional Category of the SQT. Because other Functional Categories are not expected to change from the culvert replacement, they were not evaluated. The improvement to the stream from the culvert replacement is calculated at 1.3 Functional Feet.

PRM Area 3

This project embeds and enlarges a perched, constricted culvert to ensure upstream and downstream connectivity. This will provide improvements to the Functional Category

"Hydraulics" for the portion of stream upstream from the culvert (approximately 150 feet). The current hydraulics for the reach upstream from the culvert is "Functioning at Risk" with a score of 0.63. The PRM project improves flow dynamics, resulting in a Category score of 1.00 "Functioning." The "Biology" function may also improve, although we did not try to measure this in the SQT due to a lack of available data. Based on the improvement to the "Hydraulics" function, the SQT shows a mitigation yield of 10.5 function feet of lift.

Table 2. SQT Mitigation Yield Summary

PRM Area	***Function Feet of Lift***
PRM Area 1	*54.0*
PRM Area 2	*1.3*
PRM Area 3	*10.5*
Total	*65.8*

The PRM plan combines uplift to higher value wetlands and provides lift to at minimum one fish bearing stream. The PRM plan adequately mitigates the unavoidable impacts of the project, while providing a benefit to the watershed.

USACE Question 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?

The Alaska District hereby suggests that you design and construct stream crossing that not only convey typical flows as well as large flood flows (e.g., 100- year event), but also utilize a stream simulation approach to support aquatic organisms within and immediately adjacent to the crossing as much as practicable. Such an approach should include establishing channel conditions within and adjacent to the crossing that are laterally and vertically stable, support a self-sustaining low-flow channel, include elements that provide hydraulic roughness as well as habitat, and facilitate water dispersal over a floodplain during high flow events. See guidance for accomplishing these objectives at the following:

https://www.fws.gov/alaska-culvert-design-guidelines

https://www.fs.fed.us/eng/pubs/pdf/StreamSimulation/hi_res/%20FullDoc.pdf

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Peak Gold Response 4:

No streams are being crossed by the Manh Choh Twin Road or the Manh Choh Site Access Road as shown on the figures of Attachment 1. Neither road crosses a perennial, intermittent or ephemeral stream. No access roads to any gravel pits, lay down areas, or mine facility cross a stream.

Cross drainage structures will be placed in the Manh Choh Twin Road, and culverts updated on the Tetlin Native Village Road to maintain floodplain integrity. The ADF&G has issued Fish Habitat Permits for the replacement of a culvert battery in the Tetlin Village Road and the installation of culverts on the Manh Choh Twin Road, Permit FH22-III-0019 issued on January 14, 2022, and amended on February 11, 2022 (Appendix 2). The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of

fish (e.g., perched culvert outwash gravels and or excessive water velocities) shall be restored to the satisfaction of the Habitat Section. Plans exist to ensure cross drainage takes place on the Manh Choh Twin Road. Culvert locations and design for the Manh Choh Twin Road and Tetlin Native Village Road have been included with this response.

Culverts updates on the Tetlin Native Village Road are part of the compensatory mitigation plan. The Alaska Department of Fish and Game has issued Fish Habitat Permits for the replacement of a culvert battery in the Tetlin Village Road, Permit FH22-III-0019 issued on January 14, 2022, and amended on February 11, 2022 (Appendix 2). The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of fish (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 crossing on the new gravel roads by locating culverts based on a hydraulic engineer investigation to ensure proper location for flood flow and surface drainage. Culvert typicals are supplied in §404 Permit Application Supplemental Information, sheet drawing 32 of 36 (Appendix 1). Also see ADF&G Permits for culvert locations on the Manh Choh Twin Road (Appendix 3).

Peak Gold will maintain floodplain integrity and connectivity at the stream crossings targeted for improvement via the proposed compensatory mitigation plan by lowering the current perched culverts. The culverts will be lowered and bedded. The culverts will be replaced in their entirety to provide expected flow rates for this drainage. A hydraulic engineer will be engaged to ensure the culverts are properly sized and installed at correct elevations.

Floodplain integrity will not be interrupted by the construction of the Manh Choh Twin Road or repairs in the Tetlin Village Road. The access roads are located on flats with the roads crossing one wetland swale and other non-wetland features. No floodplains will be affected by this construction as there are no streams being crossed. Surface drainage patterns will be maintained by the use of adequately sized culverting. On the Manh Choh Twin Road culverts are planned for 60 swales to maintain natural drainage and flood patterns and hydrologic connection. The culvert locations were selected by a hydraulic engineer to ensure cross culvert natural drainage will continue. Culvert typicals are supplied in §404 Permit Application Supplemental Information, sheet drawing 32 of 36 (Appendix 1). Also see ADF&G Permits for culvert locations (Appendix 3).

New gravel roads have been designed to carry projected loads at safe grades while avoiding and minimizing wetland fill as practicable. The Manh Choh Twin Road is planned adjacent to the existing Tetlin Village Road to reduce wetland impacts and maintain safety for the Native People of Tetlin by having a separate travel corridor. Floodplain integrity will be ensured by regular inspections of all culverts on all roads and ensuring sediment has not built up in outlets or inlets, Maintenance will be performed to keep all culverts in working condition. If it is determined

another culvert is required based on ponding on the upslope side corrective action will be undertaken.

Storm water is monitored and managed at the Project (mine and roads) using qualified personnel having CESCL certification (https://www.ak-cescl.com). The site will be inspected daily by staff with CESCL qualifications. Appropriate corrective actions will be undertaken immediately if problems with drainage, sediment, or containment are noted during inspection of access roads or mine site.

Wetland vegetation will be left intact outside of the culvert crossing footprint for hydraulic roughness should there be a high flow event. Peak Gold is not going to restrict surface flow or affect floodplain integrity with this road design. The swales will be culverted with minimal Flat HGM wetlands filled. This design supports the existing aquatics in the one wetland swale.

Bridging of swales is not practicable for dry, short, and shallow crossings. Culvert batteries are adequate for swales. There is no stream flow in any swale being crossed. The swales are depressional remnant features. The culverts are designed and will be placed for the projected high flow event maintaining connectivity. An Alaska Registered Professional Engineer will evaluate the crossing design and stamp the plans.

Floodplain integrity will not be interrupted by the construction of the Manh Choh Site Access Road. The access road is located on hill slopes and ridge tops. No floodplains will be affected by this construction as there are no streams crossed. Surface drainage patterns will be maintained by the placement of strategically located culverts. The culvert locations will be selected by a hydraulic engineer to ensure the cross culvert maintain flood flow. Culvert typicals are supplied in §404 Permit Application Supplemental Information submitted sheet drawing 32 of 36 (Appendix 1). No plans or designs for culverts were submitted because cross drainage structures do not require a permit from USACE or ADF&G when placed in uplands.

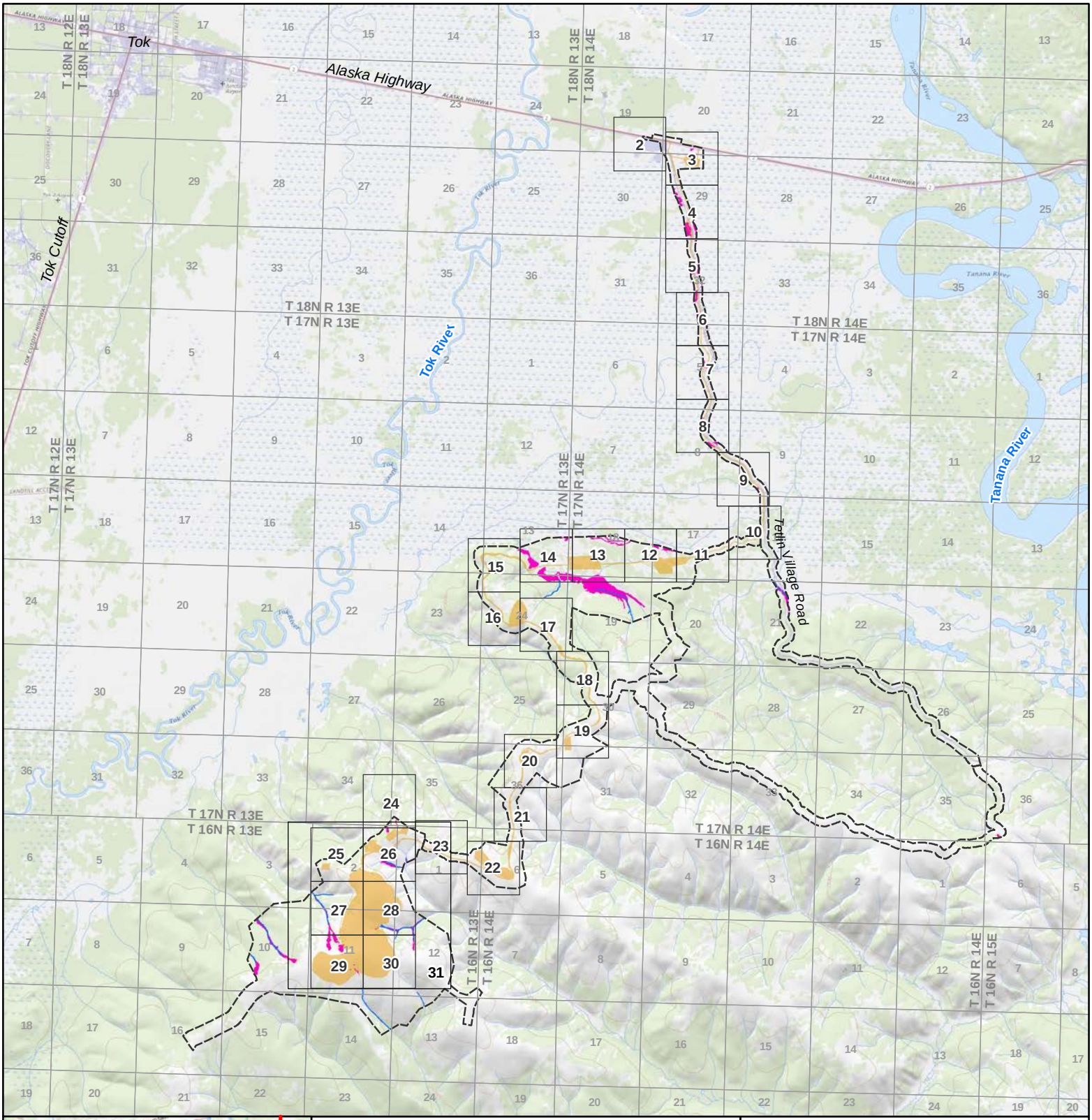
The proposed road has been designed to avoid wetlands and streams. The Manh Choh Twin Road and Manh Choh Site Access Road will be constructed of local material capable of handling daily traffic. The proposed fill has undergone testing for suitability and load capability. Analysis has confirmed the proposed road construction material is clean fill and adequate for the proposed task. Building the road with competent clean fill will ensure road prism stability.

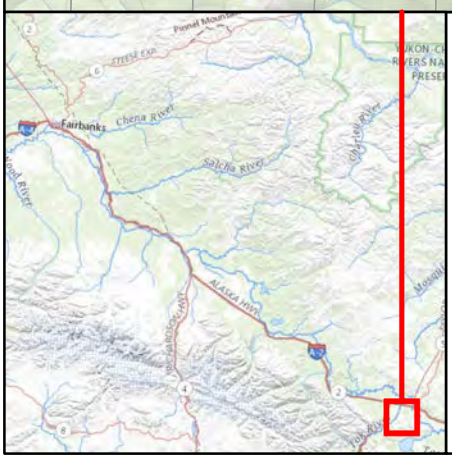
KINROSS Manh Choh
A JV with Contango ORE

Appendix 1

§404 Permit Application Supplemental Information

Sheets 1 through 36





Detail Map Grid

Public Land Survey Section

Wetland Study Area

Fill Footprint

Wetlands and Waters

Stream

Waterbody

Wetland

Note: No streams crossed by the Manh Choh Twin Road or the Manh Choh Site Access Road.

0 3,000 6,000 12,000 Feet

1 inch = 8,333 feet 1:100,000

N

W E

S

Applicant: Peak Gold, LLC

File No.: POA-

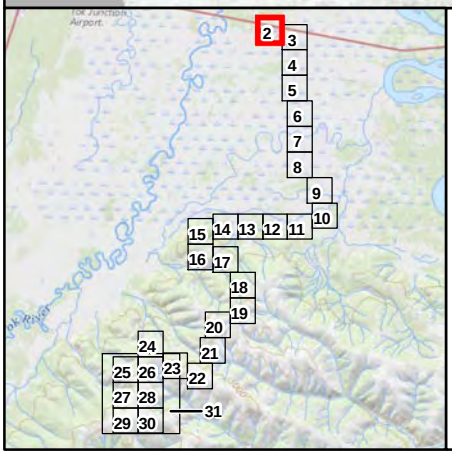
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

Fairbanks Meridian | TxxN, RxxW, Sxx

Lat.: 63.2500 Long.: -142.8100

Sheet: 1 of 31 December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

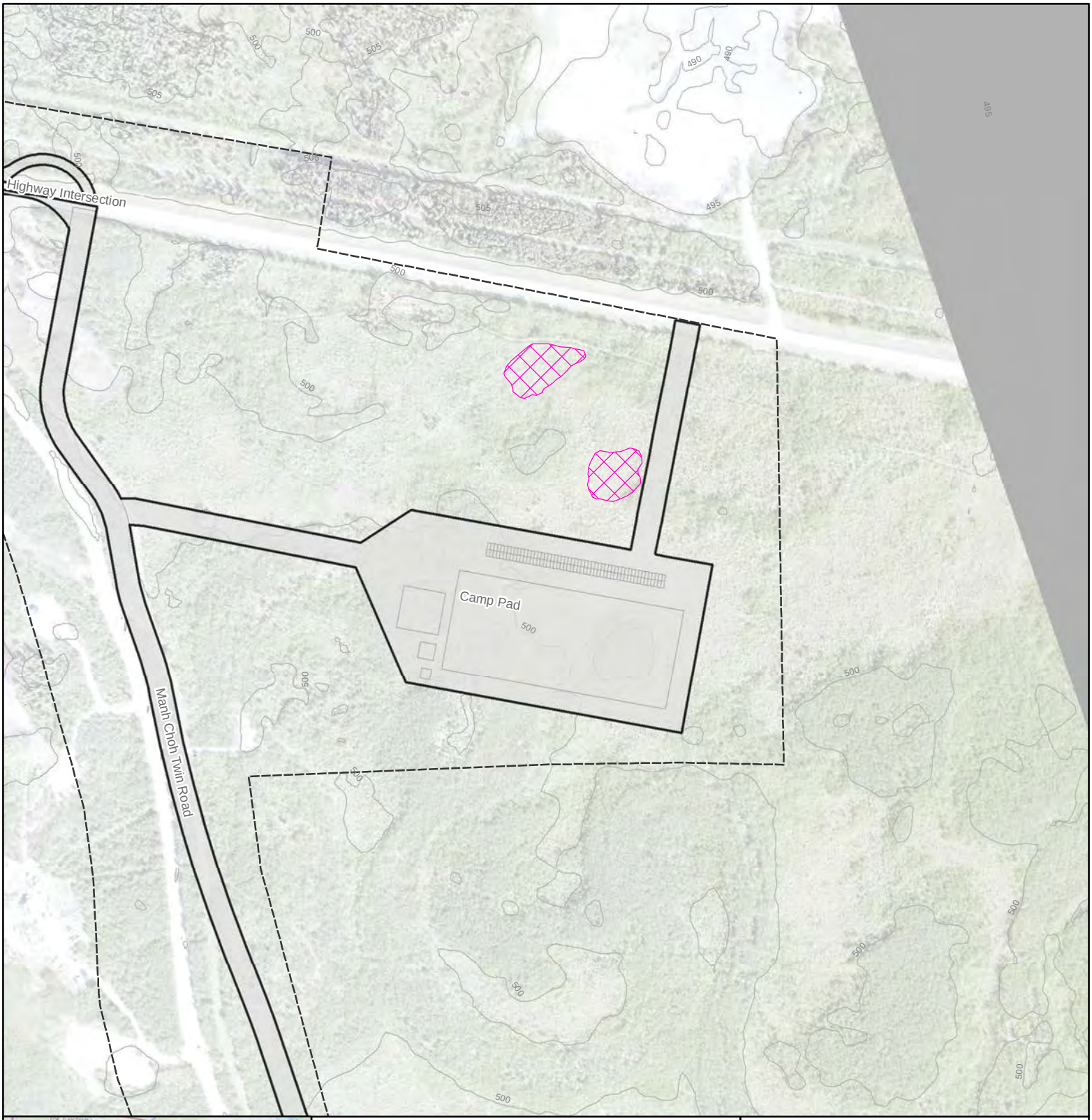
File No.: POA-

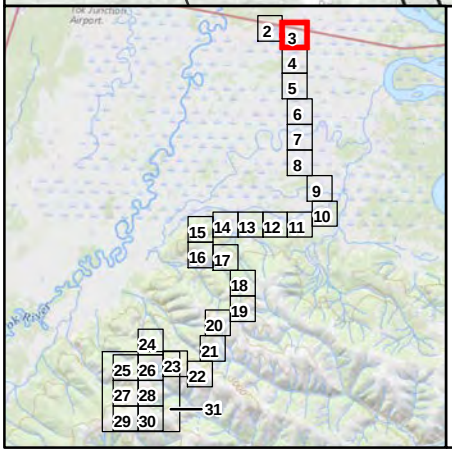
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.3206	Long.: -142.7952
Sheet: 2 of 31	December 2021





Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

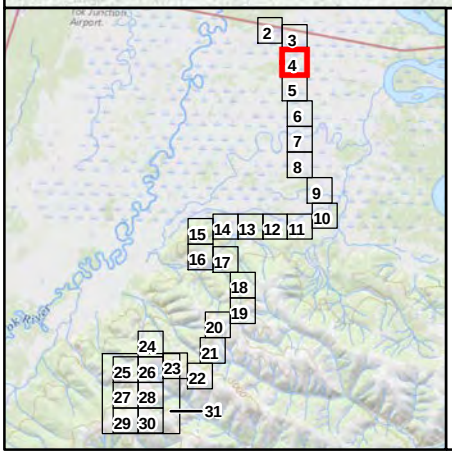
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.3184	Long.: -142.7753
Sheet: 3 of 31	December 2021



Fill Footprint
Project Component
Wetland or Water Impact
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

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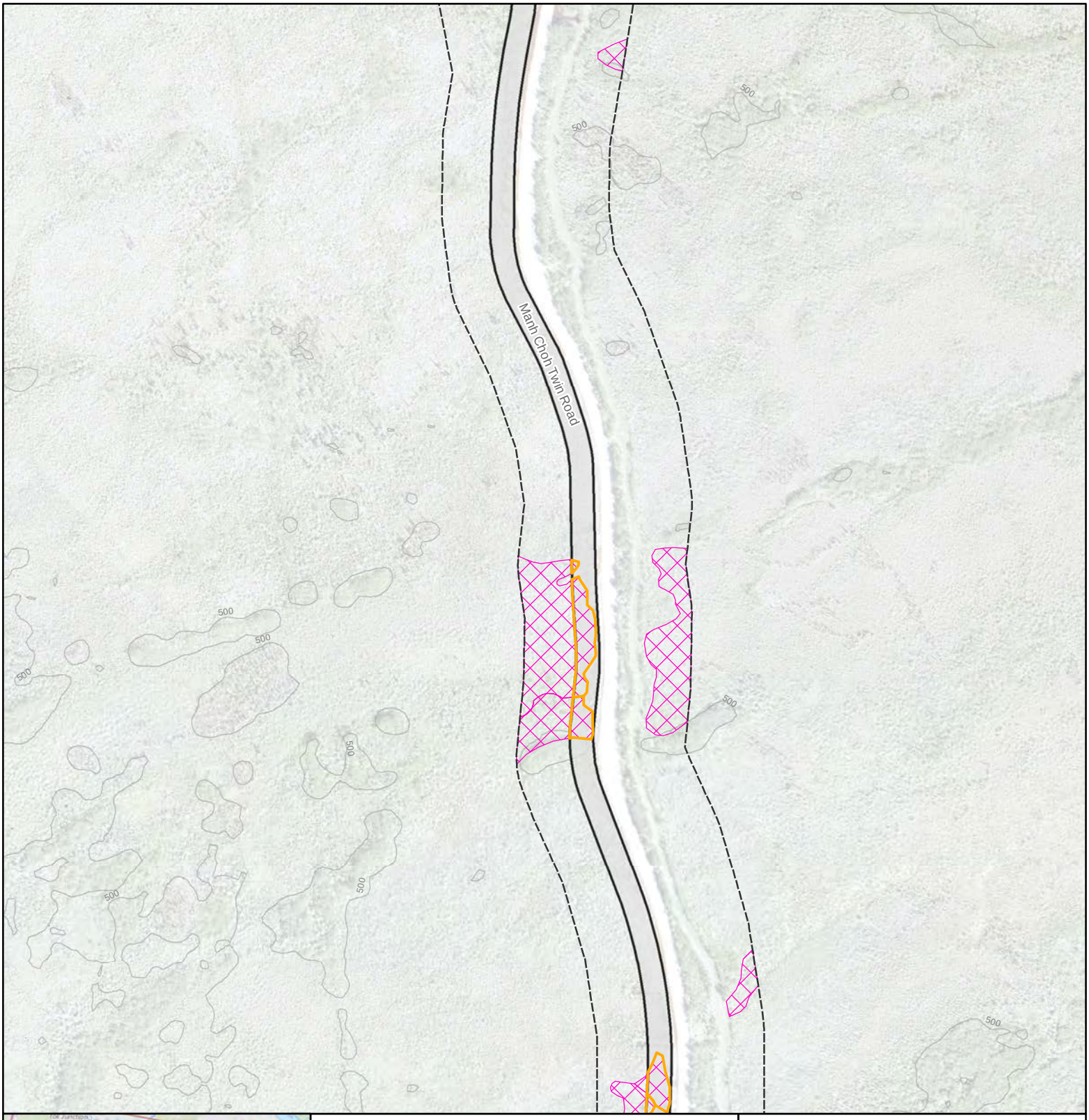
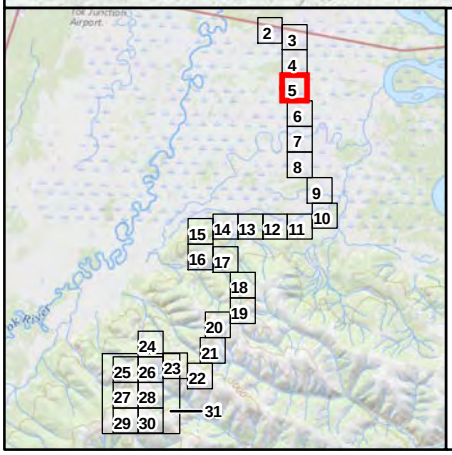
Sheet: 4 of 31	December 2021





Fill Footprint
Project Component
Wetland or Water Impact
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

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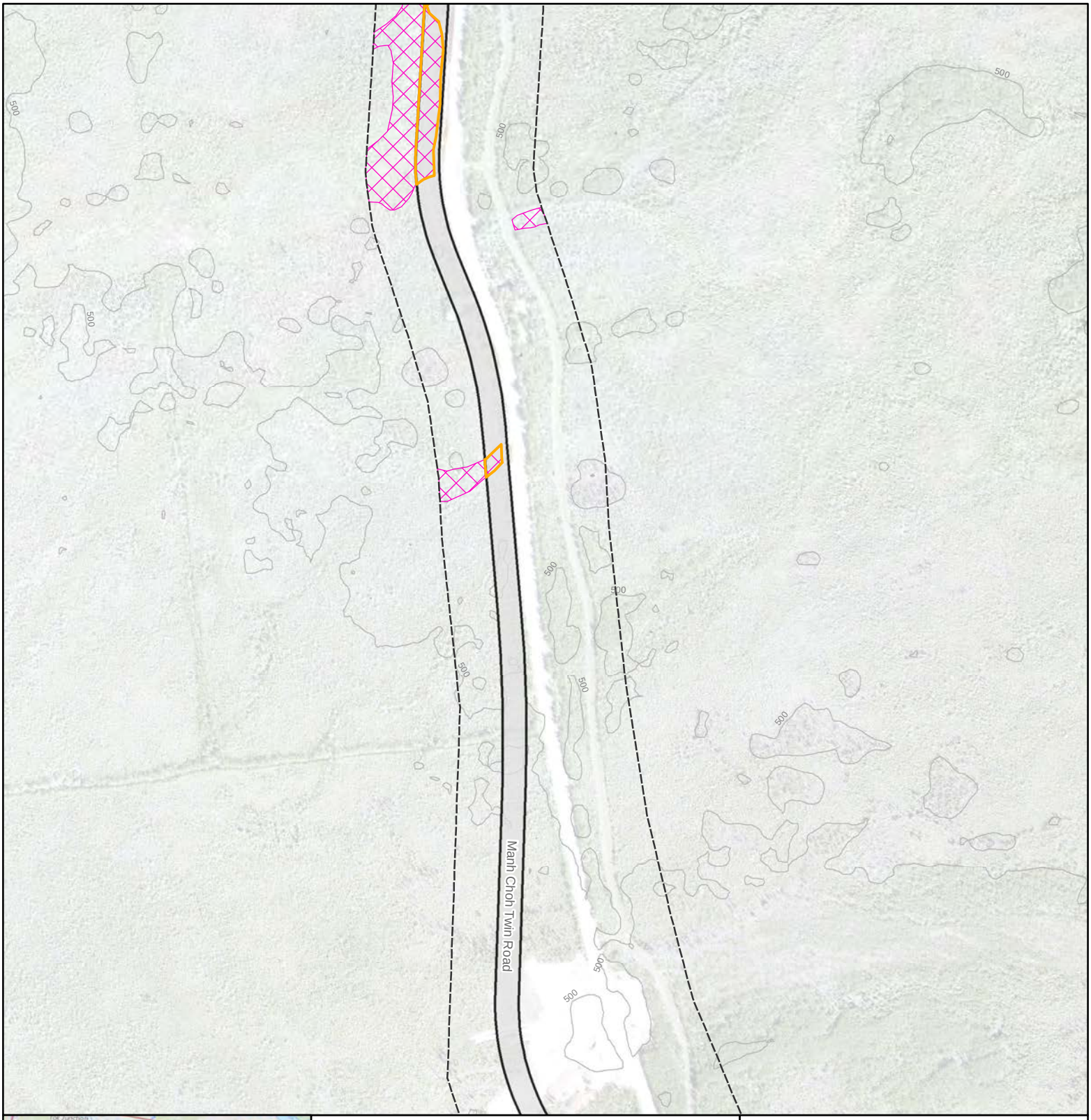
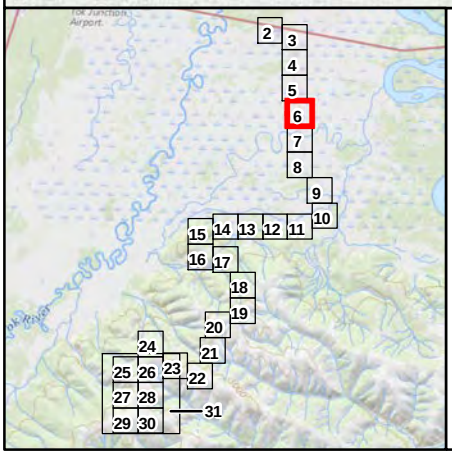
Sheet: 5 of 31	December 2021





Fill Footprint
Project Component
Wetland or Water Impact
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

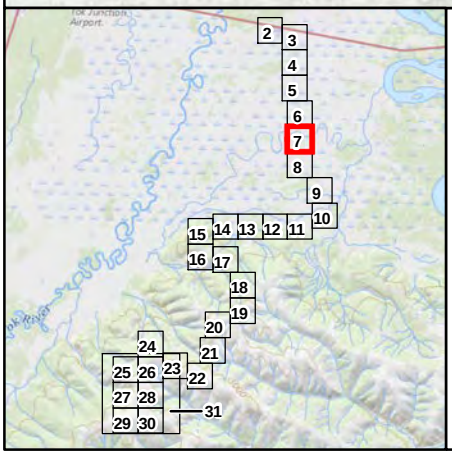
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2912	Long.: -142.7696
Sheet: 6 of 31	December 2021



Fill Footprint
Project Component
Wetland or Water Impact
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

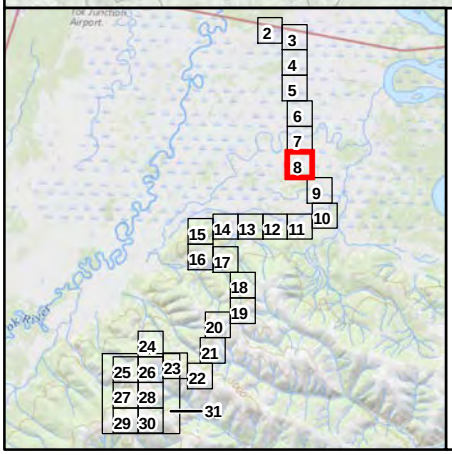
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2821	Long.: -142.769
Sheet: 7 of 31	December 2021



Fill Footprint
Project Component
Wetland or Water Impact
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

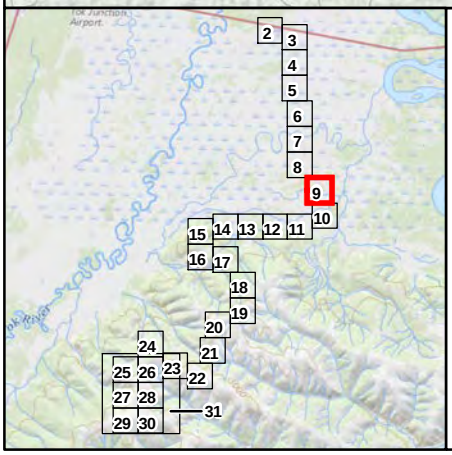
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.273	Long.: -142.7685
Sheet: 8 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

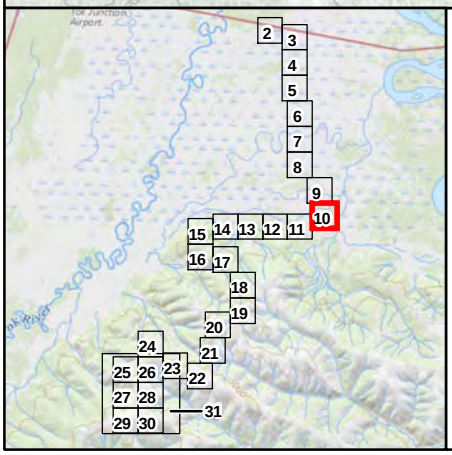
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2641	Long.: -142.7526
Sheet: 9 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

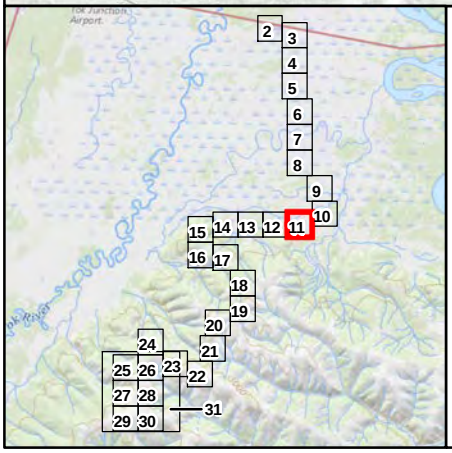
Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
See Supplement Table 15-1 for Public Land Survey Data	
Lat.: 63.2551	Long.: -142.7477
Sheet: 10 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

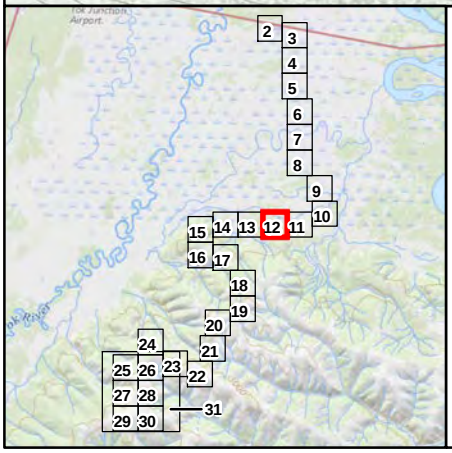
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.251	Long.: -142.7671
Sheet: 11 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

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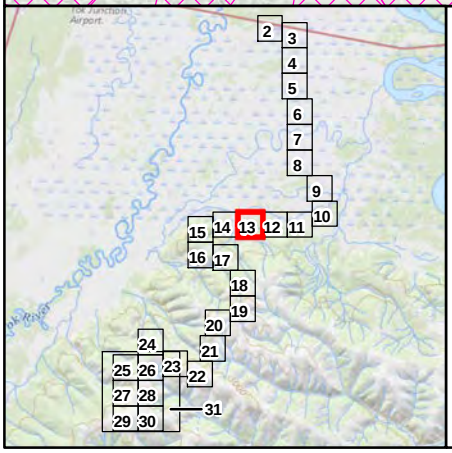
Sheet: 12 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

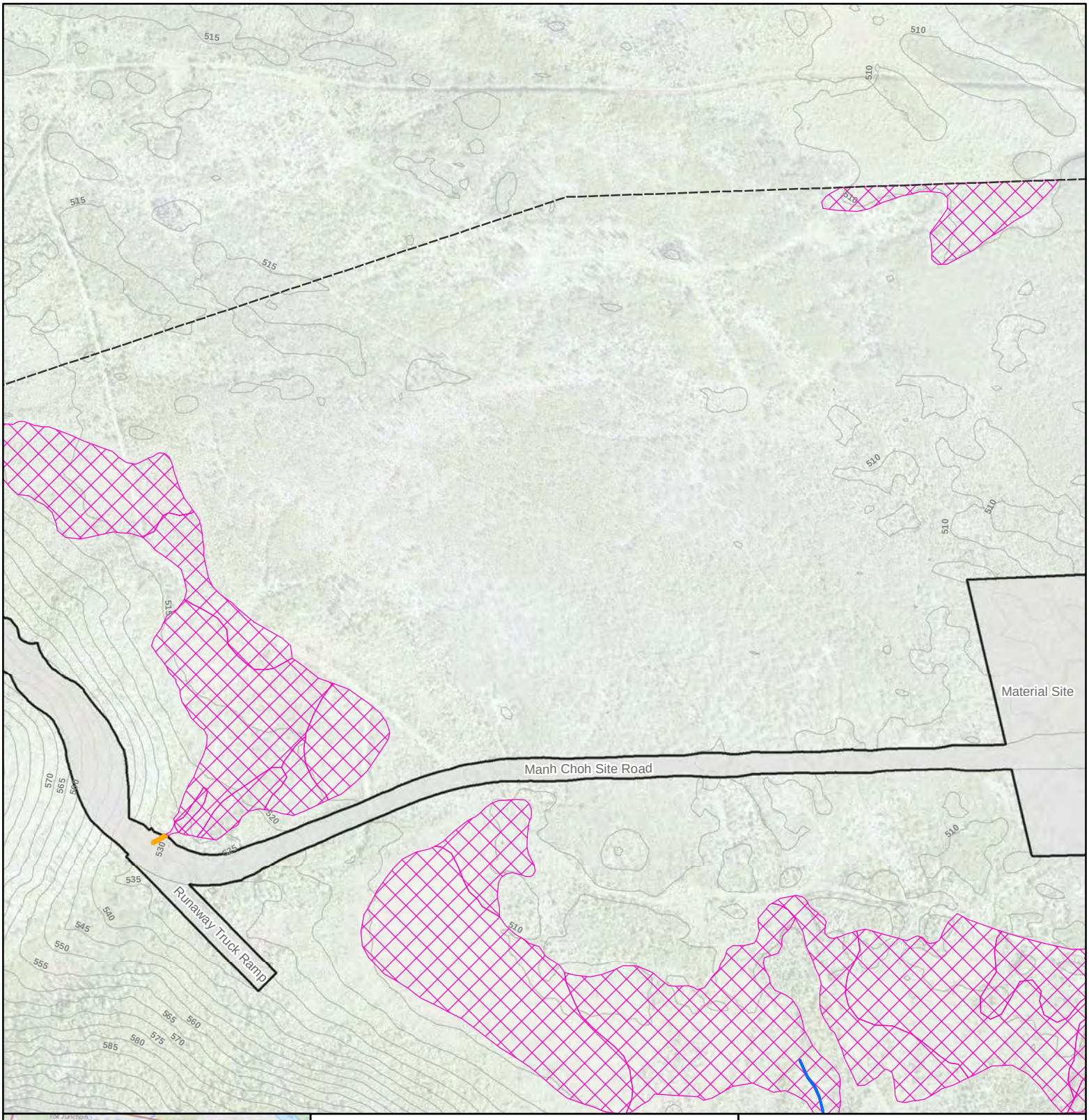
File No.: POA-

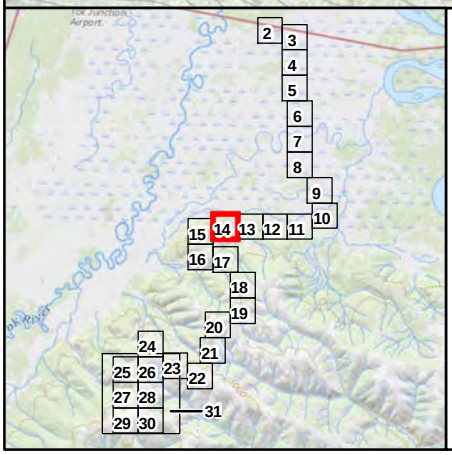
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2505	Long.: -142.8065
Sheet: 13 of 31	December 2021





Fill Footprint
Project Component
Wetland or Water Impact
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

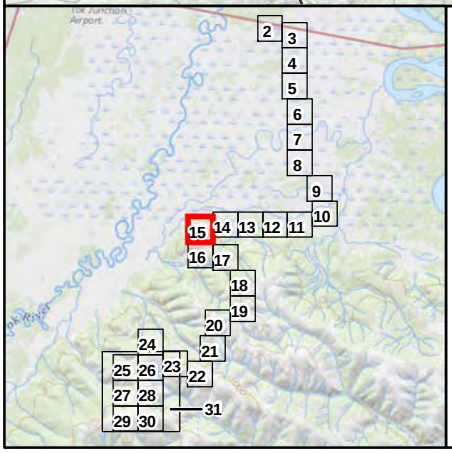
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2503	Long.: -142.8261
Sheet: 14 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

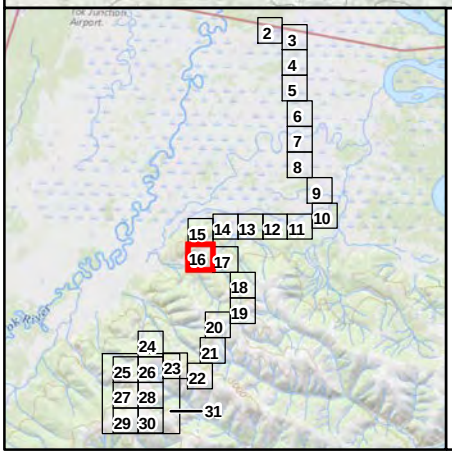
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2483	Long.: -142.8457
Sheet: 15 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
See Supplement Table 15-1 for Public Land Survey Data	
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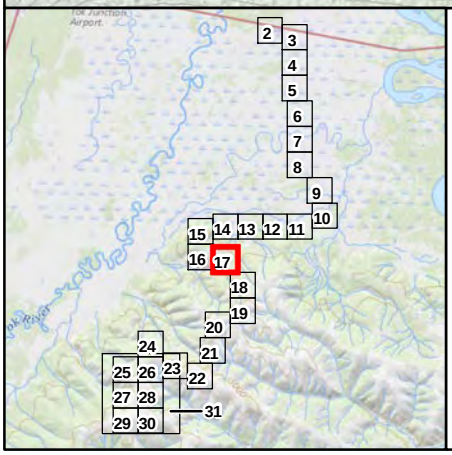
Sheet: 16 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

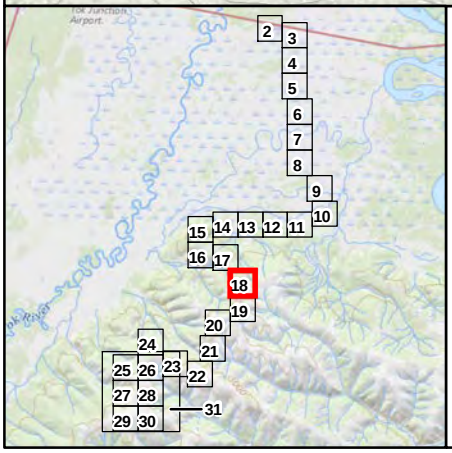
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.236	Long.: -142.8252
Sheet: 17 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

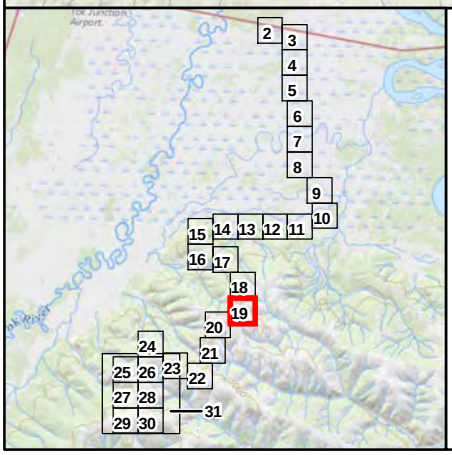
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2296	Long.: -142.8051
Sheet: 18 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

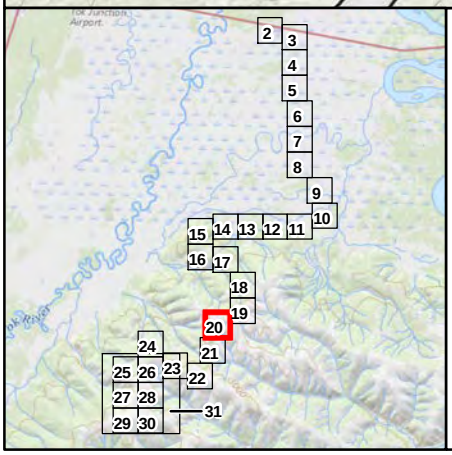
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2205	Long.: -142.8105
Sheet: 19 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

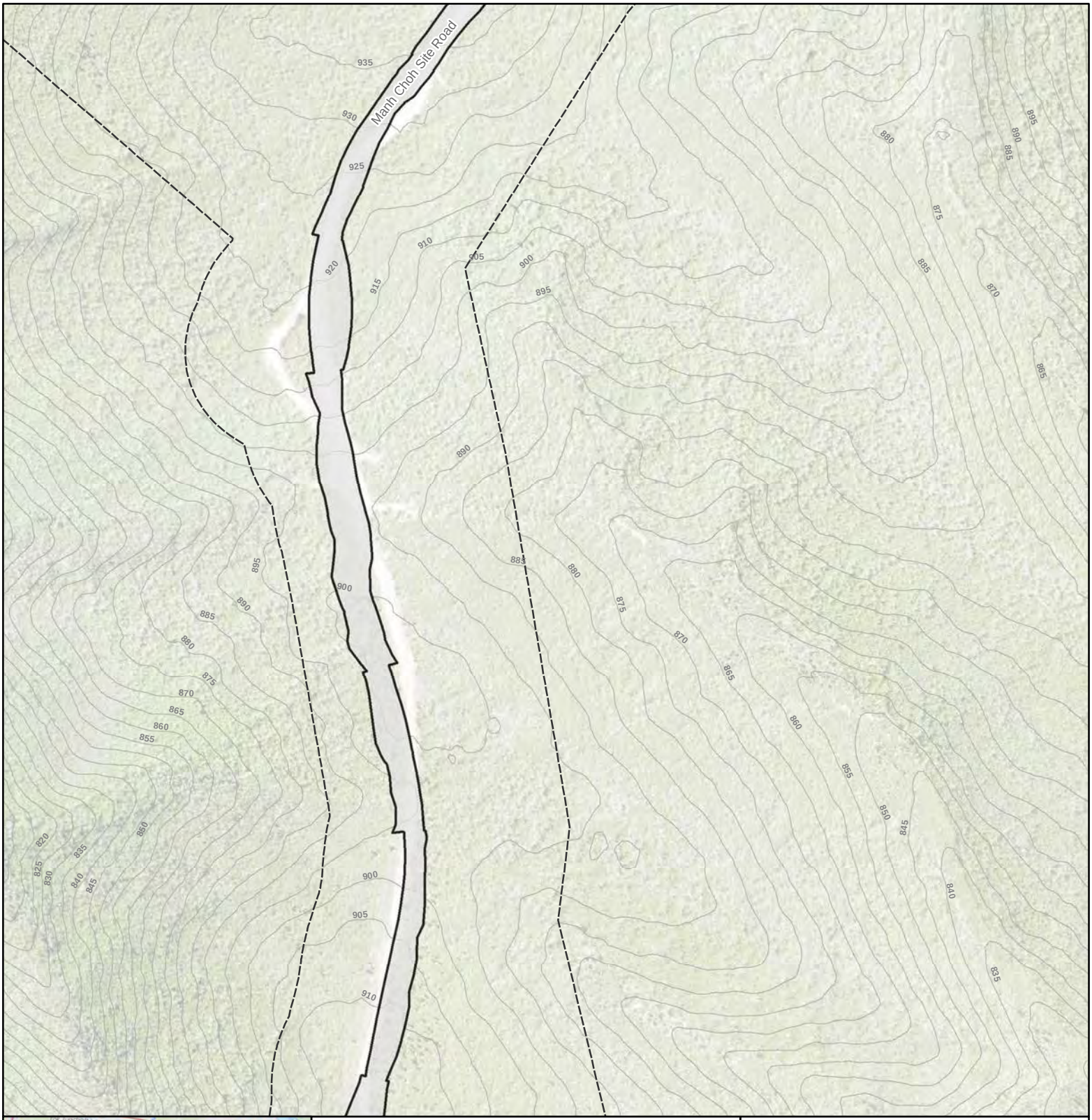
File No.: POA-

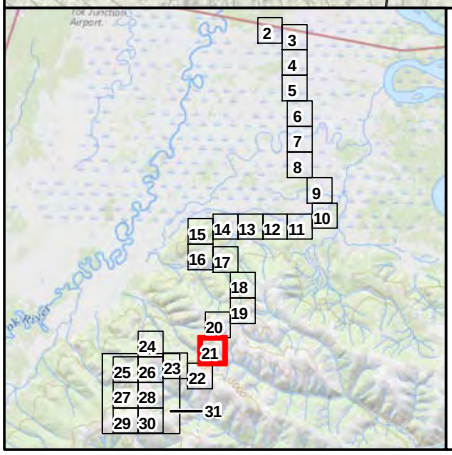
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2152	Long.: -142.8298
Sheet: 20 of 31	December 2021





Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

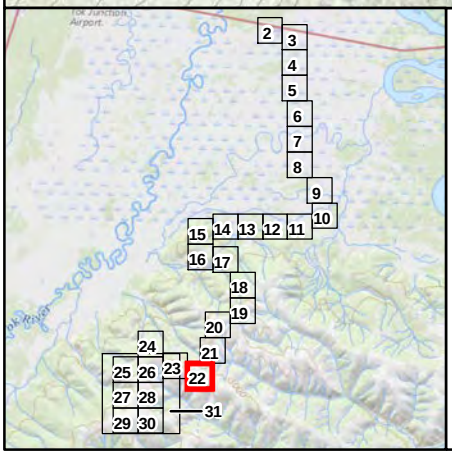
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2061	Long.: -142.8331
Sheet: 21 of 31	December 2021



Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

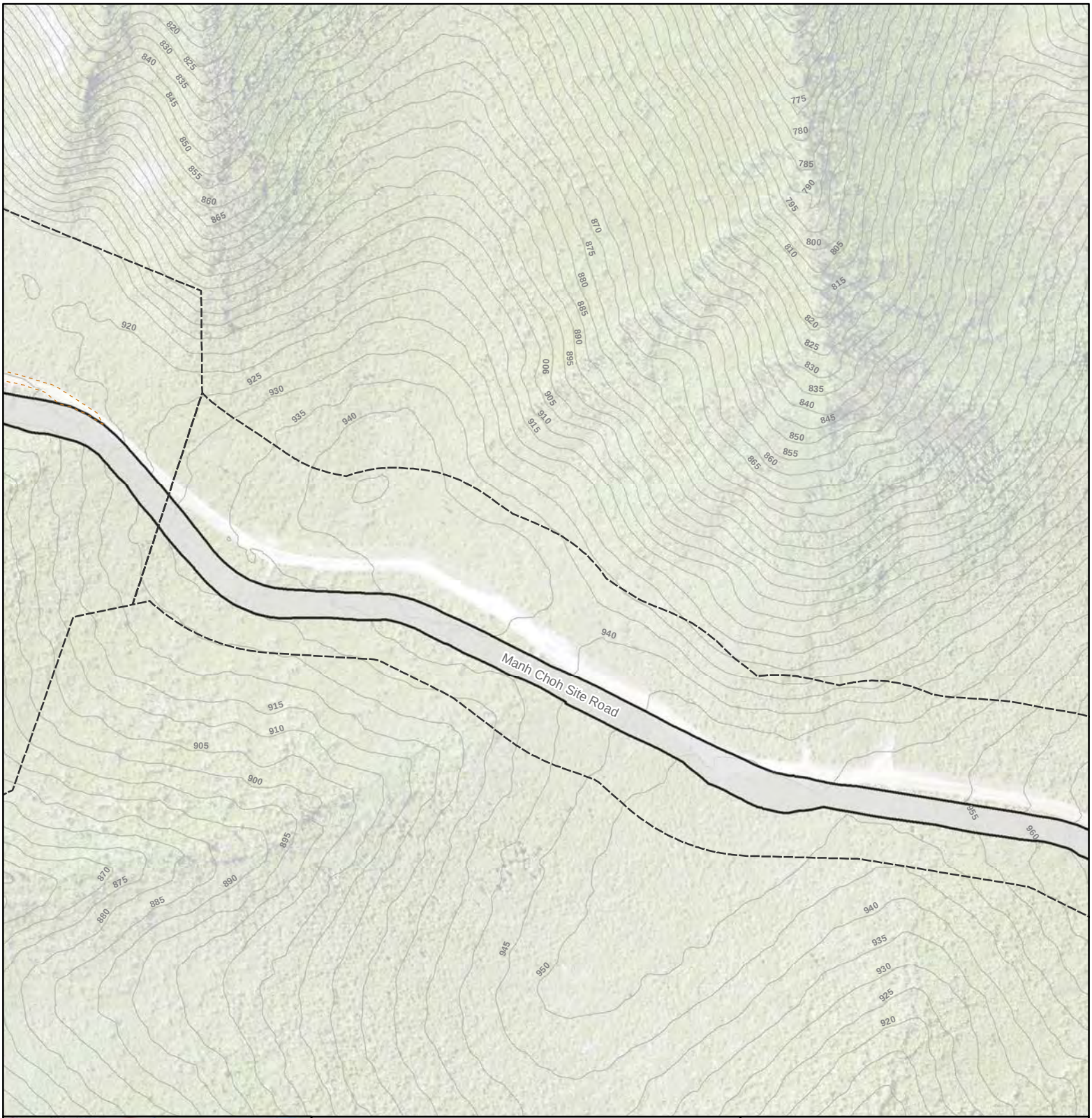
File No.: POA-

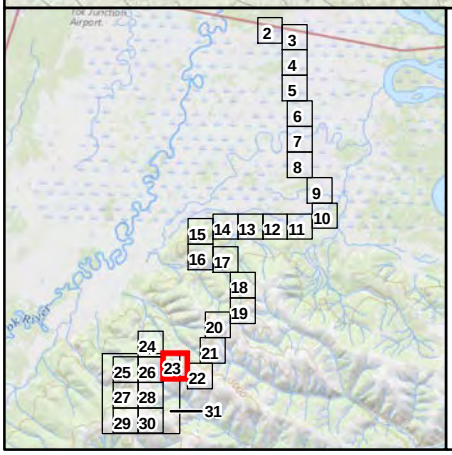
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1969	Long.: -142.8426
Sheet: 22 of 31	December 2021





Existing Footprint (Utilized as Access)

Fill Footprint

Project Component

Wetland Study Area

Wetlands and Waters

Stream

Waterbody

Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N W E S

Applicant: Peak Gold, LLC

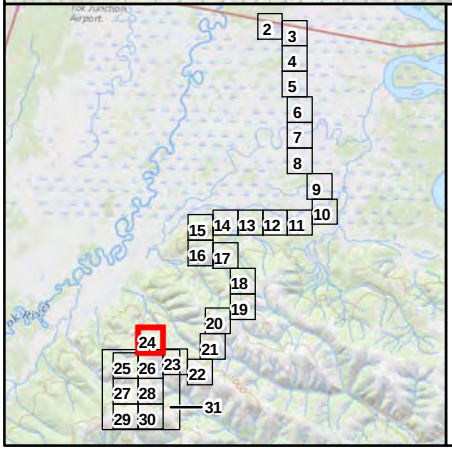
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2002	Long.: -142.8624
Sheet: 23 of 31	December 2021



Fill Footprint

Project Component

Wetland Study Area

Wetlands and Waters

Stream

Waterbody

Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N

W E

S

Applicant: Peak Gold, LLC

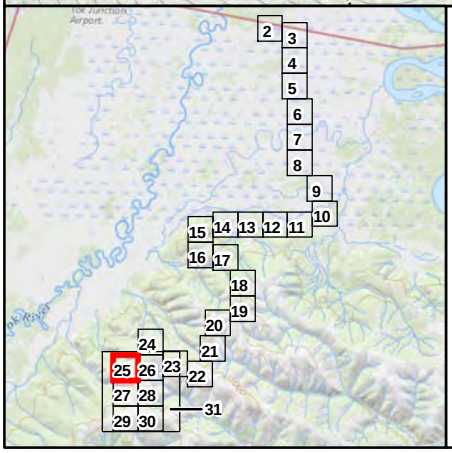
File No.: POA-

Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.2077	Long.: -142.8826
Sheet: 24 of 31	December 2021



Aboveground Storm Water Piping
Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

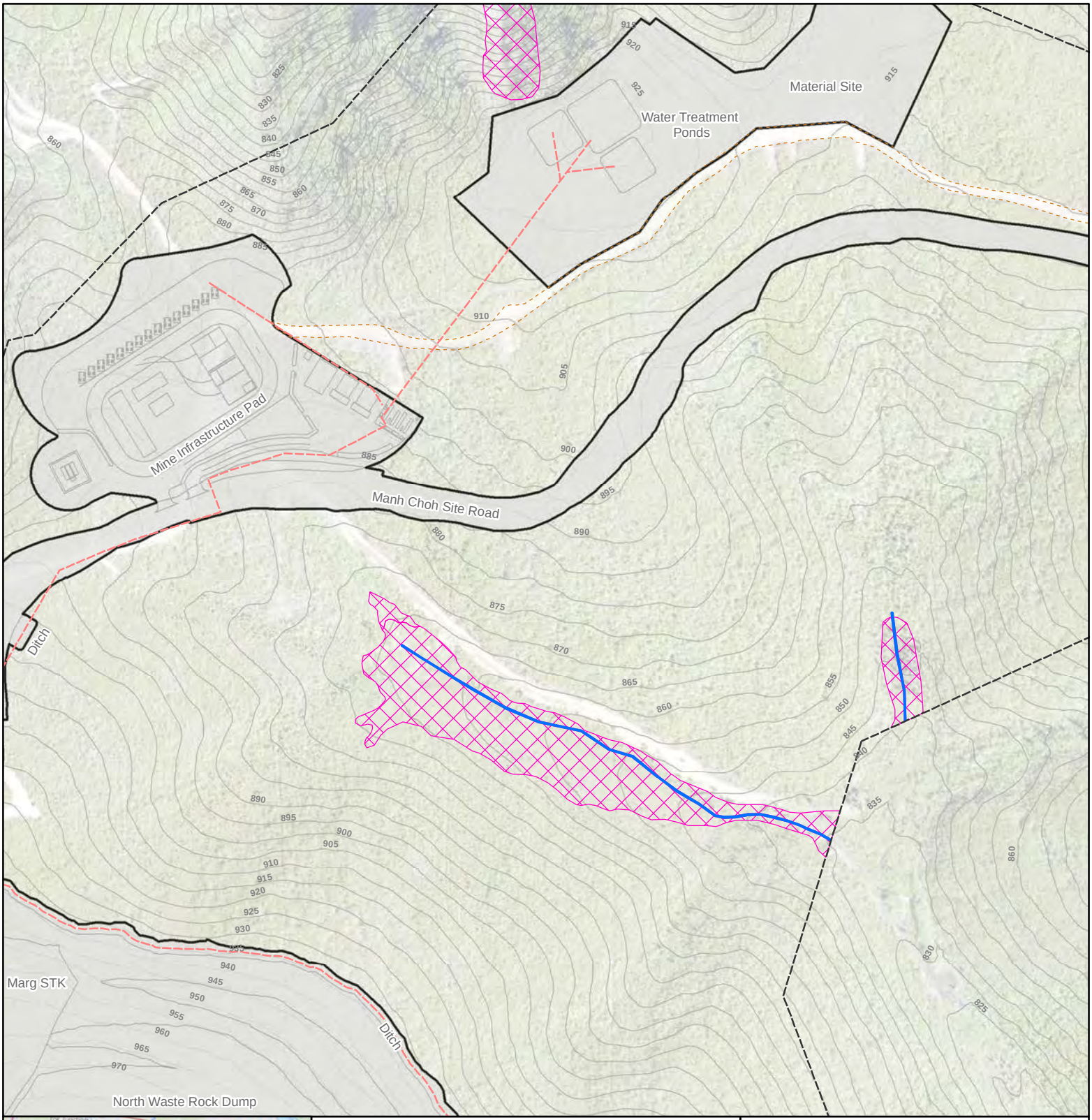
File No.: POA-

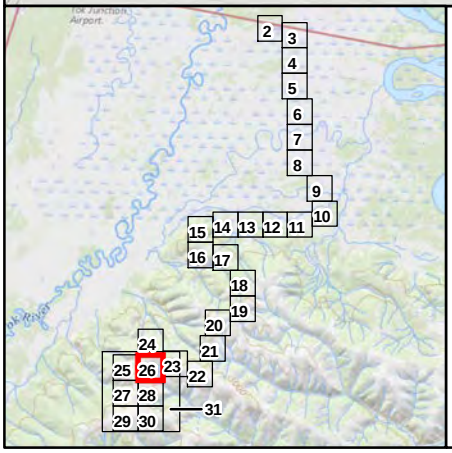
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1984	Long.: -142.9016
Sheet: 25 of 31	December 2021





- Aboveground Storm Water Piping
- Existing Footprint (Utilized as Access)
- Fill Footprint
- Project Component
- Wetland Study Area

Wetlands and Waters

- Stream
- Waterbody
- Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N W E S

Applicant: Peak Gold, LLC

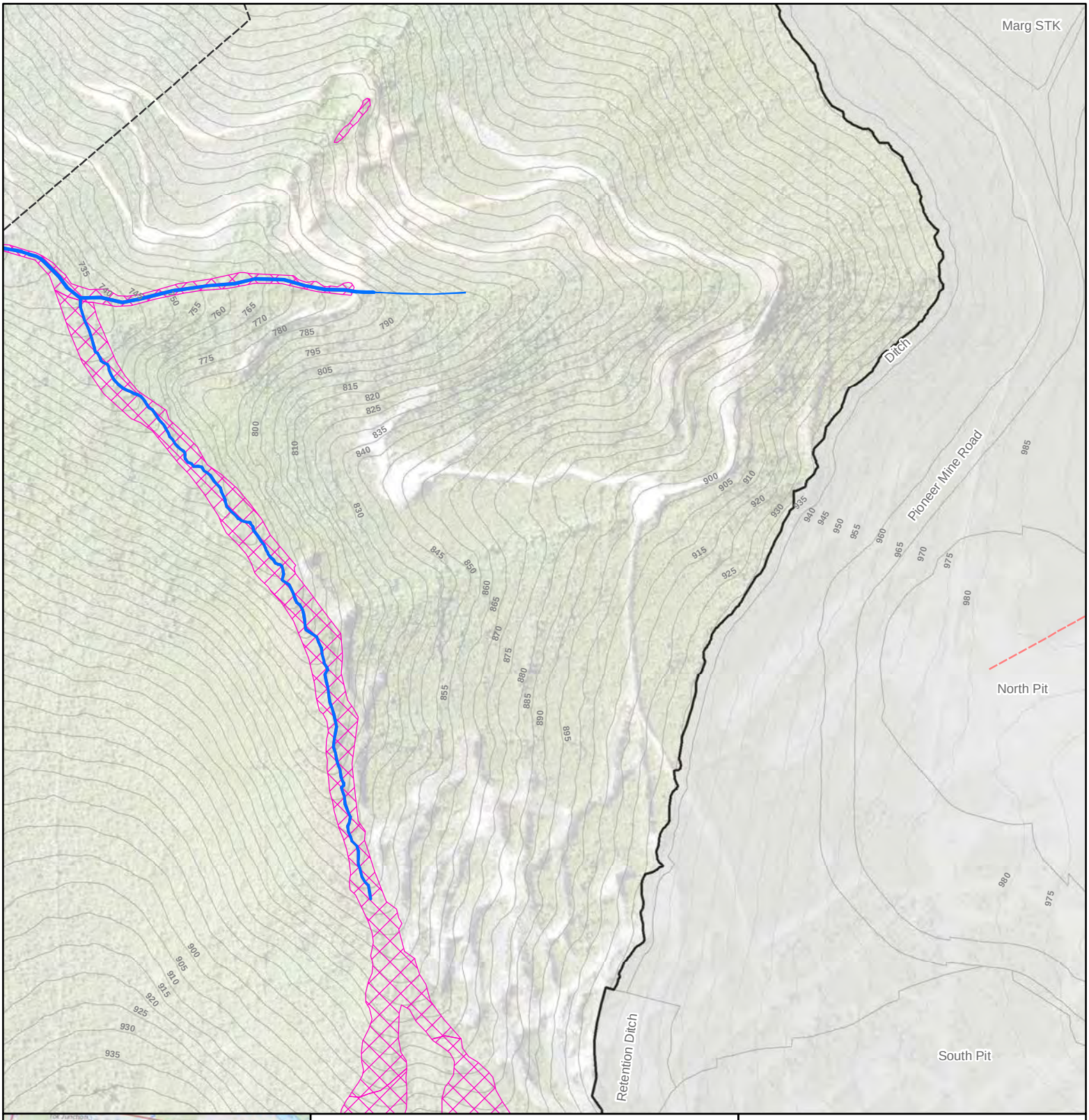
File No.: POA-

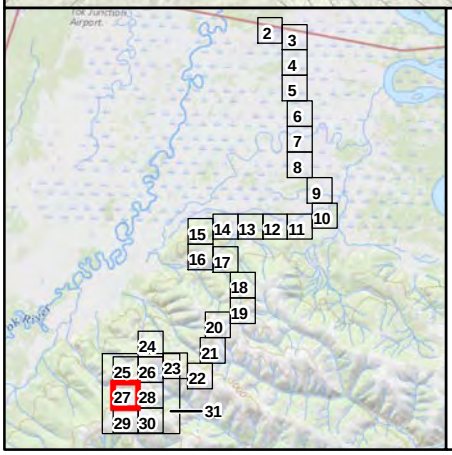
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1986	Long.: -142.882
Sheet: 26 of 31	December 2021





Aboveground Storm Water Piping
Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

Applicant: Peak Gold, LLC

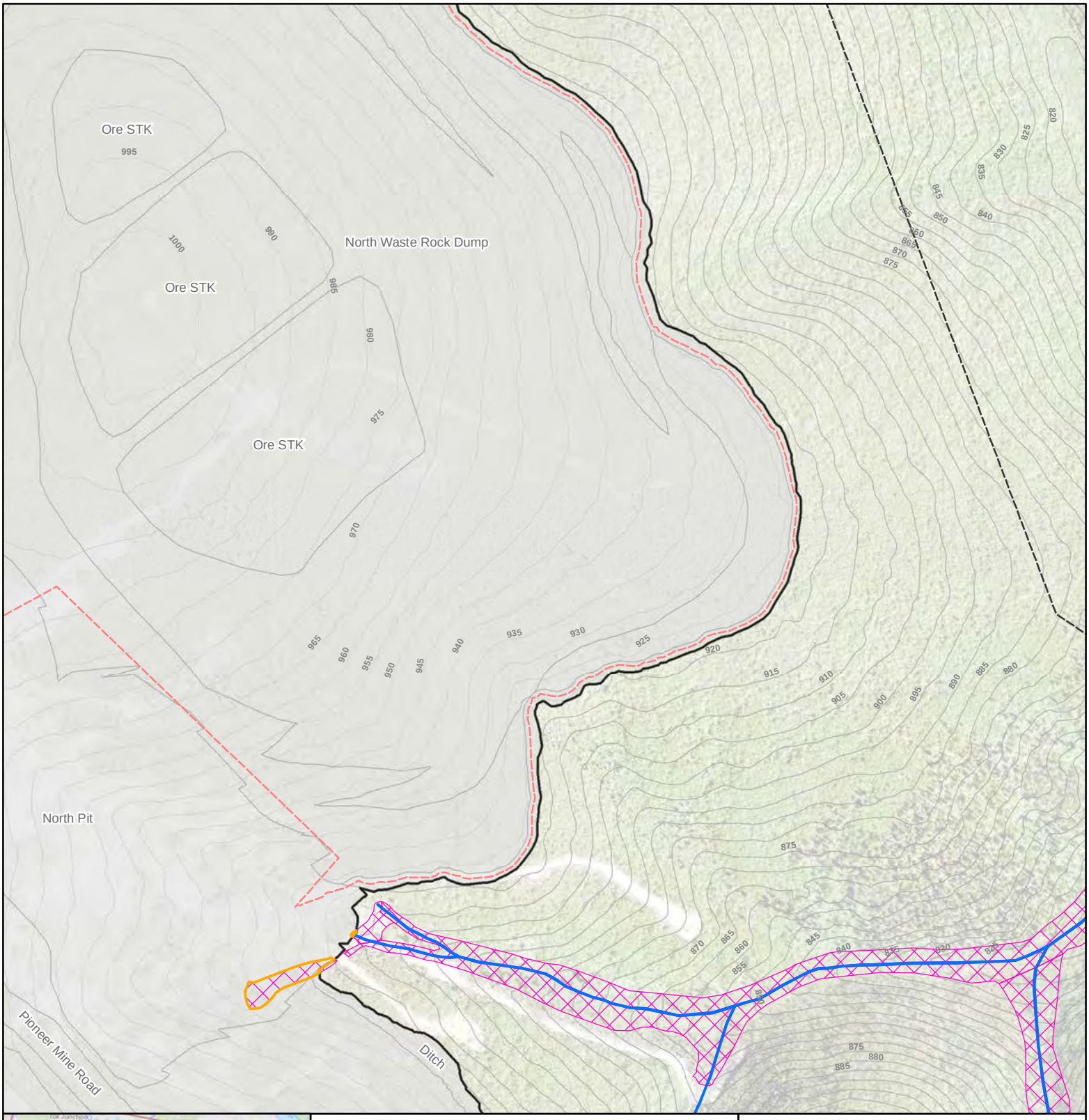
File No.: POA-

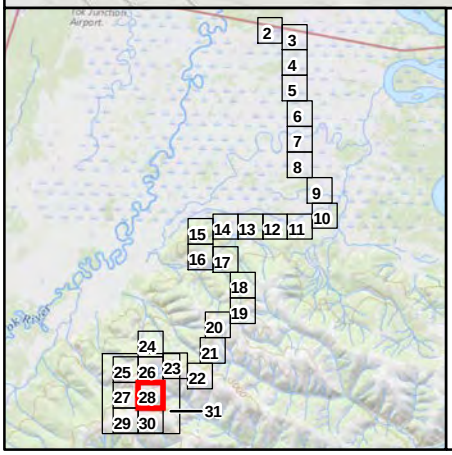
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1893	Long.: -142.901
Sheet: 27 of 31	December 2021





- Aboveground Storm Water Piping
- Fill Footprint
- Project Component
- Wetland or Water Impact
- Wetland Study Area

Wetlands and Waters

- Stream
- Waterbody
- Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N W E S

Applicant: Peak Gold, LLC

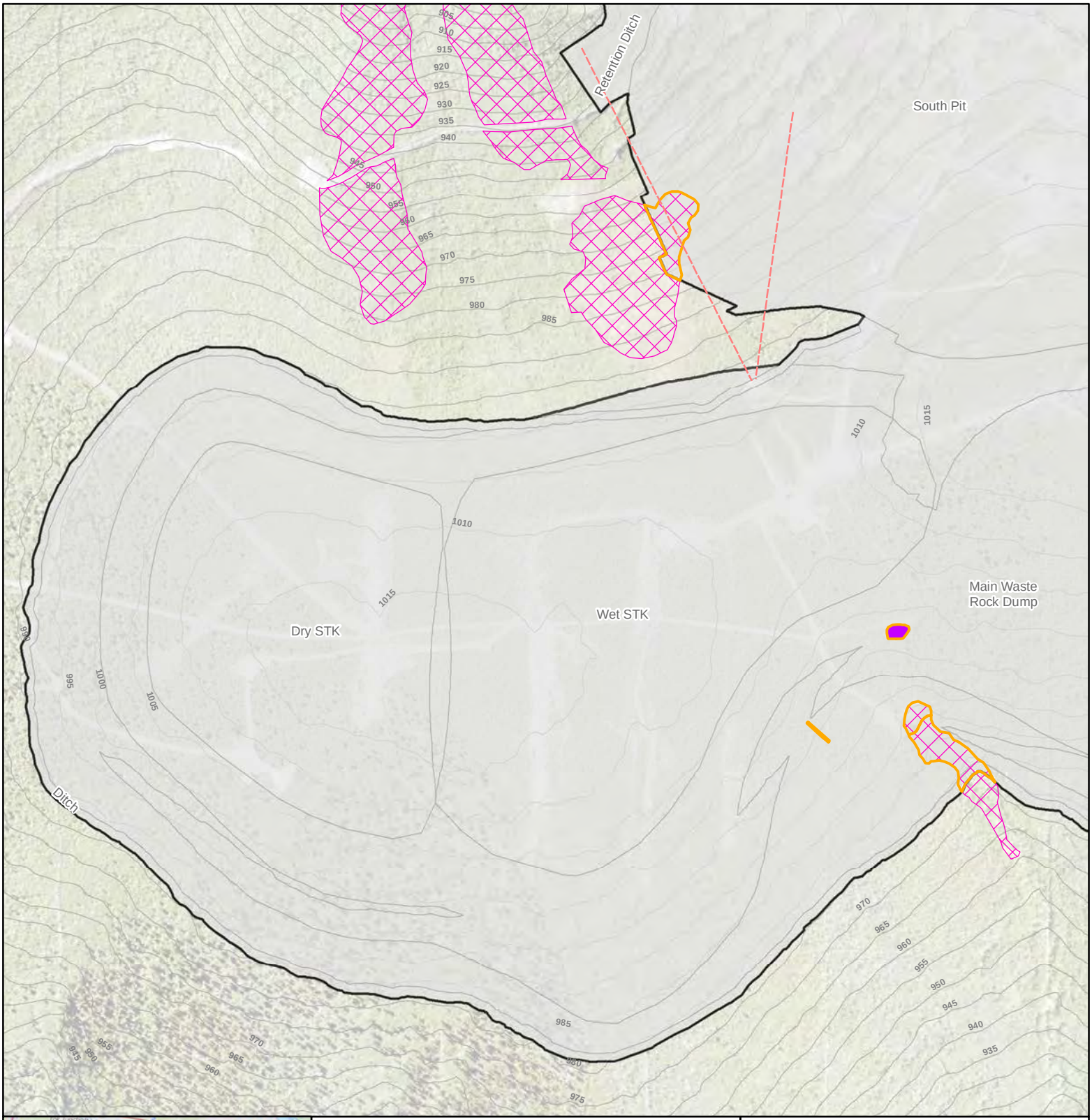
File No.: POA-

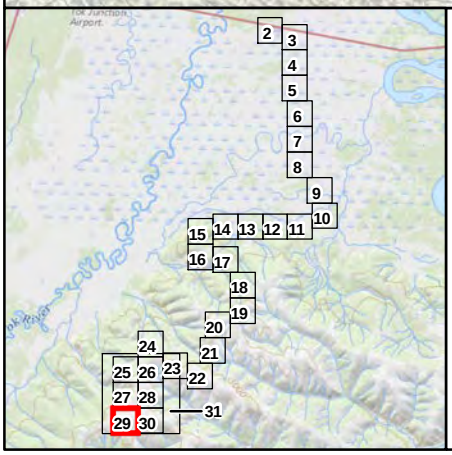
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1895	Long.: -142.8814
Sheet: 28 of 31	December 2021





- Aboveground Storm Water Piping
- Fill Footprint
- Project Component
- Wetland or Water Impact
- Wetland Study Area

Wetlands and Waters

- Stream
- Waterbody
- Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

Applicant: Peak Gold, LLC

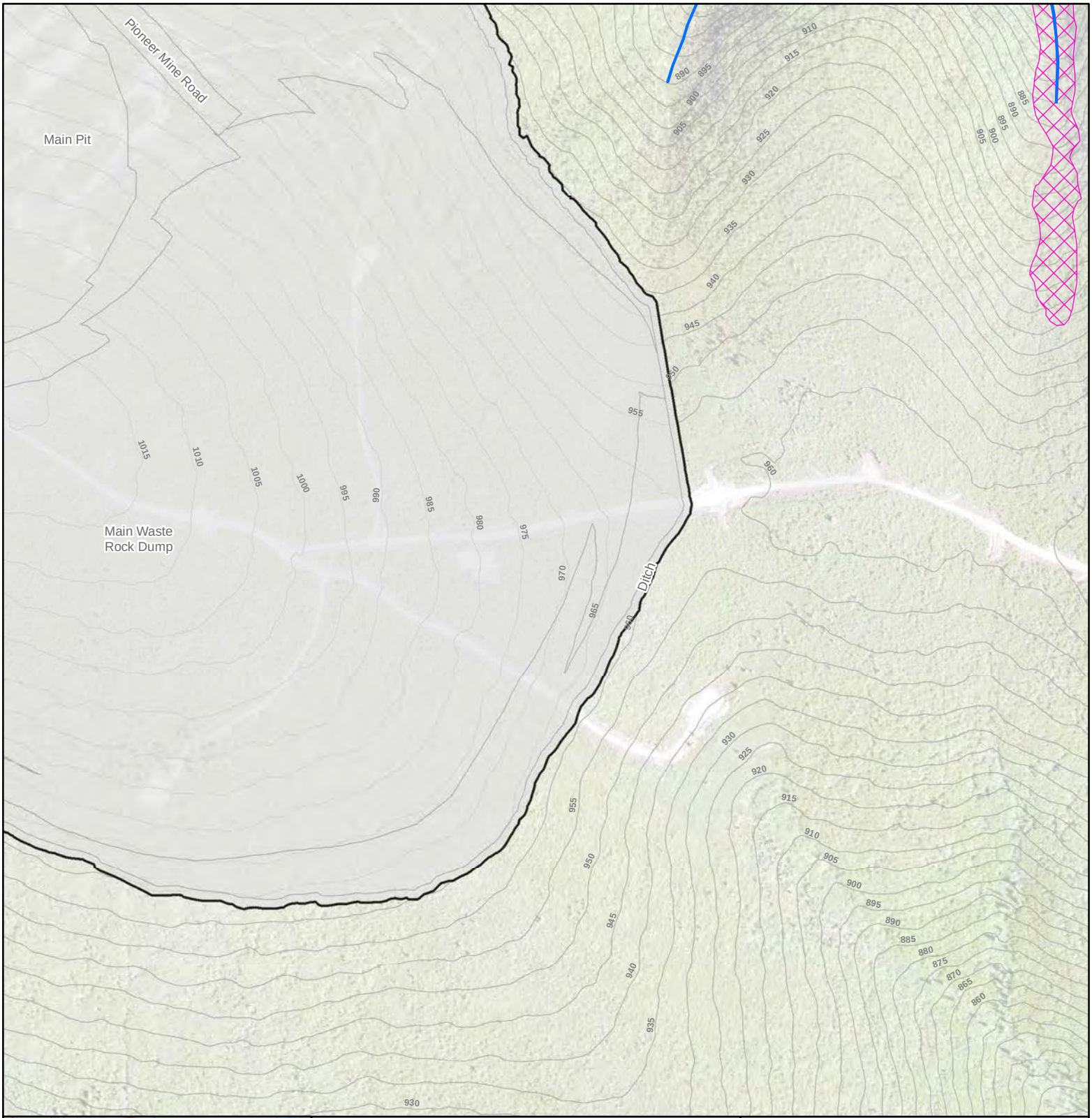
File No.: POA-

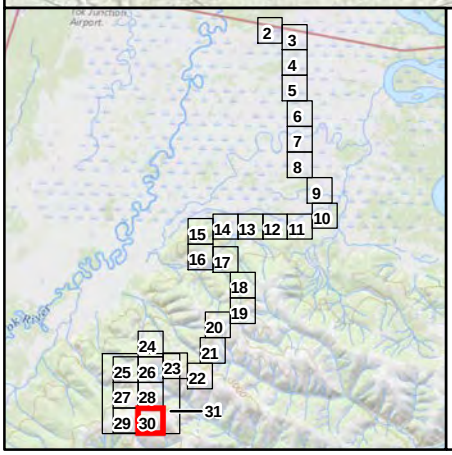
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1802	Long.: -142.9004
Sheet: 29 of 31	December 2021





Fill Footprint
Project Component
Wetland Study Area

Wetlands and Waters

Stream
Waterbody
Wetland

Contour Data: 5m IFSAR

0 150 300 600 Feet

1 inch = 400 feet 1:4,800

N
W E
S

Applicant: Peak Gold, LLC

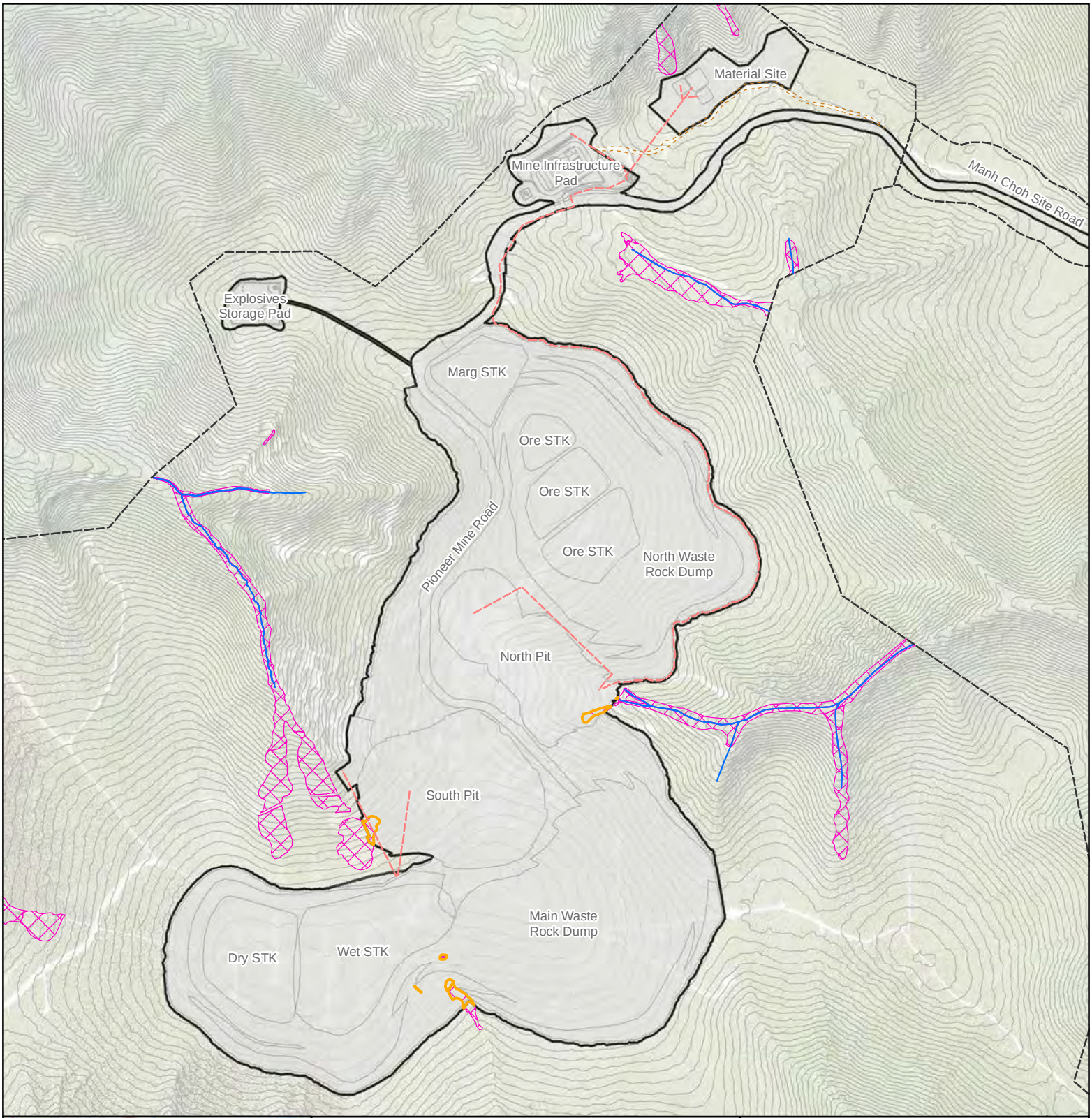
File No.: POA-

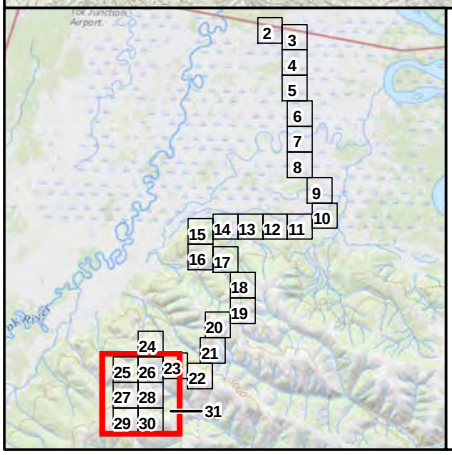
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

Lat.: 63.1805	Long.: -142.8808
Sheet: 30 of 31	December 2021





- Aboveground Storm Water Piping
- Existing Footprint (Utilized as Access)
- Fill Footprint
- Project Component
- Wetland or Water Impact
- Wetland Study Area

Wetlands and Waters

- Stream
- Waterbody
- Wetland

Contour Data: 5m IFSAR

0 500 1,000 2,000 Feet

1 inch = 1,250 feet 1:15,000

N W E S

Applicant: Peak Gold, LLC

File No.: POA-

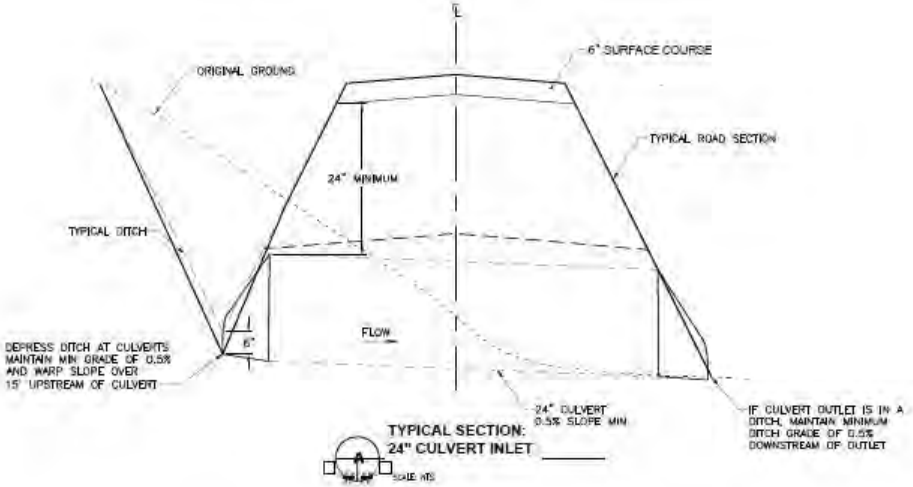
Waterway: Tanana River

Proposed Activity: Manh Choh Mine

See Supplement Table 15-1 for Public Land Survey Data

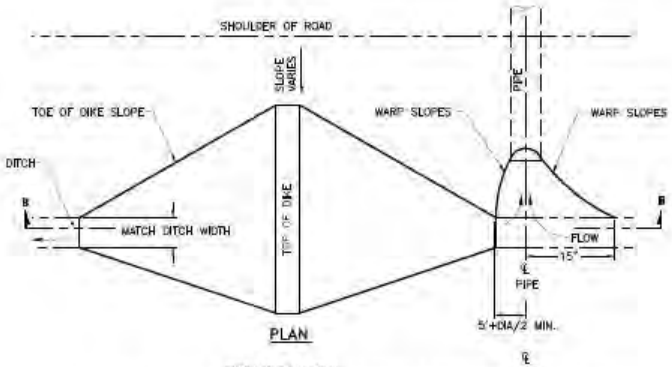
Lat.: 63.1850	Long.: -142.8940
Sheet: 31 of 31	December 2021

Culvert Typicals



TYPICAL SECTION: 24" CULVERT INLET

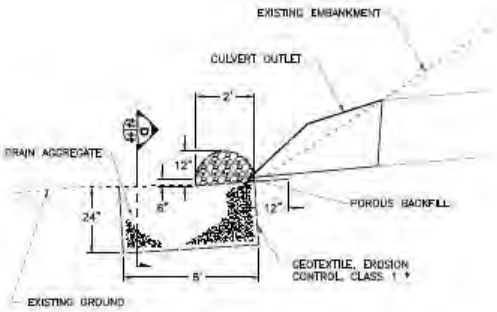
SCALE: NTS



SECTION B–B

TYPICAL SECTION: DITCH DIKE AT INLET

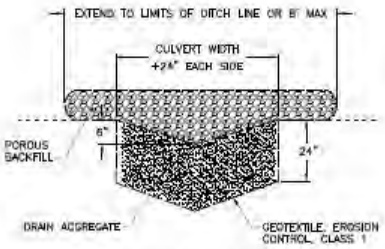
SCALE: NTS



* AT LOCATIONS IDENTIFIED BY ENGINEER IN THE FIELD.

TYPICAL SECTION: CULVERT OUTLET

SCALE: NTS



* AT LOCATIONS IDENTIFIED BY ENGINEER IN THE FIELD.

TYPICAL SECTION: CULVERT DISSIPATION BERM

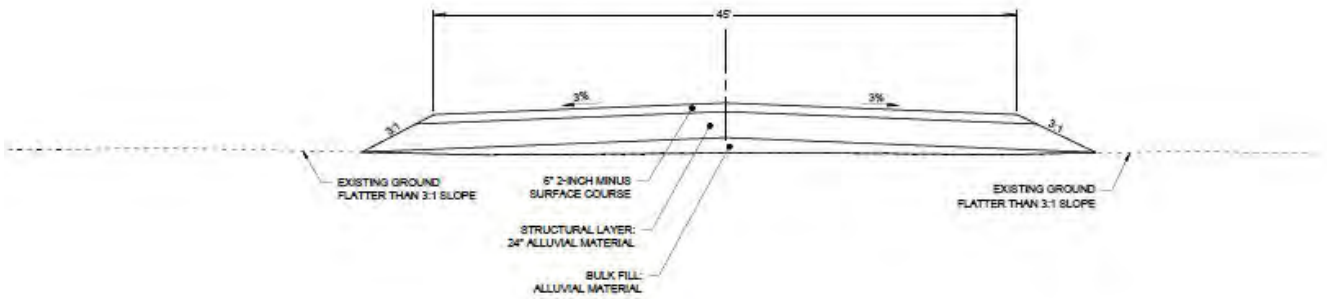
SCALE: NTS

NOTES:

1. SEE SUMMARY OF CULVERTS TABLE FOR CULVERT LOCATIONS. FINAL LOCATION TO BE FIELD FIT BY ENGINEER.
2. CULVERT VELOCITY DISSIPATION BERM SHALL BE CONSTRUCTED AT THE OUTLET OF ALL CULVERTS UNLESS DIRECTED BY ENGINEER.
3. AFTER STABILIZATION IN ACCORDANCE WITH AKDEC CGP HAS BEEN ESTABLISHED, SPREAD POROUS FILL TO ±3" THICKNESS AROUND OUTFALL END.

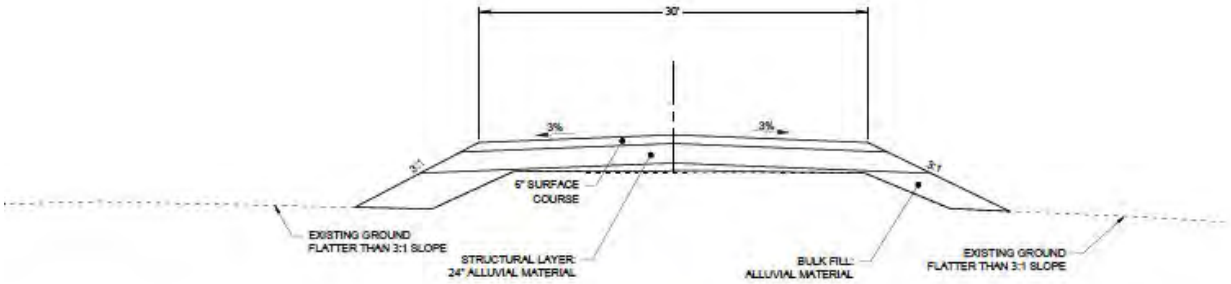
Applicant: Peak Gold LLC.	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
Fairbanks Meridian | See Supplement	
Lat.: 63.2866 N	Long.: 142.7696 W
Sheet: 32 of 36	December 2021

Road, Flat Cross Section



A CX **TYPICAL SECTION 6: MINE TRUCK TRAFFIC; MINE ACCESS ROAD, FLATS; LOADOUT TO HILL**
NOT TO SCALE

ASSUME 20.5' WIDE DESIGN VEHICLE, SINGLE LANE

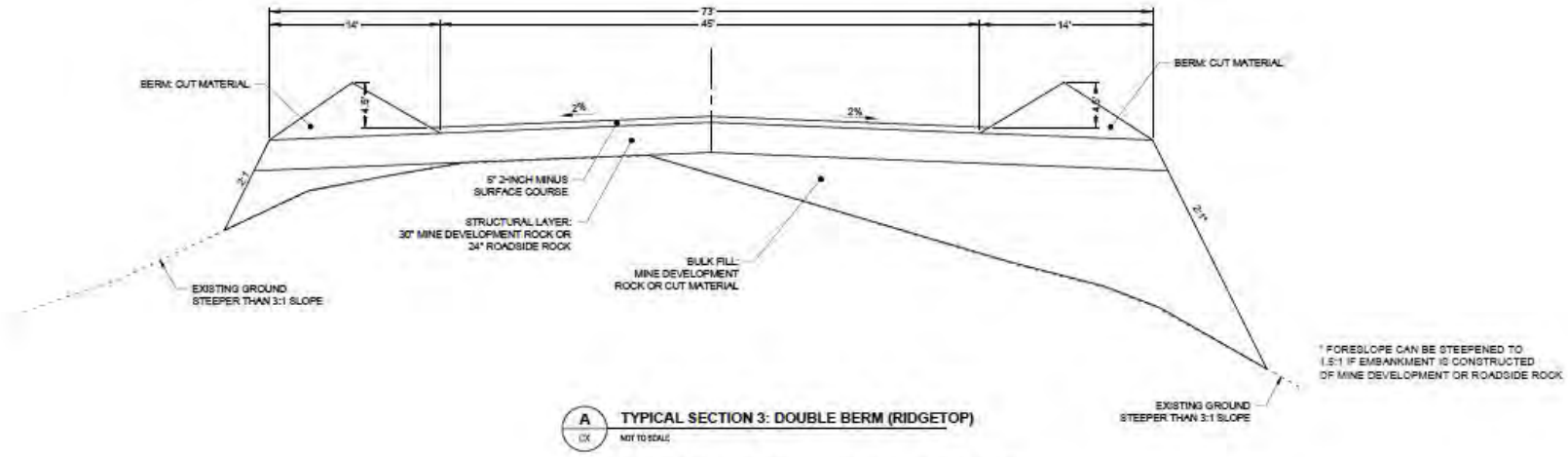


B CX **TYPICAL SECTION 7: HIGHWAY TRUCK TRAFFIC; TETLIN VILLAGE ROAD & TETLIN VILLAGE ROAD TO LOADOUT**
NOT TO SCALE

ASSUME 8.5' WIDE DESIGN VEHICLE, DOUBLE LANE

Applicant: Peak Gold LLC.	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
Fairbanks Meridian | See Supplement	
Lat.: 63.2866 N	Long.: 142.7696 W
Sheet: 33 of 36	December 2021

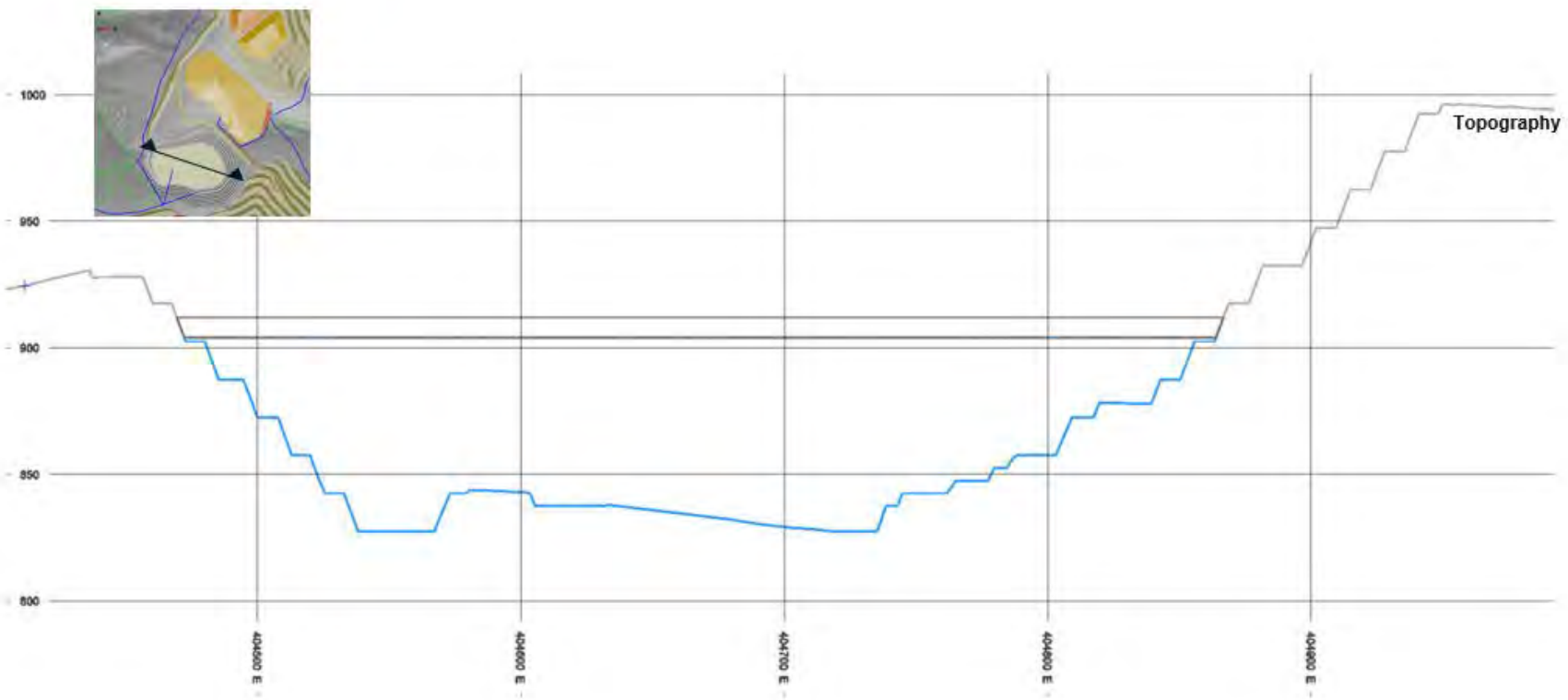
Road Design, Hillside Cross Section



ASSUME 20.5' WIDE DESIGN VEHICLE, SINGLE LANE

Applicant: Peak Gold LLC.	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
Fairbanks Meridian | See Supplement	
Lat.: 63.2368 N	Long.: 142.8239 W
Sheet: 34 of 36	December 2021

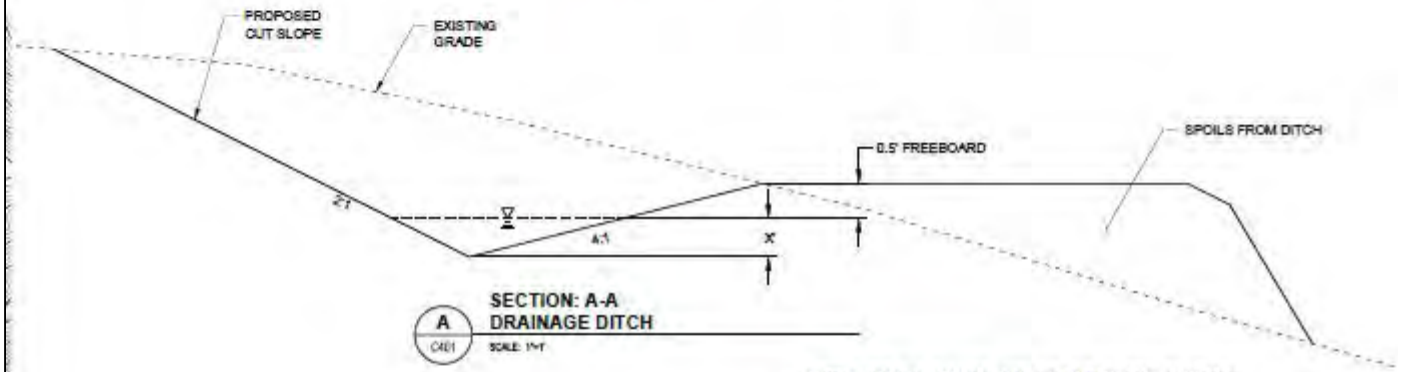
Mine Pit Cross Section



Applicant: Peak Gold LLC.	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
Fairbanks Meridian | See Supplement	
Lat.: 63.1854 N	Long.: 142.8917 W
Sheet: 35 of 36	December 2021

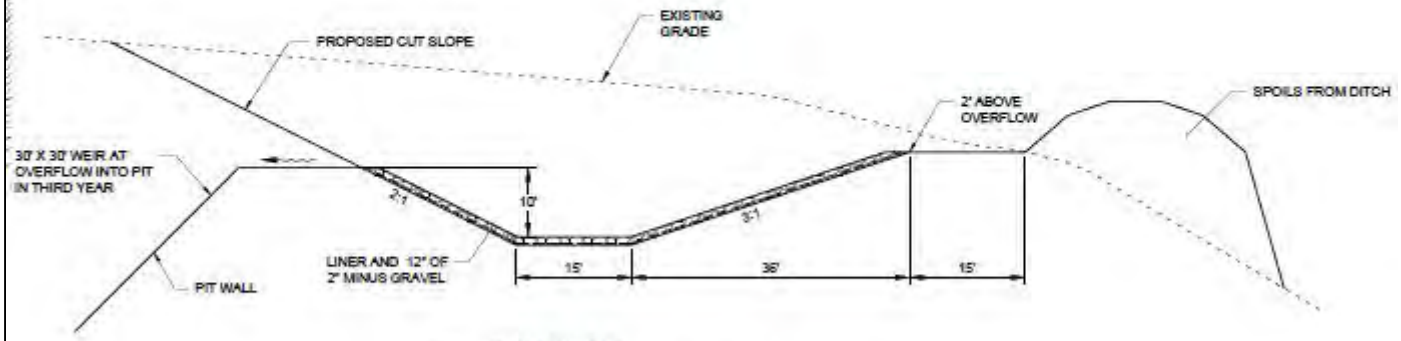
Drainage Ditch Cross Section

REQUIRED DITCH DEPTH - 100 YEAR STORM				
POINT	FLOW (CFS)	FLOW DEPTH X (FT)	FREEBOARD (FT)	DITCH DEPTH (FT)
A	4.2	0.41	0.50	0.91
B	6.0	0.47	0.50	0.97
C	9.5	0.56	0.50	1.06
D	11.0	0.59	0.50	1.09
E	17.3	0.70	0.50	1.20
F	8.1	0.53	0.50	1.03
G	3.8	0.40	0.50	0.90
H	2.2	0.32	0.50	0.82
I	0.6	0.20	0.50	0.70
J	1.7	0.29	0.50	0.79
K	3.7	0.39	0.50	0.89
L	7.1	0.50	0.50	1.00



SECTION: A-A
DRAINAGE DITCH
A
C401
SCALE: 1"=1'

NOTE: LINER WILL ONLY BE INSTALLED WITHIN DITCHES WHERE THEY ARE WITHIN 500' OF WETLANDS.



SECTION: B-B
2 YEAR STORM WEST RETENTION DITCH
B
C401
SCALE: 1"=10'

1500

Applicant: Peak Gold LLC.	
File No.: POA-	
Waterway: Tanana River	
Proposed Activity: Manh Choh Mine	
Fairbanks Meridian | See Supplement	
Lat.: 63.1854 N	Long.: 142.8917 W
Sheet: 36 of 36	December 2021

KINROSS Manh Choh
A JV with Contango ORE

Appendix 2

Alaska Department of Fish and Game

Fish Habitat Permits

FH22-III-0019

FH22-III-0019-Amendment 1

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game
HABITAT SECTION
Fairbanks Regional Office

1300 College Road
Fairbanks, AK 99701-1151
Main: 907.459.7289
Fax: 907.459.7303

FISH HABITAT PERMIT
FH22-III-0019

ISSUED: January 14, 2022
EXPIRES: Life of Structures

Bartly Kleven
Peak Gold, LLC
PO Box 73726
Fairbanks, AK 99707-3726

RE: Culvert Installations
Unnamed stream
Section 5, T17N, R14E, CRM
Location: 63.2832 N, 142.7683 W

Dear Bartly Kleven:

Pursuant to AS 16.05.841 (Fishway Act), the Alaska Department of Fish and Game (ADF&G) Habitat Section has reviewed your proposal to install a battery of three culverts along Manh Choh Twin Road for water management. This proposal was received on December 31, 2021.

Project Description
The proposed Manh Choh Project is located approximately ten miles southeast of Tok, Alaska in the Tetlin Hills. The 5.4-mile Manh Choh Twin Road will be constructed to eliminate the co-use of mine and village traffic along the existing Tetlin Village Road. A battery of three culverts will be installed at this location to provide water management.

Fishway Act
This unnamed stream is likely seasonally connected to the Tok River and therefore may support resident fish species such as slimy sculpin. Your project as proposed is not anticipated to obstruct the free passage of fish.

In accordance with AS 16.05.841, your project is approved subject to the project description and permit terms, with the following stipulation:

1. The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of fish (e.g., perched culvert, outwash gravels, and/ or excessive water velocities) shall be restored to the satisfaction of the Habitat Section. The Habitat Section shall be notified, and its approval granted before any instream culvert maintenance activities occur.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to activities regulated by the Habitat Section of ADF&G; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other permits; state, federal, or local. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. For any activity that significantly deviates from the approved plan, you shall notify the ADF&G Habitat Section and obtain written approval in the form of a permit amendment before beginning the activity. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G Habitat Section. Therefore, it is recommended that you consult the Habitat Section before considering any deviation from the approved plan.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Please direct questions about this permit to Habitat Biologist Olivia Edwards at 907-459-7326 or olivia.edwards@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner

By: Audra L. J. Brase
Fairbanks Regional Supervisor

ecc: Al Ott, ADF&G Habitat, Fairbanks
Andy Gryska, ADF&G SF, Fairbanks
Brandy Baker, ADF&G SF, Delta Junction
Permit Coordinator, ADF&G SF
Fairbanks Mining, ADNR Fairbanks
Gillian O'Doherty, ADF&G SF, Anchorage
Tim Pilon, ADEC, Fairbanks
Bob Henszey, USFWS, Fairbanks
Ellen Lyons, USACE, Fairbanks
AWT, Northern Detachment, Fairbanks
Ashlee Adoko, ADNR OPMP

one/AB

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Fish and Game
HABITAT SECTION
Fairbanks Regional Office

1300 College Road
Fairbanks, AK 99701-1151
Main: 907.459.7289
Fax: 907.459.7303

FISH HABITAT PERMIT
FH22-III-0019 – AMENDMENT 1

ISSUED: February 11, 2022
EXPIRES: Life of Structures

Bartly Kleven
Peak Gold, LLC
PO Box 73726
Fairbanks, AK 99707-3726

RE: Culvert Installations
Unnamed stream
Section 5, T17N, R14E, CRM
Location: 63.2832 N, 142.7683 W

Dear Bartly Kleven:

Pursuant to AS 16.05.841 (Fishway Act), the Alaska Department of Fish and Game (ADF&G) Habitat Section has reviewed your proposal to replace a battery of three culverts on the Tetlin Village Road for water management. This amendment request was received by phone on February 3, 2022.

Project Description

Peak Gold, LLC will replace a battery of three perched 24-inch diameter culverts on the existing Tetlin Village Road with three 30-inch diameter culverts as part of the Manh Choh Project. The proposed Manh Choh Project is located approximately ten miles southeast of Tok, Alaska in the Tetlin Hills. The original permit was for installation of three 30-inch culverts on the proposed 5.4-mile Manh Choh Twin Road which will be constructed to eliminate the co-use of mine and village traffic along the existing Tetlin Village Road. This amendment approves the replacement of the nearby Tetlin Village Road culverts.

Fishway Act

This unnamed stream is likely seasonally connected to the Tok River and therefore may support resident fish species such as slimy sculpin. Your project as proposed is not anticipated to obstruct the free passage of fish.

In accordance with AS 16.05.841, your project is approved subject to the project description and permit terms, with the following stipulation:

1. The culverts shall be constructed, operated, and maintained for the life of the structures to ensure fish passage. Any obstruction to the passage of fish (e.g., perched culvert, outwash gravels, and/ or excessive water velocities) shall be restored to the satisfaction of the Habitat Section. The Habitat Section shall be notified, and its approval granted before any instream culvert maintenance activities occur.

Permit Terms

This letter constitutes a permit issued under the authority of AS 16.05.841 and must be retained on site during project activities. Please be advised that this determination applies only to activities regulated by the Habitat Section of ADF&G; other agencies also may have jurisdiction under their respective authorities. This determination does not relieve you of your responsibility to secure other permits; state, federal, or local. You are still required to comply with all other applicable laws.

You are responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project. For any activity that significantly deviates from the approved plan, you shall notify the ADF&G Habitat Section and obtain written approval in the form of a permit amendment before beginning the activity. Any action that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any provision contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G Habitat Section. Therefore, it is recommended that you consult the Habitat Section before considering any deviation from the approved plan.

You shall give an authorized representative of the state free and unobstructed access to the permit site, at safe and reasonable times, for the purpose of inspecting or monitoring compliance with any provision of this permit. You shall furnish whatever assistance and information the authorized representative reasonably requires for monitoring and inspection purposes.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. You shall mitigate any adverse effect upon fish or wildlife, their habitats, or any restriction or interference with public use that the commissioner determines was a direct result of your failure to comply with this permit or any applicable law.

You shall indemnify, save harmless, and defend the department, its agents, and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or

property arising directly or indirectly from permitted activities or your performance under this permit. However, this provision has no effect if, and only if, the sole proximate cause of the injury is the department's negligence.

Please direct questions about this permit to Habitat Biologist Olivia Edwards at 907-459-7326 or olivia.edwards@alaska.gov.

Sincerely,
Doug Vincent-Lang
Commissioner

By: Audra L. J. Brase
Fairbanks Regional Supervisor

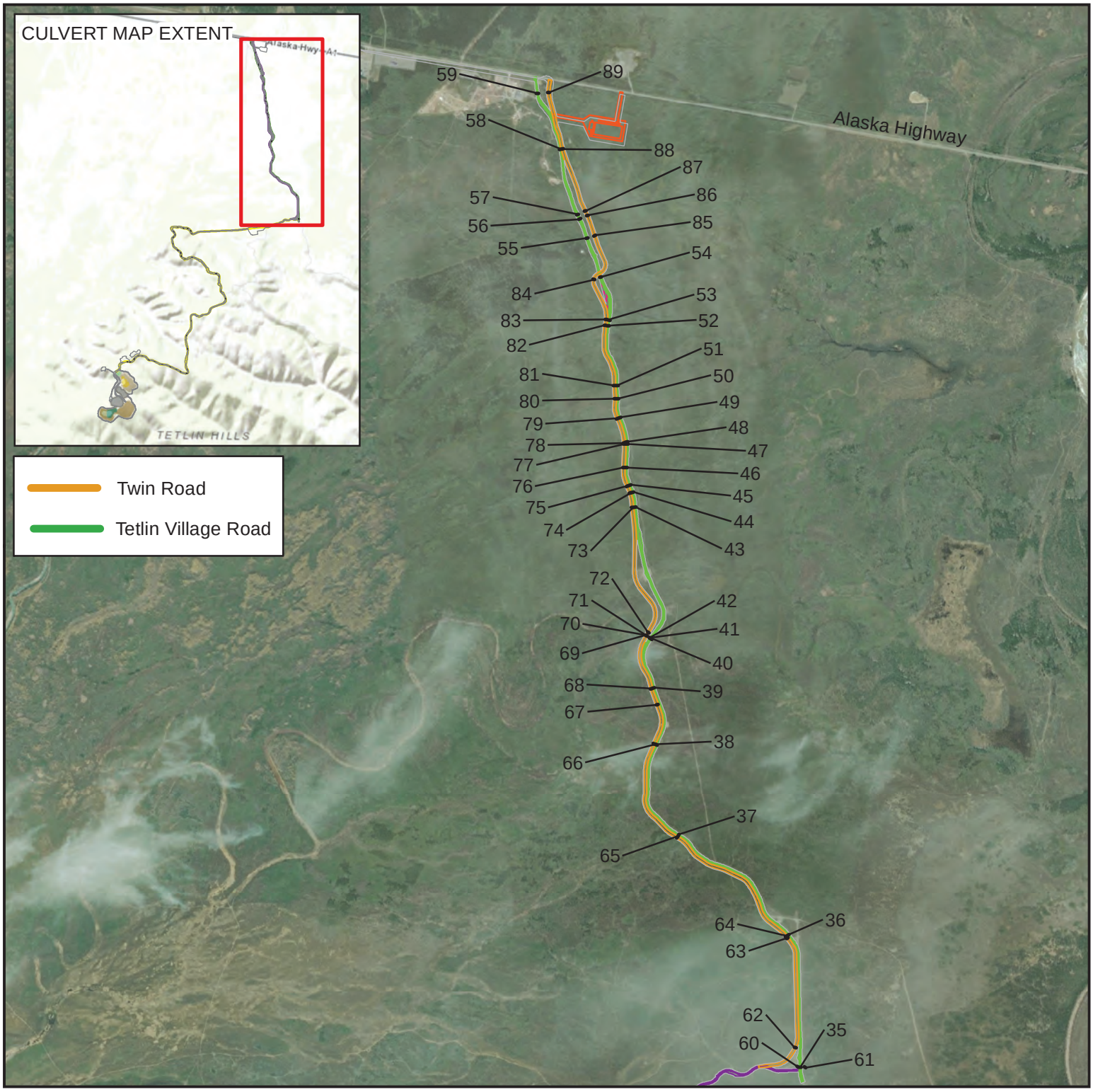
ecc: Al Ott, ADF&G Habitat, Fairbanks
Andy Gryska, ADF&G SF, Fairbanks
Brandy Baker, ADF&G SF, Delta Junction
Permit Coordinator, ADF&G SF
Jeanette Brena, Boreal Services, Anchorage
Fairbanks Mining, ADNR Fairbanks
Gillian O'Doherty, ADF&G SF, Anchorage
Tim Pilon, ADEC, Fairbanks
Bob Henszey, USFWS, Fairbanks
Ellen Lyons, USACE, Fairbanks
AWT, Northern Detachment, Fairbanks
Ashlee Adoko, ADNR OPMP

one/AB

KINROSS Manh Choh
A JV with Contango ORE

Appendix 3

Culvert Locations



Coordinate System: NAD83 StatePlane Alaska2 FIPS 5002 ft.

December 2021

Legend

- Tetlin Village Road
- Manh Choh Twin Road
- Manh Choh Site Road
- Camp Pad
- Culverts

Manh Choh Culverts

N

Miles

0 0.4 0.8 1.2

Note: map for conceptual use only.
Map made by Rose Hart (SLR)
on behalf of Peak Gold and BES.

Peak Gold, LLC - Manh Choh Project
Culvert Summary Table

PIPE NO.	ROAD ALIGNMENT	STATION	SIZE / LENGTH		INVERT ELEVATION		LOCATION	
			24"	30"	LT	RT	LATITUDE (Degrees N)	LONGITUDE (Degrees W)
35	Tetlin Village Road	11+17	46'		1,621.89'	1,621.70'	63.253769	-142.744003
36	Tetlin Village Road	44+99	50'		1,625.42'	1,625.85'	63.262817	-142.746048
37	Tetlin Village Road	83+58	54'		1,633.44'	1,635.94'	63.269554	-142.762924
38	Tetlin Village Road	109+99	60'		1,641.61'	1,641.33'	63.275761	-142.766602
39	Tetlin Village Road	124+99	50'		1,643.07'	1,643.24'	63.279606	-142.766953
40	Tetlin Village Road	138+28		66'	1,638.80'	1,639.35'	63.283001	-142.767487
41	Tetlin Village Road	138+32		66'	1,638.77'	1,639.33'	63.282993	-142.767502
42	Tetlin Village Road	138+36		66'	1,638.81'	1,639.29'	63.282986	-142.767517
43	Tetlin Village Road	173+37	58'		1,635.50'	1,635.81'	63.291969	-142.770142
44	Tetlin Village Road	177+12	74'		1,632.85'	1,633.39'	63.292980	-142.770554
45	Tetlin Village Road	179+00	58'		1,634.33'	1,634.84'	63.293461	-142.770966
46	Tetlin Village Road	183+56	60'		1,634.27'	1,633.50'	63.294663	-142.771530
47	Tetlin Village Road	189+50	58'		1,633.66'	1,632.85'	63.296288	-142.771454
48	Tetlin Village Road	190+00	54'		1,633.52'	1,633.74'	63.296421	-142.771484
49	Tetlin Village Road	196+37	52'		1,632.45'	1,632.87'	63.298084	-142.772598
50	Tetlin Village Road	201+20	50'		1,631.95'	1,632.40'	63.299370	-142.772934
51	Tetlin Village Road	204+57	56'		1,631.45'	1,631.22'	63.300285	-142.773087
52	Tetlin Village Road	220+01	56'		1,627.99'	1,626.43'	63.304359	-142.774551
53	Tetlin Village Road	221+46	58'		1,627.38'	1,626.70'	63.304749	-142.774399
54	Tetlin Village Road	232+75	56'		1,628.39'	1,626.72'	63.307678	-142.775772
55	Tetlin Village Road	243+08	50'		1,628.29'	1,629.15'	63.310329	-142.777908
56	Tetlin Village Road	248+21	50'		1,629.44'	1,629.68'	63.311638	-142.779038
57	Tetlin Village Road	249+46	48'		1,629.51'	1,629.61'	63.311939	-142.779388
58	Tetlin Village Road	266+50	48'		1,639.04'	1,638.85'	63.316399	-142.782135
59	Tetlin Village Road	281+89	52'		1,634.42'	1,634.23'	63.320202	-142.785736
60	Tetlin Village Road	11+28	42'		1,624.05'	1,623.90'	63.253788	-142.744385
61	Tetlin Village Road	10+11	44'		1,622.50'	1,622.40'	63.253773	-142.743256
62	Manh Choh Twin Road	11+02	46'		1,624.26'	1,624.00'	63.255116	-142.744812
63	Manh Choh Twin Road	38+99	46'		1,625.81'	1,625.60'	63.262589	-142.746170
64	Manh Choh Twin Road	39+56	50'		1,626.16'	1,625.38'	63.262714	-142.746368
65	Manh Choh Twin Road	77+86	58'		1,634.62'	1,635.39'	63.269421	-142.763092
66	Manh Choh Twin Road	105+18	56'		1,641.58'	1,641.27'	63.275730	-142.766449
67	Manh Choh Twin Road	115+51	46'		1,642.36'	1,642.63'	63.278477	-142.766403
68	Manh Choh Twin Road	119+75	46'		1,642.47'	1,642.18'	63.279564	-142.767304
69	Manh Choh Twin Road	133+94		46'	1,638.44'	1,638.01'	63.283211	-142.768265
70	Manh Choh Twin Road	133+98		46'	1,638.39'	1,638.27'	63.283192	-142.768127
71	Manh Choh Twin Road	134+02		46'	1,638.39'	1,638.40'	63.283230	-142.768250
72	Manh Choh Twin Road	134+93	46'		1,638.50'	1,638.24'	63.283421	-142.767868
73	Manh Choh Twin Road	168+13	46'		1,634.53'	1,634.91'	63.291950	-142.770523
74	Manh Choh Twin Road	171+80	50'		1,634.35'	1,633.86'	63.292934	-142.770920
75	Manh Choh Twin Road	173+59	52'		1,633.87'	1,634.16'	63.293396	-142.771301
76	Manh Choh Twin Road	178+44	46'		1,633.73'	1,633.33'	63.294670	-142.771942
77	Manh Choh Twin Road	184+30	52'		1,632.62'	1,632.00'	63.296269	-142.771866
78	Manh Choh Twin Road	184+61	46'		1,632.86'	1,632.56'	63.296356	-142.771881
79	Manh Choh Twin Road	190+96	48'		1,632.04'	1,631.70'	63.298016	-142.772949
80	Manh Choh Twin Road	196+03	48'		1,632.18'	1,631.84'	63.299362	-142.773346
81	Manh Choh Twin Road	199+40	48'		1,632.00'	1,631.63'	63.300282	-142.773483
82	Manh Choh Twin Road	214+96	50'		1,627.36'	1,627.09'	63.304386	-142.774963
83	Manh Choh Twin Road	216+42	46'		1,627.23'	1,627.67'	63.304783	-142.774841
84	Manh Choh Twin Road	227+12	46'		1,628.08'	1,627.71'	63.307514	-142.776794
85	Manh Choh Twin Road	239+86	46'		1,628.18'	1,627.86'	63.310494	-142.776886
86	Manh Choh Twin Road	245+24	46'		1,628.87'	1,628.44'	63.311890	-142.777908
87	Manh Choh Twin Road	246+49	46'		1,629.07'	1,629.47'	63.312199	-142.778244
88	Manh Choh Twin Road	263+07	48'		1,639.03'	1,638.68'	63.316429	-142.781799
89	Manh Choh Twin Road	277+64	46'		1,633.16'	1,632.90'	63.320274	-142.784164

Notes:

1. Culverts located in the upland Manh Choh Site Road are excluded from this table.

2. Tetlin Village Road culverts may also need to be replaced to allow water to flow through both embankments (Manh Choh Twin Road and Tetlin Village Road).

Appendix 4

Wetland Assessment Data Forms

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** Flat Disturbance

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

[X] Wetland/waterbody potentially affected by a proposed project [ ] Mitigation wetlands; pre-construction

[ ] Mitigation wetlands; post-construction [ ] Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 3.8 (measured, e.g., in GIS)

9. Assessment area (AA) size: 50 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS4	B		30
PSS1/4	B		30
PSS1/FO4	B		20
PFO4	B		10
PSS1	B		10

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Flat	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF**)

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare Common **Abundant**

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	**H**
2 classes; or 1 class if forested	M
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- __ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
Low *disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate *disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High *disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: _____ acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: _____ feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D _____ feet X A _____ acres = _____ acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub _____% plus the additional % of the flooded wetland that is hummocky _____% = _____ % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: NA Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: NA Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: NA Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.4

iv. Final Score and Rating: 0.4 M Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

____ The AA is a slope wetland (HGM type)
____ Springs or seeps are known or observed
____ Vegetation growing during dormant season
____ Wetland occurs at the toe of a natural slope
____ AA permanently flooded during dry periods
____ Wetland contains an outlet, but no inlet
____ Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

____ Permeable substrate present without underlying impeding layer
____ Wetland contains inlet but no outlet
____ Stream is a known 'losing' stream; discharge decreases downstream
____ Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	(NA)			

iv. Final Score and Rating: NA Enter on the summary page on the Groundwater Discharge/Recharge row.
Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	.3L	(.2L)
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.2 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.
Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	M	0.7	1.0		
C. General Fish Support		NA	NA		
D. Water Storage		NA	NA		
E. Sediment/Nutrient/Toxicant Removal		NA	NA		
F. Sediment/Shoreline Stabilization		NA	NA		
G. Production Export/Food Chain Support		0.4	1.0		
H. Groundwater Discharge/Recharge		NA	NA		
I. Uniqueness		0.2	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		1.3	4.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.325		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
X Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 2 (3) 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** Slope Impacts

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

[X] Wetland/waterbody potentially affected by a proposed project [ ] Mitigation wetlands; pre-construction

[ ] Mitigation wetlands; post-construction [ ] Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 1.4 (measured, e.g., in GIS)

9. Assessment area (AA) size: 20 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1	B		30
PSS1/EM1	C		30
PEM1/SS1	C		20
PFO4	B		15
PEM1	C		5

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Slope	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF**)

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	**H**
2 classes; or 1 class if forested	M
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- __ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
Low *disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate *disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High *disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.9 H Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 10 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 0.5 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 0.5 feet X A 10 acres = 5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 80 % plus the additional % of the flooded wetland that is hummocky 5 % = 85 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.				Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	*Duration of surface water adjacent to rooted vegetation in the AA*		
	Permanent / Perennial	*Seasonal / Intermittent*	*Temporary / Ephemeral*
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	*General Wildlife Habitat Rating (14B.iii.)*		
	E/H	*M*	*L*
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	*Vegetated component >5 acres*						*Vegetated component 1-5 acres*						*Vegetated component <1 acre*					
B	*High*		*Moderate*		*Low*		*High*		*Moderate*		*Low*		*High*		*Moderate*		*Low*	
C	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.8

iv. Final Score and Rating: 0.8 H Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

- [X] The AA is a slope wetland (HGM type)
- [X] Springs or seeps are known or observed
- [ ] Vegetation growing during dormant season
- [ ] Wetland occurs at the toe of a natural slope
- [ ] AA permanently flooded during dry periods
- [ ] Wetland contains an outlet, but no inlet
- [ ] Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

- [ ] Permeable substrate present without underlying impeding layer
- [ ] Wetland contains inlet but no outlet
- [ ] Stream is a known 'losing' stream; discharge decreases downstream
- [ ] Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	1H	(.7M)	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row.

Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.

Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.9	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	M	0.7	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	H	0.9	1.0		
G. Production Export/Food Chain Support	H	0.8	1.0		
H. Groundwater Discharge/Recharge	M	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.2	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.65		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
X Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 [2] 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM1 - DS - Exist

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

X Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 22 (measured, e.g., in GIS)

9. Assessment area (AA) size: 22 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1/EM1	C		90
PEM1	F		10

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Riverine	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- __ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
***Low** disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
***Moderate** disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
***High** disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1: 0.1 L (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: 0.1 L Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 22 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 1 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 22 feet X A 1 acres = 22 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 90 % plus the additional % of the flooded wetland that is hummocky 0 % = 90 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.7

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

____ The AA is a slope wetland (HGM type)
____ Springs or seeps are known or observed
____ Vegetation growing during dormant season
____ Wetland occurs at the toe of a natural slope
____ AA permanently flooded during dry periods
____ Wetland contains an outlet, but no inlet
____ Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

__X__ Permeable substrate present without underlying impeding layer
____ Wetland contains inlet but no outlet
__X__ Stream is a known 'losing' stream; discharge decreases downstream
____ Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	1H	.7M	(.4M)	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 0.4 M Enter on the summary page on the Groundwater Discharge/Recharge row.
Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.
Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.8	1.0		
C. General Fish Support	L	0.1	1.0		
D. Water Storage	H	0.9	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	M	0.7	1.0		
G. Production Export/Food Chain Support	H	0.7	1.0		
H. Groundwater Discharge/Recharge	M	0.4	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		4.8	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.53		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
X Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM1 - DS - Restore

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

X Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 22 (measured, e.g., in GIS)

9. Assessment area (AA) size: 22 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1/EM1	C		90
PEM1	F		10

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Riverine	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- __ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
***Low** disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
***Moderate** disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
***High** disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: 0.6 M Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 22 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 1 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 22 feet X A 1 acres = 22 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 90 % plus the additional % of the flooded wetland that is hummocky 0 % = 90 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 1.0

iv. Final Score and Rating: 1.0 H Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

____ The AA is a slope wetland (HGM type)
____ Springs or seeps are known or observed
____ Vegetation growing during dormant season
____ Wetland occurs at the toe of a natural slope
____ AA permanently flooded during dry periods
____ Wetland contains an outlet, but no inlet
____ Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

__X__ Permeable substrate present without underlying impeding layer
____ Wetland contains inlet but no outlet
__X__ Stream is a known 'losing' stream; discharge decreases downstream
____ Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	1H	(.7M)	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row.
Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.
Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.8	1.0		
C. General Fish Support	M	0.6	1.0		
D. Water Storage	H	0.9	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	H	0.9	1.0		
G. Production Export/Food Chain Support	H	1.0	1.0		
H. Groundwater Discharge/Recharge	M	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		6.1	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.68		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
_X_ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM1 - US - Exist

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

X Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 5 (measured, e.g., in GIS)

9. Assessment area (AA) size: 5 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1/EM1	C		75
PEM1	F		25

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Riverine	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- __ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
***Low** disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
***Moderate** disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
***High** disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1: 0.5 M (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: 0.5 M Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 1 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 5 feet X A 1 acres = 5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 75 % plus the additional % of the flooded wetland that is hummocky 0 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

____ The AA is a slope wetland (HGM type)
____ Springs or seeps are known or observed
____ Vegetation growing during dormant season
____ Wetland occurs at the toe of a natural slope
____ AA permanently flooded during dry periods
____ Wetland contains an outlet, but no inlet
____ Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

__X__ Permeable substrate present without underlying impeding layer
____ Wetland contains inlet but no outlet
__X__ Stream is a known 'losing' stream; discharge decreases downstream
____ Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	1H	(.7M)	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row.
Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.
Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.8	1.0		
C. General Fish Support	M	0.5	1.0		
D. Water Storage	M	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	H	0.9	1.0		
G. Production Export/Food Chain Support	H	0.9	1.0		
H. Groundwater Discharge/Recharge	M	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.6	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.62		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
_X_ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM1 - US - Restore

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

X Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 5 (measured, e.g., in GIS)

9. Assessment area (AA) size: 5 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1/EM1	C		75
PEM1	F		25

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Riverine	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- X abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- __ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
***Low** disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
***Moderate** disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
***High** disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.8 H Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle **NA** here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: 0.6 M Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 1 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 5 feet X A 1 acres = 5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 75 % plus the additional % of the flooded wetland that is hummocky 0 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

14H. Groundwater Discharge/Recharge: (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

____ The AA is a slope wetland (HGM type)
____ Springs or seeps are known or observed
____ Vegetation growing during dormant season
____ Wetland occurs at the toe of a natural slope
____ AA permanently flooded during dry periods
____ Wetland contains an outlet, but no inlet
____ Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

__X__ Permeable substrate present without underlying impeding layer
____ Wetland contains inlet but no outlet
__X__ Stream is a known 'losing' stream; discharge decreases downstream
____ Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	1H	(.7M)	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 0.7 M Enter on the summary page on the Groundwater Discharge/Recharge row.
Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.
Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.8	1.0		
C. General Fish Support	M	0.6	1.0		
D. Water Storage	M	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	H	0.9	1.0		
G. Production Export/Food Chain Support	H	0.9	1.0		
H. Groundwater Discharge/Recharge	M	0.7	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.7	9.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.63		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
X Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
X Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM2 - Dn S - Exist

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

X Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 1.5 (measured, e.g., in GIS)

9. Assessment area (AA) size: 1.5 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1	C		70
PEM1	C		30

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Slope	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	moderate disturbance	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	M
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	0L

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- __ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
Low *disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate *disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High *disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.5 M Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 1.5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 1 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 1 feet X A 1.5 acres = 1.5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 70 % plus the additional % of the flooded wetland that is hummocky 5 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.4 M Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.8

iv. Final Score and Rating: 0.8 H Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

- [X] The AA is a slope wetland (HGM type)
- [ ] Springs or seeps are known or observed
- [ ] Vegetation growing during dormant season
- [ ] Wetland occurs at the toe of a natural slope
- [ ] AA permanently flooded during dry periods
- [X] Wetland contains an outlet, but no inlet
- [ ] Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

- [ ] Permeable substrate present without underlying impeding layer
- [ ] Wetland contains inlet but no outlet
- [ ] Stream is a known 'losing' stream; discharge decreases downstream
- [ ] Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	(1H)	.7M	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 1.0 H Enter on the summary page on the Groundwater Discharge/Recharge row.

Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.

Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	M	0.5	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	M	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	M	0.4	1.0		
F. Sediment/Shoreline Stabilization	M	0.7	1.0		
G. Production Export/Food Chain Support	H	0.8	1.0		
H. Groundwater Discharge/Recharge	H	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		4.3	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.5375		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
_X_ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM2 - Dn S - Restore

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

X Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 1.5 (measured, e.g., in GIS)

9. Assessment area (AA) size: 1.5 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1	C		70
PEM1	C		30

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Slope	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- __ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
***Low** disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
***Moderate** disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
***High** disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 1.5 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 1 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 1 feet X A 1.5 acres = 1.5 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 70 % plus the additional % of the flooded wetland that is hummocky 5 % = 75 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.6 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.				Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	*Duration of surface water adjacent to rooted vegetation in the AA*		
	Permanent / Perennial	*Seasonal / Intermittent*	*Temporary / Ephemeral*
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 1 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	*General Wildlife Habitat Rating (14B.iii.)*		
	E/H	*M*	*L*
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	*Vegetated component >5 acres*						*Vegetated component 1-5 acres*						*Vegetated component <1 acre*					
B	*High*		*Moderate*		*Low*		*High*		*Moderate*		*Low*		*High*		*Moderate*		*Low*	
C	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.8

iv. Final Score and Rating: 0.8 H Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

- [X] The AA is a slope wetland (HGM type)
- [ ] Springs or seeps are known or observed
- [ ] Vegetation growing during dormant season
- [ ] Wetland occurs at the toe of a natural slope
- [ ] AA permanently flooded during dry periods
- [X] Wetland contains an outlet, but no inlet
- [ ] Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

- [ ] Permeable substrate present without underlying impeding layer
- [ ] Wetland contains inlet but no outlet
- [ ] Stream is a known 'losing' stream; discharge decreases downstream
- [ ] Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	(1H)	.7M	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 1.0 H Enter on the summary page on the Groundwater Discharge/Recharge row.

Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.

Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	M	0.7	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	M	0.6	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	H	1.0	1.0		
G. Production Export/Food Chain Support	H	0.8	1.0		
H. Groundwater Discharge/Recharge	H	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.3	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.6625		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
_X_ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM2 - US - Exist

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

____ Wetland/waterbody potentially affected by a proposed project ___X___ Mitigation wetlands; pre-construction

____ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 0.5 (measured, e.g., in GIS)

9. Assessment area (AA) size: 6 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1	C		80
PEM1	C		20

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Slope	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- __ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
Low *disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate *disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High *disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 6 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 0.5 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 0.5 feet X A 6 acres = 3 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 80 % plus the additional % of the flooded wetland that is hummocky 5 % = 85 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	(.4M)	.3L	.2L	.1L

ii. Final Score and Rating: 0.4 M Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	(1H)	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 1 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	(M)	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	(.8H)	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
(**Y**) **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

- [X] The AA is a slope wetland (HGM type)
- [ ] Springs or seeps are known or observed
- [ ] Vegetation growing during dormant season
- [ ] Wetland occurs at the toe of a natural slope
- [ ] AA permanently flooded during dry periods
- [X] Wetland contains an outlet, but no inlet
- [ ] Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

- [ ] Permeable substrate present without underlying impeding layer
- [ ] Wetland contains inlet but no outlet
- [ ] Stream is a known 'losing' stream; discharge decreases downstream
- [ ] Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	(1H)	.7M	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 1.0 H Enter on the summary page on the Groundwater Discharge/Recharge row.

Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.

Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.8	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	M	0.7	1.0		
E. Sediment/Nutrient/Toxicant Removal	M	0.4	1.0		
F. Sediment/Shoreline Stabilization	H	1.0	1.0		
G. Production Export/Food Chain Support	H	0.9	1.0		
H. Groundwater Discharge/Recharge	H	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.1	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.6375		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
___ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
X Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

Category: 1 (2) 3 4

Appendix A
Wetland Assessment Data Form

Use this form to assess areas that are primarily wetlands (versus waterbodies). For waterbodies, use the Waterbody Categorization Form.

1. Project name and ADOT&PF #: Manh Choh **2. Assessment Area #(s):** PRM2 - US - Restore

3. Evaluation date: Mo. 4 Day 18 Yr. 22 **4. Evaluator(s) and affiliation:** Zach Baer, PWS - Stantec

5. Purpose of evaluation:

____ Wetland/waterbody potentially affected by a proposed project ____ Mitigation wetlands; pre-construction

_X_ Mitigation wetlands; post-construction ____ Other _____

6. Wetland location(s):

Legal: T ____ N or S (circle one); R ____ E or W; S _____ ; and T ____ N or S; R ____ E or W; S _____ ; _____ Meridian

Approx. stationing or mileposts or pertinent project component: _____

Lat/long: _____ **Datum:** NAD 83 **Nearest community:** Tok, AK

Watershed: _____ (smallest named stream), tributary of _____ Ecoregion (from USCOE 2007): _____

7. Identifying numbers of related data: wetland determination forms See PJD photos _____

GPS waypoint # _____ other _____

Map (#) showing AA: _____ (closely follow the user's manual instructions for identifying the AA)

Briefly describe the features that define the limits of the AA (e.g., tributary, wetland/upland boundary, extreme low tide elevation)**:**

8. Wetland size (total acres, not just AA): _____ (visually estimated) or 0.5 (measured, e.g., in GIS)

9. Assessment area (AA) size: 6 acres (visually estimated) or _____acres (measured)

Acreage of the AA MINUS the part that is waterbody that will be separately assessed using the waterbody form: _____ acres of wetland in AA

10. Classification of Wetland and Waterbody in the Wetland AA:

Class (Cowardin)	Water Regime (Cowardin)	Modifier (if any; Cowardin)	% of AA
PSS1	C		80
PEM1	C		20

Abbreviations:

Cowardin Classes: Forested Wetland (**FO**), Scrub-Shrub Wetland (**SS**), Emergent Wetland (**EM**), Moss-lichen Wetland (**ML**), Aquatic Bed (**AB**), Unvegetated (**UN**)

Water (Inundation) Regimes: Permanent/Perennial (**P/P**), Seasonal/Intermittent (**S/I**), Temporary/Ephemeral/Saturated (**T/E**)

Modifiers: Excavated (**X**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**), Beaver-modified (**B**)

HGM Class (Brinson)	% of AA
Slope	100

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Flat (**F**), Lacustrine Fringe (**LF)**

11. Estimated relative abundance (of similar wetlands within the same 6th level hydrologic unit subregion, see definitions in user's manual)**:**

(Circle one) Unknown Rare **Common** Abundant

What information sources did you use for this estimate?

12. **General condition of AA:**

i. Disturbance (see User's manual for descriptions of disturbance levels):

Conditions adjacent to AA / *Conditions within AA*	*Predominant conditions adjacent to (within 500 feet of) the AA, plus any area that drains into the AA*		
	Adjacent land is in a natural state	*Adjacent land has experienced minimal or minor disturbance*	*Adjacent land is substantially disturbed*
AA is in a natural state	low disturbance	low disturbance	moderate disturbance
AA has experienced minimal or minor disturbance	moderate disturbance	**moderate disturbance**	high disturbance
AA is substantially disturbed	high disturbance	high disturbance	high disturbance

Describe the disturbance within the AA (type, age, intensity, source of disturbance, location)**:**

ii. Consider the 6th level HU containing the AA again. If you estimate that **more than 10% of the land in the 6th level HU is disturbed**, circle those bold words, cross out the disturbance level you selected in the matrix above and write in the next higher level of disturbance in the same box.

iii. List any noxious or invasive plant or animal species in the AA or surrounding lands (specify which are in the AA):

iv. Briefly describe the AA and surrounding land use and habitat types (dominant species, water source, topography, approximate slope, inlets and outlets, land use, relationship to other AAs, adjacent vegetation types and land uses)**:**

13. **Structural Diversity of AA:** (based on number of simplified Cowardin **vegetated** classes present, listed in #10 above)

Existing # of Cowardin vegetated classes in AA	***Rating***
≥3 classes; or 2 classes if 1 is forested	H
2 classes; or 1 class if forested	**M**
1 class, and humans do not prevent establishment of additional classes	M
1 class, and humans limit establishment of additional classes	L

14A. Habitat for Federally Listed or Candidate Threatened or Endangered Plants or Animals or Other Species of Concern:

i. Species, Documentation, and Habitat Importance.

AA is Documented (D) or Suspected (S) to contain (circle one based on definitions contained in instructions):

Primary or critical habitat (**list species**) D S species: _____

Secondary habitat (**list species**) D S species: _____

Incidental habitat (**list species**) D S species: _____

None or unknown ☒

ii. Rating (use the conclusions from 14A.i. above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	***doc/ primary***	***sus/ primary***	***doc/ secondary***	***sus/ secondary***	***doc/ incidental***	***sus/ incidental***	***none or unknown***
One or more of the species listed in 14A.i. is a federally Listed or Candidate Threatened or Endangered Species	1H	.8H	.9M	.7M	.3L	.1L	0L
Species listed in 14A.i. are all "Other Species of Concern" (i.e., not listed under the Endangered Species Act)	.8M	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented or suspected use (e.g., observations, records, etc):

iii. Final Score and Rating: 0 L Enter on the summary page on the Habitat for Federally Listed Species row.

14B. General Wildlife Support Rating:

i. Evidence of overall wildlife use in the AA (circle substantial, moderate, or low based on supporting evidence):

Substantial (based on any of the following [check]):
- __ observations of abundant wildlife #s or high species diversity (during any period)
- __ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
- __ presence of extremely limiting habitat features not available in the surrounding area
- __ interviews with local biologists with knowledge of the AA or its habitat type

Minimal (based on any of the following [check]):
- __ few or no wildlife observations during peak use periods
- __ little to no wildlife sign
- __ sparse adjacent upland food sources
- __ interviews with local biologists with knowledge of the AA

Moderate (based on any of the following [check]):
- __ observations of scattered wildlife groups or individuals or relatively few species during peak periods
- X common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
- X upland food sources exist in moderate quantity
- __ interviews with local biologists with knowledge of the AA or its habitat type

ii. Wildlife habitat features Working from top to bottom, circle appropriate AA attributes in matrix to arrive at rating.
Structural diversity is from #13.
For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percentage of the AA (see #10).
Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent See instructions for further definitions of these terms.

Structural diversity (from #13)	***High***								***Moderate***								***Low***			
Class cover distribution (all vegetated classes)	***Even***				***Uneven***				***Even***				***Uneven***				***Even***			
Longest duration of surface water in ≥ 10% of AA, or immediately abutting the AA	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***	***P/P***	***S/I***	***T/E***	***A***
Low *disturbance at AA (see #12i & 12ii)*	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate *disturbance at AA (see #12i & 12ii)*	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High *disturbance at AA (see #12i & 12ii)*	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i. and ii. above and the matrix below to arrive at [circle] the functional points and rating)

	Wildlife habitat features rating (ii)			
Evidence of wildlife use (i)	***Exceptional***	***High***	***Moderate***	***Low***
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	.3L
Minimal	.6M	.4M	.2L	.1L

iv. Final Score and Rating: 0.7 M Enter on the summary page on the General Wildlife Support row.
Comments:

14C. **General Fish Support Rating:** (Assess this function if any part of the AA (including the waterbody part of a wetland AA) is used by fish or the existing situation is "correctable" such that the AA could be used by fish. If the AA is not used by fish, fish use is not restorable, or is not desired from a management perspective, then circle NA here and proceed to 14D.)

i. Habitat Quality and Known / Suspected Fish Species in AA (use matrix to arrive at [circle] the functional points and rating)

Duration of surface water in AA	***Permanent / Perennial***			***Seasonal / Intermittent***			***Temporary / Ephemeral***		
Aquatic hiding / resting / escape cover in waterbody(Table 3 in manual)	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***	***Optimal***	***Adequate***	***Poor***
Anadromous salmon species	1E	.8H	.6M	.9H	.7M	.5M	.7M	.5M	.3L
Resident and non-salmon sport and subsistence species	.9H	.7M	.5M	.8H	.6M	.4M	.6M	.4M	.2L
Other resident species	.8H	.6M	.4M	.7M	.5M	.3L	.5M	.3L	.1L

Sources used to identify fish species potentially found in AA:

ii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1)

a) Is fish use of the AA precluded or substantially reduced by a culvert, dike, or other man-made structure or activity **or** is the waterbody included on the current Alaska Department of Environmental Conservation list of Category 5 / Section 303(d) Impaired Waterbodies (unless its impaired uses are named and aquatic life is not listed as impaired)?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

b) Do noxious or invasive plant species or invasive fish species (see Appendices F and G) occur in the AA?

Y **N** If yes, reduce the score in 14C.i. by 0.1:_____ (If no, do not change the score.)

iii. Final Score and Rating: NA Enter on the summary page on the General Fish Support row.

Comments:

14D. **Water Storage:** (Applies to wetlands that flood or pond from overbank flooding, precipitation, or overland flow from uplands. If no wetlands in the AA are subject to inundation or ponding, circle **NA** here and proceed to 14E.)

i. Rating

Estimate the variation in the water volume stored in the **wetland** portion of the AA **that experiences surface ponding or flooding** during the typical year, between break-up and freeze-up. First, identify the part of the AA that is both wetland and has surface water sometime between breakup and freezeup (the "flooded wetland"). Estimate its area in acres: 6 acres = A.

Second, estimate the range in that flooded wetland's water surface elevation between its lowest and highest elevation during the unfrozen period, in feet. Call this D for depth: 0.5 feet = D. For example, if the water table is typically one foot below the ground surface during the driest part of summer, and is typically 6 inches above the surface following breakup, the range is 18 inches, or 1.5 feet. Consider evidence such as water marks, staining on vegetation or rocks, drift lines, and the depth to the water table in your soil pit. Consider also the elevation of the wetland surface relative to the elevation of the water surface in an adjacent stream (i.e., does the channel overflow its banks into the wetland?). During a flood, the depth of water over a stream channel is likely to be double its depth when the stream is full to its banks. Consider the area the stream would flood when the water is that deep.

Multiply the range in the flooded wetland's water surface elevation (D) times the area (A) to estimate the maximum storage volume in acre-feet. D 0.5 feet X A 6 acres = 3 acre-feet. Use this storage volume estimate in the matrix below.

Next, determine the portion of the flooded wetland that is forested, shrub-dominated, or is neither of those but is dominated by hummocks or tussocks at least one foot in height: % of AA that experiences water surface fluctuation that is forested or scrub/shrub 80 % plus the additional % of the flooded wetland that is hummocky 5 % = 85 % of flooded wetland with water-slowing roughness. Use this percentage in the second row of the matrix below.

Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.

Estimated maximum acre-feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	**>5 acre-feet**			**1 to 5 acre-feet**			**<1 acre-foot**		
% of flooded wetland classified as forested or scrub/shrub or dominated by hummocks > 1 foot tall	>75%	25-75%	<25%	>75%	25-75%	<25%	>75%	25-75%	<25%
AA contains **no outlet or restricted outlet**	1H	.9H	.6M	.8H	.7M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.8H	.5M	.7M	.6M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.7 M Enter on the summary page on the Water Storage row.

Comments:

iii. Potential Property Protection

Are ≥10 acres of wetland in the AA subject to flooding **AND** are man-made features which may be significantly damaged by floods located within 0.5 mile downstream of the AA (circle)? **Y** **N** **Comments:**

14E. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are, or with the planned project will be, subject to such input, circle **NA** here and proceed to 14F.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low])

Sediment, nutrient, and toxicant input levels within AA	**AA receives or surrounding land use (including proposed future land use) has potential to deliver levels of sediments, nutrients, or toxicants at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication are present, or sources are suspected.**				**Waterbody is on Alaska's Section 303(d) List of Impaired Waterbodies or AA receives or surrounding land use has potential to deliver high levels of sediments, nutrients, or toxicants such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, unnatural turbidity, or signs of eutrophication are present.**			
% cover of vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	.9H	.7M	.6M	.4M	.4M	.3L	.2L	.1L

ii. Final Score and Rating: 0.9 H Enter on the summary page on the Sediment/Nutrient/Toxicant Retention row.
Comments:

14F. Sediment/Shoreline Stabilization: (Applies only if AA occurs on or within the banks of a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If 14F does not apply, circle **NA** here and proceed to 14G.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

For the wetland area subjected to erosive forces, % cover of species with deep, soil-binding root masses	***Duration of surface water adjacent to rooted vegetation in the AA***		
	Permanent / Perennial	***Seasonal / Intermittent***	***Temporary / Ephemeral***
≥ 65%	1H	.9H	.7M
35-64%	.7M	.6M	.5M
< 35%	.3L	.2L	.1L

ii. Final Score and Rating: 1 H Enter on the summary page on the Sediment/Shoreline Stabilization row.
Comments:

14G. Production Export/Terrestrial and Aquatic Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings [circle])

General Fish Habitat Rating (14C.iii.)	***General Wildlife Habitat Rating (14B.iii.)***		
	E/H	***M***	***L***
E/H	H	H	M
M	H	M	M
L	M	M	L
NA	M	M	L

ii. Rating (Working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating.
Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14G.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as defined under #10 above, and A = "absent".)

A	***Vegetated component >5 acres***						***Vegetated component 1-5 acres***						***Vegetated component <1 acre***					
B	***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***		***High***		***Moderate***		***Low***	
C	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***	***Yes***	***No***
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	.3L	.2L
T/E or A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating (**NOTE:** Modified score cannot exceed 1 or be less than 0.1.)
Vegetated Upland Buffer: Area with ≥ 30% plant cover, ≤ 2% noxious or invasive plant cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).
a) Is there an average ≥50-foot-wide vegetated upland buffer around ≥75% of the AA circumference?
Y **N** *If yes, add 0.1 to the score in 14G.ii. above and adjust the rating accordingly:* 0.9

iv. Final Score and Rating: 0.9 H Enter on the summary page on the Production Export row.

Comments:

14H. **Groundwater Discharge/Recharge:** (Check the appropriate indicators in i. and ii. below.)

i. Discharge Indicators

- [X] The AA is a slope wetland (HGM type)
- [ ] Springs or seeps are known or observed
- [ ] Vegetation growing during dormant season
- [ ] Wetland occurs at the toe of a natural slope
- [ ] AA permanently flooded during dry periods
- [X] Wetland contains an outlet, but no inlet
- [ ] Other:_____

ii. Recharge Indicators (NA for fringe wetlands)

- [ ] Permeable substrate present without underlying impeding layer
- [ ] Wetland contains inlet but no outlet
- [ ] Stream is a known 'losing' stream; discharge decreases downstream
- [ ] Other:_____

iii. Rating (use the information from i. and ii. above and the table below to arrive at [circle] the functional points and rating)

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	*S/I*	*T/E*	*None*
Groundwater Discharge or Recharge Indicators Exist	(1H)	.7M	.4M	.1L
Permafrost Underlies Wetland or Insufficient Information Exists	NA			

iv. Final Score and Rating: 1.0 H Enter on the summary page on the Groundwater Discharge/Recharge row.

Comments:

14I. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating)

Replacement potential	**AA contains irreplaceable wetland types [fens, bogs, springs, seeps, or mature (>80-yr-old) forested wetland type] OR a plant association listed as S1, S2, G1, or G2 by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is high OR contains plant association listed as S3, G3, S?, or G? by the AKNHP (Appendix J)**			**AA does not contain irreplaceable wetland types and structural diversity (#13) is low to moderate (Appendix J)**		
Estimated relative abundance of wetland types (from 11)	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***	***rare***	***common***	***abundant***
***Low** disturbance at AA (from 12.i. and ii.)*	1H	.6M	.5M	.8H	.5M	.4M	.7M	.4M	.3L
***Moderate** disturbance at AA (from 12.i. and ii.)*	.9H	.5M	.4M	.7M	.4M	.3L	.6M	(.3L)	.2L
***High** disturbance at AA (from12.i. and ii.)*	.7M	.3L	.2L	.5M	.2L	.1L	.4M	.1L	.1L

ii. Final Score and Rating: 0.3 L Enter on the summary page on the Uniqueness row.

Comments:

14J. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential recreation or education site: (circle) **Y (N)** if 'Yes' continue with the evaluation; if 'No' then circle **(NA)** here and proceed to the overall summary and rating page)

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___ Non-consumptive rec.; ___Other

iii. Rating (use the matrix below to arrive at [circle] the functional points and rating)

Known or Potential Recreation or Education Area	***Known***	***Potential***
Public ownership or public easement with general public access (no permission required)	.2H	.15H
Private ownership with general public access (no permission required)	.15H	.1M
Private or public ownership without general public access, or requiring permission for public access	.1M	.05L

iv. Final Score and Rating: NA Enter on the summary page on the Recreation/Education Potential row.

Comments:

General Site Notes:

FUNCTION AND SERVICE SUMMARY AND OVERALL RATING FOR WETLAND AA #(s):_____

Functions and Services	Rating (E, H, M, L)	Actual Functional Points (0 to 1.0)	Possible Functional Points	Optional: Functional Units Affected (Actual Points x AA Acreage Affected)	Indicate the four most prominent functions with an asterisk (*)
A. Habitat for Federally Listed/Candidate T&E Species or Other Species of Concern	L	0.0	1.0		
B. General Wildlife Support	H	0.8	1.0		
C. General Fish Support		NA	NA		
D. Water Storage	M	0.7	1.0		
E. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0		
F. Sediment/Shoreline Stabilization	H	1.0	1.0		
G. Production Export/Food Chain Support	H	0.9	1.0		
H. Groundwater Discharge/Recharge	H	1.0	1.0		
I. Uniqueness	L	0.3	1.0		
J. Recreation/Education Potential (bonus points)		NA	NA		
Totals:		5.6	8.0		
Percentage of Possible Score (actual points divided by possible points)		%	0.7		

Category 1 Wetland: Must satisfy **one** of the following criteria; otherwise go to Category 2.
___ Score of 0.9 to 1 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for Uniqueness; **or**
___ Score of 0.9 or 1 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Score of 0.9 or 1 functional point for General Fish Support; **or**
_X_ Percent of possible score ≥ 70% (round to nearest whole number); or
___ Percent of possible score ≥ 50% **and** 6th level hydrologic unit subregion has already experienced ≥15% land development.

Category 2 Wetland: Criteria for Category 1 not satisfied **and** meets any **one** of the following criteria; otherwise go to Category 4.
___ Score of 0.8 functional point for Threatened or Endangered Species or Other Species of Concern; **or**
___ Score of 0.9 or 1 functional point for General Wildlife Support; **or**
___ Score of 0.6 to 0.8 functional point for General Fish Support; **or**
___ Score of 0.8 functional point for Uniqueness; **or**
___ Score 0.7 or 0.8 functional point for Water Storage **and** answer to Question 14D.ii. is "yes"; **or**
___ Percent of possible score ≥ 50% (round to nearest whole number).

Category 3 Wetland: Criteria for Categories 1, 2, and 4 are not satisfied.
___ Does not qualify as Category 1, 2, or 4

Category 4 Wetland: Criteria for Categories 1 and 2 not satisfied **and** all of the following criteria are met; if not, go to Category 3.
___ Vegetated wetland component of AA < 1 acre (do not include upland vegetated buffer); **and**
___ Score of 0.5 or lower for Uniqueness; **and**
___ General Wildlife Support is 0.4 or lower; **and**
___ General Fish Support score is 0.3 or lower; **and**
___ If answer to 14D.ii. is "no", score for Water Storage is 0.2, 0.1, or NA; **and**
___ Is not rated "High" for any function or service; **and**
___ Percent of possible score < 35% (round to nearest whole number).

OVERALL ASSESSMENT AREA RATING: (circle appropriate category based on the criteria outlined above)

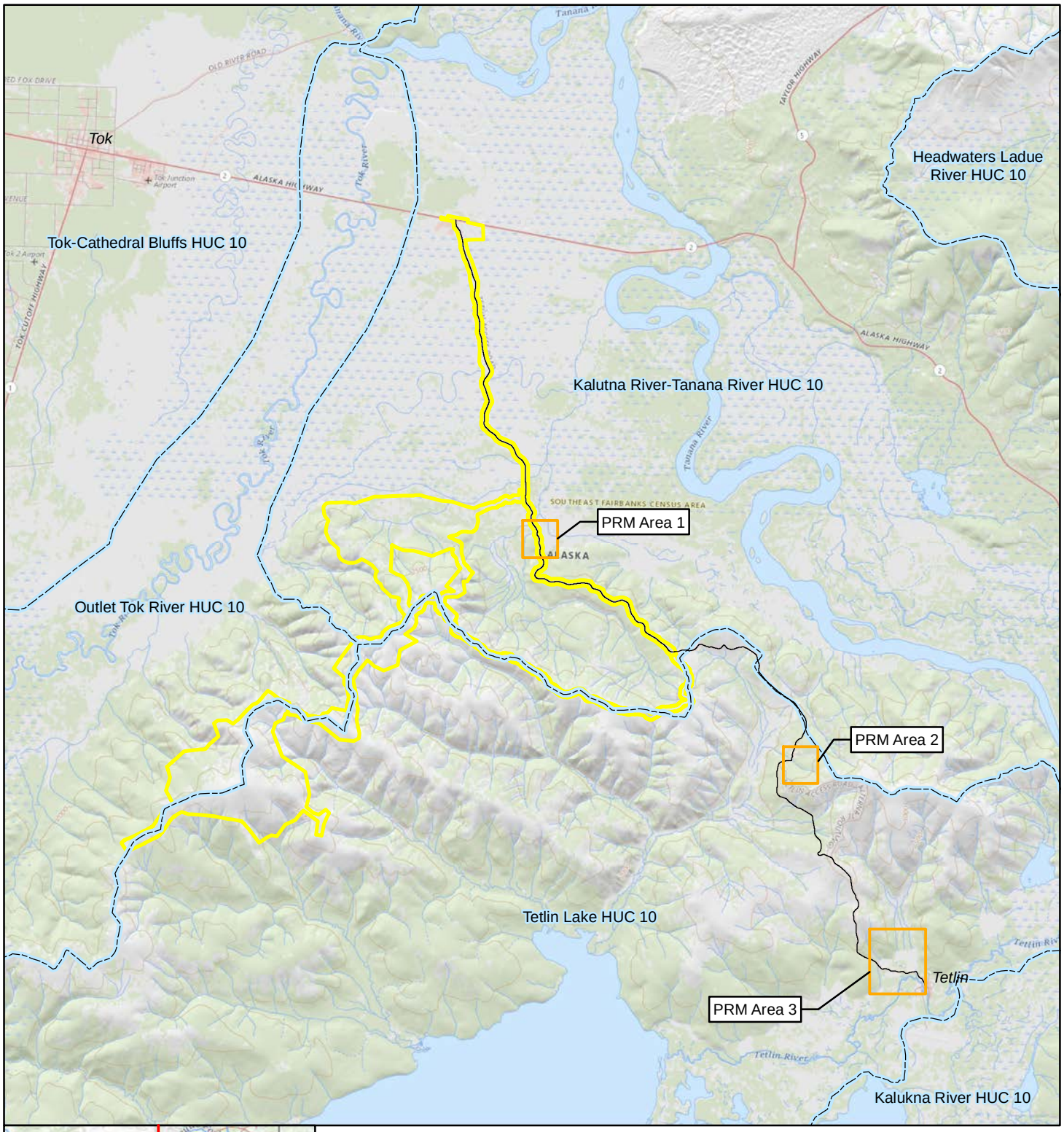
Category: (1) 2 3 4

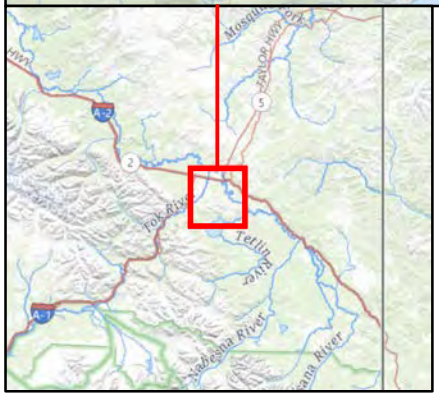
KINROSS Manh Choh
A JV with Contango ORE

Appendix 5

Permittee Responsible Mitigation Figures

Areas 1 - 3





PRM_Area
Tetlin Village Road
HUC 10 Watershed
Wetland Study Area

0 6,400 12,800 19,200 Feet

N
W E
S

(At original document size of 8.5x11)
1:150,000 1 in = 12,500 ft

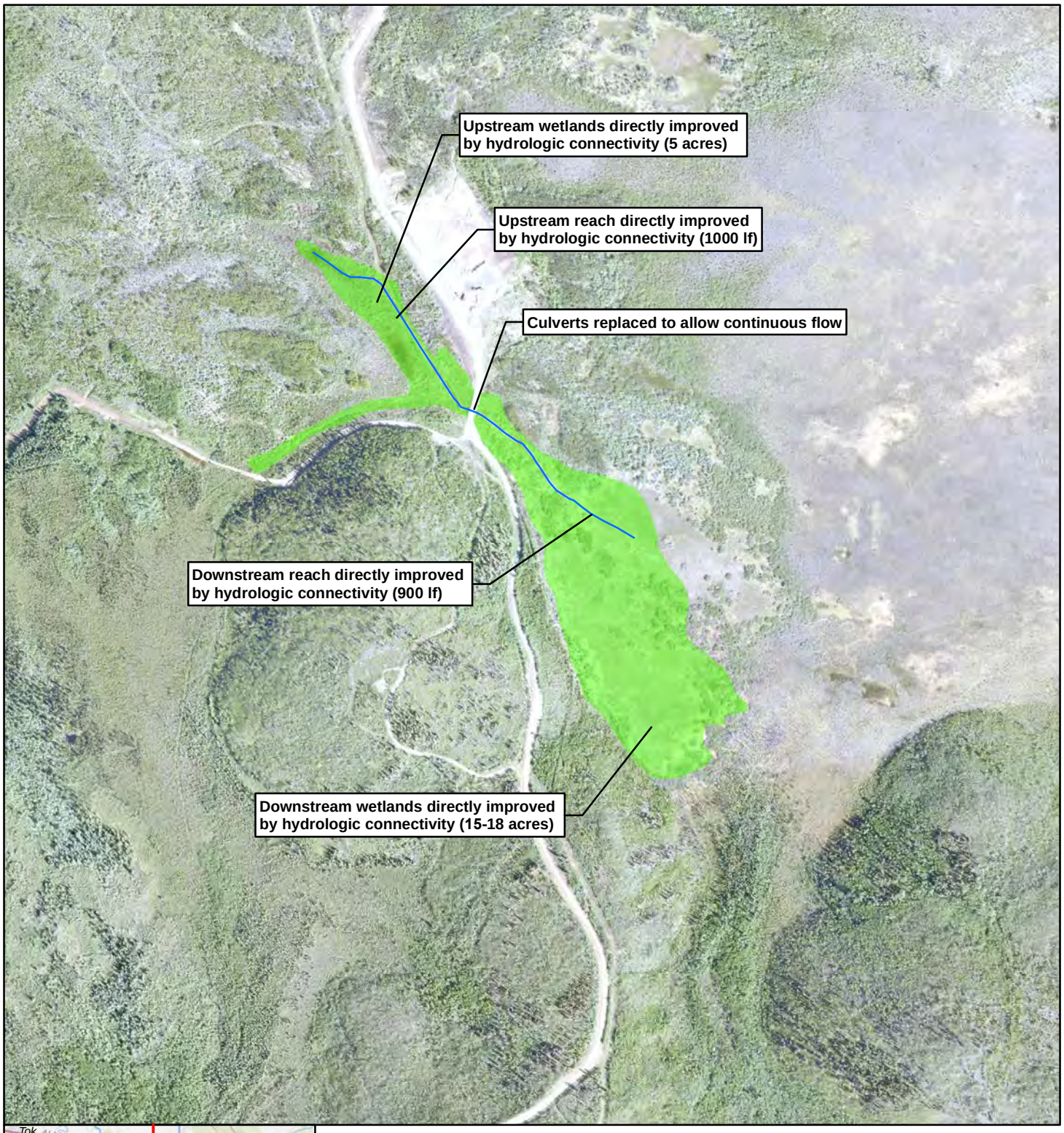
Client Peak Gold LLC

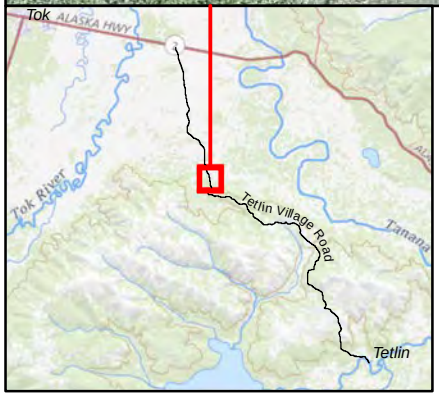
Project Manh Choh Project

Figure **PRM Project Overview**

Figure Number

1





Stream
Wetland

0 320 640 960 Feet

N
W E
S

(At original document size of 8.5x11)
1:7,500 1 in = 625 ft

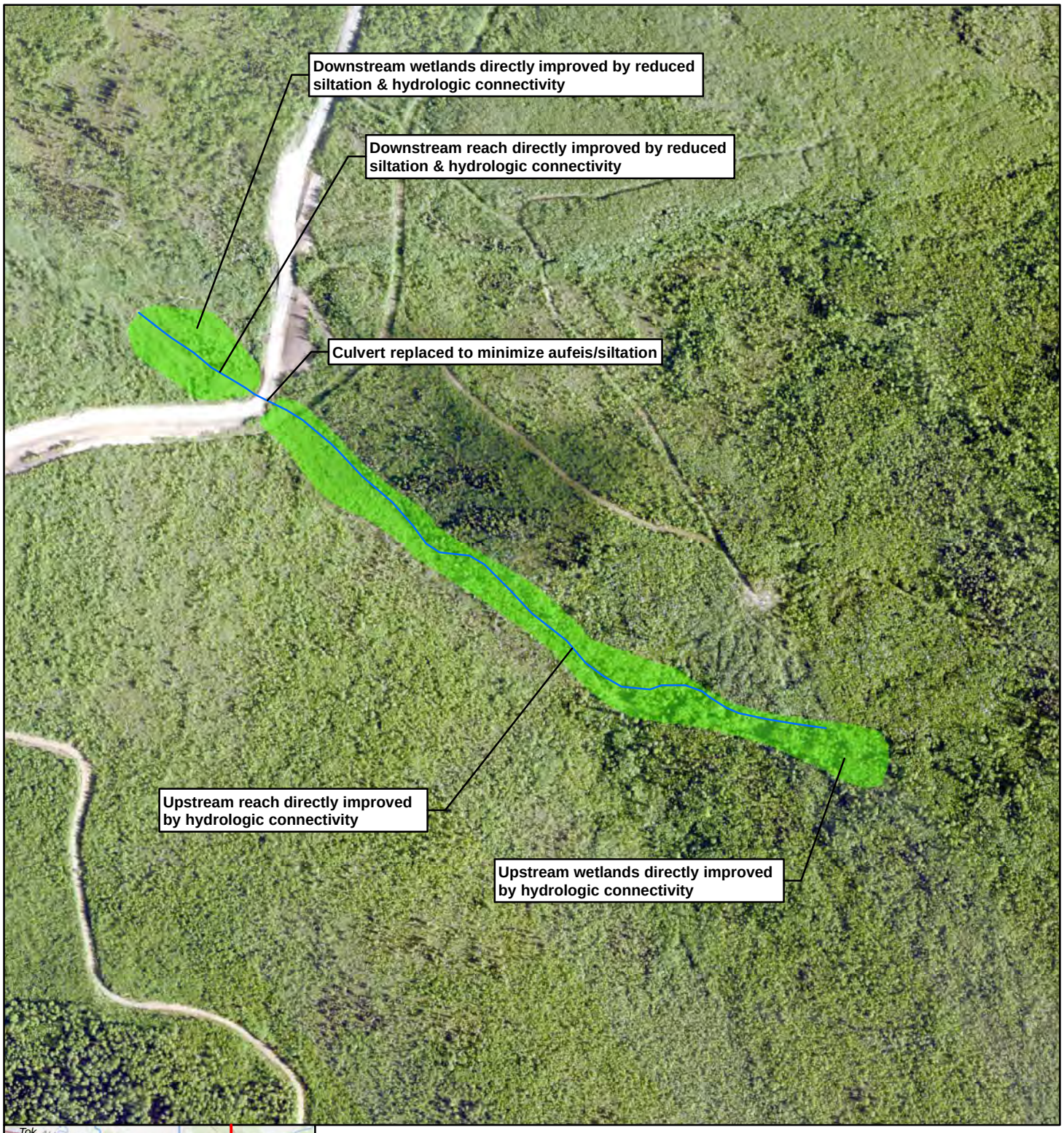
Client Peak Gold LLC

Project Manh Choh Project

Figure **PRM Project 1**

Figure Number

2



Stream
Wetland

0 200 400 600 Feet

N
W E
S

(At original document size of 8.5x11)
1:4,800 1 in = 400 ft

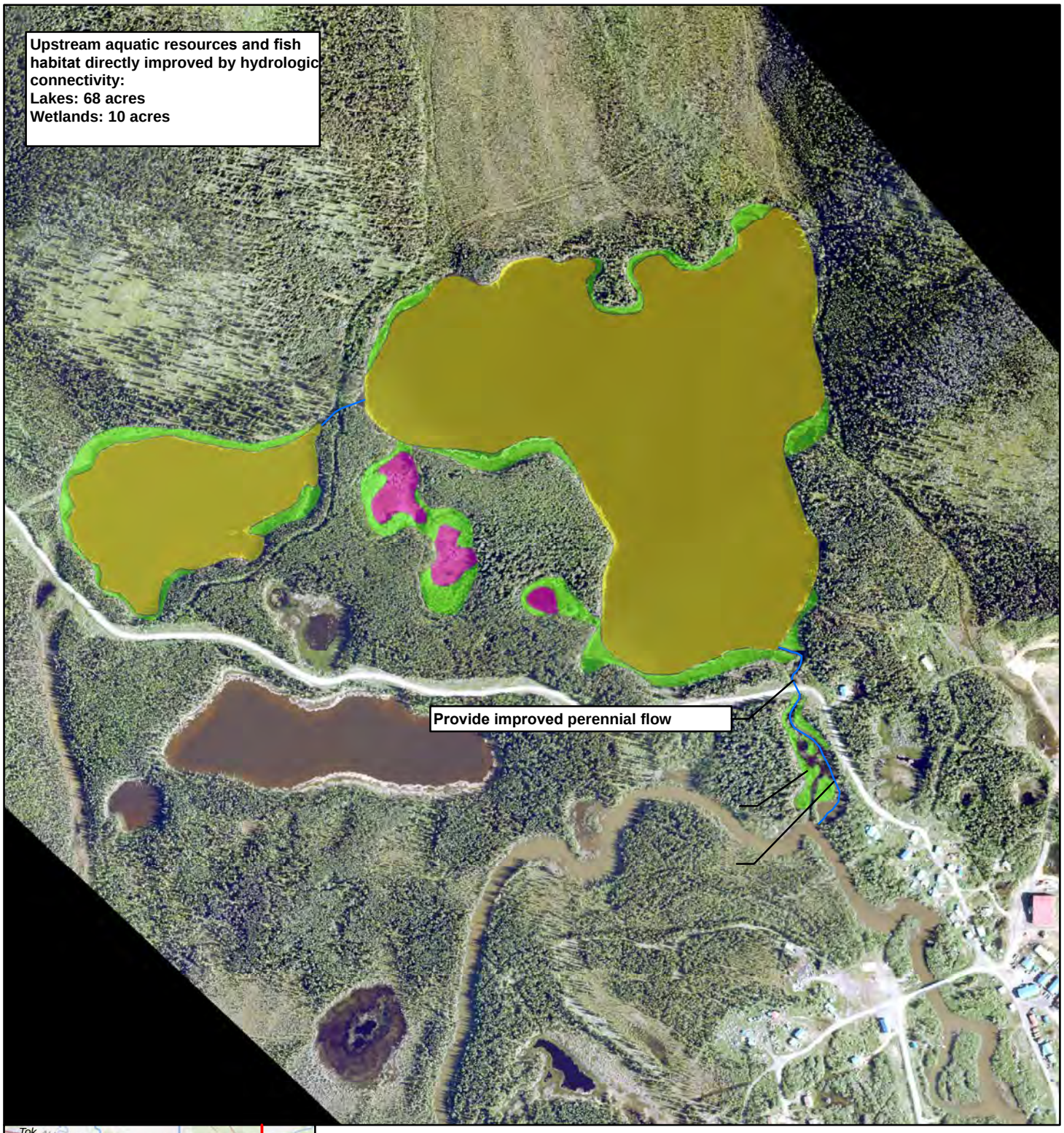
Client Peak Gold LLC

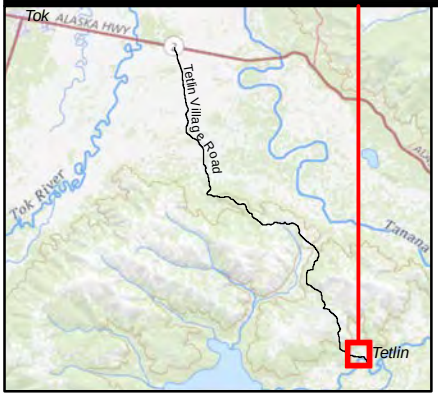
Project Manh Choh Project

Figure **PRM Project 2**

Figure Number

3





Stream
Lake
Wetland
Pond

0 300 600 900 Feet

(At original document size of 8.5x11)
1:7,500 1 in = 625 ft

N
W E
S

Client Peak Gold LLC

Project Manh Choh Project

Figure **PRM Project 3**

Figure Number

4

Perched Culvert at PRM Area 3