APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): March 25, 2020

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Alaska District, POA-2020-00093

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: Alaska Borough: FNSB City: Fort Wainwright
Center coordinates of site (lat/long in degree decimal format): Lat. 64.8192° N., Long. -147.6026° W.
Universal Transverse Mercator: 06W 471412 7188452 UTM
Name of nearest waterbody: Chena River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA, aquatic resource is a lake.
Name of watershed or Hydrologic Unit Code (HUC): Chena River, HUC 19080306

☒Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☐Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒Office (Desk) Determination. Date: March 26, 2020
☐Field Determination. Date(s): November, 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.
There are no *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area.

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: T

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.
There are no *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area.

1. Waters of the U.S.
a. Indicate presence of waters of U.S. in review area (check all that apply):[1]
☐TNWs, including territorial seas
☐Wetlands adjacent to TNWs
☐Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
☐Non-RPWs that flow directly or indirectly into TNWs
☐Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☐Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
☐Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐Impoundments of jurisdictional waters
☒Isolated (interstate or intrastate) waters, including isolated wetlands

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.

[2] For purposes of this form an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months.

b. Identify (estimate) size of waters of the U.S. in the review area:
Non-wetland waters: 36.4 acres, Deep aquatic and non-vegetated lacustrine.
Wetlands: Emergent Palustrine Fringe wetlands: 0.6 acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual/Established by the OHWM/
Elevation of established OHWM (if known): 141.5 meters (based on 2019 CEMML Wetland Delineation)

2. Non-regulated waters/wetlands (check if applicable):[3]

☐Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW:
Summarize rationale supporting determination:

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size:

[3] Supporting documentation is presented in Section III F.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Drainage area:

Average annual rainfall:
Average annual snowfall:

(ii) Physical Characteristics:

(a) Relationship with TNW:

☐Tributary flows directly into TNW.

☐Tributary flows through:

Project waters are :
Project waters are :
Project waters are :
Project waters are :
Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW[5]:
Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐Artificial (man-made). Explain:
☐Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):
Average width:
Average depth:
Average side slopes: Choose an item.

Primary tributary substrate composition (check all that apply):

☐Silts ☐Sands ☐Concrete
☐Cobbles ☐Gravel ☐Muck
☐Bedrock ☐Vegetation. Type/% cover:
☐Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry:
Tributary gradient (approximate average slope):

(c) Flow:

Tributary provides for:
Estimate average number of flow events in review area/year:
Describe flow regime:
Other information on duration and volume:
Surface flow is: Characteristics:
Subsurface flow: No Explain findings:
☐Dye (or other) test performed:

Tributary has (check all that apply):
☐Bed and banks
☐OHWM[6] (check all indicators that apply):

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

[6] A natural or man-made discontinuity in the OHWM does not necessarily server jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

☐clear, natural line impressed on the bank
☐changes in the character of soil
☐shelving
☐vegetation matted down, bent, or absent
☐leaf litter disturbed or washed away
☐sediment deposition
☐water staining
☐other (list):
☐Discontinuous OHWM.[7] Explain:

☐the presence of litter and debris
☐destruction of terrestrial vegetation
☐the presence of wrack line
☐sediment sorting
☐scour
☐multiple observed or predicted flow events
☐abrupt change in plant community

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐High Tide Line indicated by:
☐oil or scum line along shore objects
☐fine shell or debris deposits (foreshore)
☐physical markings/characteristics
☐tidal gauges
☐other (list):

☐Mean High Water Mark indicated by:
☐survey to available datum;
☐physical markings;
☐vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain:
Identify specific pollutants, if known:

(iv) Biological Characteristics. Channel supports (check all that apply):

☐Riparian corridor. Characteristics (type, average width):
☐Wetland fringe. Characteristics:
☐Habitat for:
☐Federally Listed species. Explain findings:
☐Fish/spawn areas. Explain findings:
☐Other environmentally-sensitive species. Explain findings:
☐Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) <u>General Wetland Characteristics:</u>
Properties:
Wetland size:
Wetland type. Explain:
Wetland quality. Explain:
Project wetlands cross or serve as state boundaries. Explain:

(b) <u>General Flow Relationship with Non-TNW:</u>
Flow is: Choose an item. Explain:
Surface flow is:
Characteristics:
Subsurface flow: Explain findings:
☐Dye (or other) test performed:

(c) <u>Wetland Adjacency Determination with Non-TNW:</u>
☐Directly abutting
☐Not directly abutting

[7] Ibid.

☐Discrete wetland hydrologic connection. Explain:
☐Ecological connection. Explain:
☐Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW
Project wetlands are:
Project waters are:
Flow is from:
Estimate approximate location of wetland as within the: floodplain.

(ii) Chemical Characteristics:
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:
Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):
☐Riparian buffer. Characteristics (type, average width):
☐Vegetation type/percent cover. Explain:
☐Habitat for:
☐Federally Listed species. Explain findings:
☐Fish/spawn areas. Explain findings:
☐Other environmentally-sensitive species. Explain findings:
☐Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)
All wetland(s) being considered in the cumulative analysis
Approximately (#) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
Y/N	#	Y/N	#
Y/N	#	Y/N	#
Y/N	#	Y/N	#
Y/N	#	Y/N	#

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the Rapanos Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?

- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. TNWs and Adjacent Wetlands. Check all that apply and provide size estimates in review area:

☐TNWs:

☐Wetlands adjacent to TNWs:

2. RPWs that flow directly or indirectly into TNWs.

☐Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:

☐Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐Tributary waters:

☐Other non-wetland waters: 34.6 acres.

Identify type(s) of waters: Lake and lacustrine fringe. Lake is not connected by surface hydrology.

3. Non-RPWs[8] that flow directly or indirectly into TNWs.

☐Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐Tributary waters:

☐Other non-wetland waters:

Identify type(s) of waters:

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

☐Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

[8] See Footnote #3.

☐Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area:

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area:

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area:

7. **Impoundments of jurisdictional waters.**[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐Demonstrate that impoundment was created from "waters of the U.S.," or
☐Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐which are or could be used for industrial purposes by industries in interstate commerce.
☐Interstate isolated waters. Explain:
☐Other factors. Explain:

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐Tributary waters:
☐Other non-wetland waters:
Identify type(s) of waters:
☐Wetlands:

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.

☒Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).

[9] To complete the analysis refer to the key in Section III D.6 of the Instructional Guidebook.

[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Jurisdiction Following Rapanos*.

☒Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: The presence or absence of Badger Lake and its fringe emergent wetlands would not change the physical, biological or chemical characteristics of the nearest TNW, the Chena River, because its current physical connection to groundwater is essentially unchanged from its original connection. The Lake was originally created in uplands as an excavation pit for gravel extraction: the location was targeted for its coarse alluvial deposits that inherently make its current substrate porous to the Tanana Basin alluvial aquifer, a buried river valley. This aquifer ranges from a few feet thick at the base of Birch Hill to at least 300 feet thick under the Post's main cantonment area. The deposits consist of unconsolidated sediment that such as silt, sand, and gravel; and range in thickness from 10 feet to more than 400 feet before encountering bedrock (U.S. Army Garrison Alaska 2019). It shares the subsurface aquifer with the Chena River and comprises the only hydrologic connection to this TNW.

Surface hydrology to the Chena River was potentially established in the early 2000's when excavation breached the adjacent Palustrine Forested wetlands which were at one point connected to the B-Channel, the modern pathway for Clear Creek (a tributary of the Chena River). However, around this time the lake was also ringed by non-pervious infrastructure and roads acting as berms to overland flows which cut off the surface flow and shallow subsurface flow between the Lake, the Palustrine Forested wetlands, and the B-Channel.

Though Badger Lake is now an open water reservoir with the additional function of storing floodwaters in the Chena River watershed, its essential capacity for pollution abatement, nitrogen and carbon cycling support, and other chemical cycles in the Chena River has not changed due to the area's excavation and the creation of the open water, because the pathway by which water connects the two waterbodies is still the same groundwater reservoir. The capacity to transfer nutrients and organic carbon that support downstream foodwebs is limited to non-existent due to the fact that the water from the lake is chemically altered by substrates and time as it travels northwest through the aquifer to the Chena River. Nutrient inputs undergo cycling process in the aquifer, diluting or deleting the effects of the Lake's inputs before reaching the Chena River.

Biological inputs of the Lake ecosystem to the larger watershed are irrefutable. It provides habitat and lifecycle support for pike, an introduced fish species, and for migratory and resident bird species, especially those species needing lacustrine shore habitat for feeding and refuge. Various species of shorebirds and waterfowl, including Lesser Yellowlegs, Spotted Sandpipers, Semi-palmated Plovers and Red-necked Grebes have been observed using the lake. Adult and juvenile Bonaparte's and Mew Gull are also frequently seen on and around the lake in mid-summer (Fort Wainwright Environmental Division – Natural Resources Department, unpublished). This ecological support is a man-made addition to the Chena River Watershed, and is not directly connected to the TNW itself. There are no anadromous species in the lake, and it is not connected to any other surface waters which would provide ingress or egress for aquatic organisms in the Chena River system.

In summary, Badger Lake has no significant relationships to the physical, chemical, or biological integrity of the Chena River, its closest related TNW.

☐Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐Non-wetland waters (i.e., rivers, streams):.
☒Lakes/ponds: 36.4 acres.
☐Other non-wetland waters: List type of aquatic resource:
☒Wetlands: 0.6 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐Non-wetland waters (i.e., rivers, streams):
☒Lakes/ponds: 36.4acres.
☐Other non-wetland waters: List type of aquatic resource:
☒Wetlands: 0.6 acres.

SECTION IV: DATA SOURCES.
A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: CEMML 2019
Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒Office concurs with data sheets/delineation report.
☐Office does not concur with data sheets/delineation report.
☐Data sheets prepared by the Corps: NA
☒Corps navigable waters' study: US Army Corps of Engineers, Alaska District
U.S. Geological Survey Hydrologic Atlas: National Hydrographic Dataset (accsd. online 2019)
☒USGS NHD data.
☒USGS 8 and 12 digit HUC maps.
☒Alaska District's Approved List of Navigable Waters
☒U.S. Geological Survey map(s). Cite scale & quad name: Fairbanks D–2, 1:63,360 (USGS 1952, minor revisions 1981)
☒USDA Natural Resources Conservation Service Soil Survey. Citation: Greater Fairbanks Area (NRCS 2004, online updates 2009)
☒National wetlands inventory map(s). Cite name: Chena River HU8_19080306 (NWI, accsd online 2018)
☐State/Local wetland inventory map(s): NA
☒FEMA/FIRM maps: FEMA FIRM panel number 02090C4405J, effective on 03/17/2014 (accsd online 02/2020)
☒100-year Floodplain Elevation is: 513 feet. (National Geodectic Vertical Datum of 1929)
☒Photographs: ☒Aerial (Name & Date): ESRI world imagery (accsd 03/2020), Digital Globe imagery database, (accsd online, 02/2020), Pictometry_2012_12in_7_Fairbanks_East.sid (FNSB, 2012)
or ☒Other (Name & Date): Historical aerial imagery in Delineation Report (CEMML 2019)
☒Previous determination(s). File no. and date of response letter: POA-2002-00569, June 05, 2002.
☐Applicable/supporting case law: NA
☐Applicable/supporting scientific literature: NA
☒Other information (please specify):

Citations:

DERA Program, 2016. FWA Groundwater Contours Delineated in 1990's. Department of Public Works, Environmental Division, U.S Army Garrison Alaska. Fort Wainwright Alaska, 1 page.

U.S. Army Corps of Engineers, Alaska District. 2004. Proposed Development Plan for Badger Pit, Fort Wainwright, Alaska. 32 pages.

Center for Environmental Management of Military Lands (CEMML) 2019. Stormwater Infrastructure Drainage Basins And Flow Direction Mapbook. Directorate of Public Works, Environmental Section. U.S. Army Garrison Fort Wainwright, Alaska. 35 pages.

B. ADDITIONAL COMMENTS TO SUPPORT JD: After review of all data available to this office, a reconnaissance field visit in November of 2017 to establish the existence or absence of any surface connections in the form of drainages and channels, and careful examination of groundwater reports, the Corps asserts that this lake and its emergent fringe wetlands are jurisdictionally isolated.

The original gravel pit was constructed in uplands. Sheila Newman did a JD on the project (POA-2002-00569, June 05, 2002) which concluded that at the time with the existing boundaries, the Lake was completely in uplands but may intrude into wetlands if the pit was expanded to the north into Section 17. Between 2002 and 2005 the pit expanded to the north and merged with two pits that had been placed in the alleged wetlands that Shelia alluded to in her JD letter. Mapping efforts to determine if this area was indeed wetlands were conducted by the Center for Environmental Management on Military Lands (CEMML) as early as 2008, but not before the gravel pit was expanded. Therefore, the efforts did not test the expanded area and did not determine if the pit intruded into wetlands. Current wetland determinations (data points from 2015-2019) at and near the edge of the Lake in the intact Black Spruce forest (the assumed wetland ecotype) showed a different distribution of wetlands than was assumed by the NWI. The NWI, as you know, is based off imagery extrapolation, has few data points in this region, and cannot be considered highly accurate. Sheila probably used it as a template for identifying potentially jurisdictional wetlands. CEMML's data showed wetlands to be present in the Black Spruce ecotype, but in a location farther away from the lakeshore than the NWI mapping which had placed them up to the edge of Rhineland Avenue which hugs the northern lakeshore. Though wetlands change with time and may have receded away from the Lake due to disturbance, historic photos show that prior to the Lake expansion this area went through multiple disturbances that eliminated the vegetation cover multiple times. Wetlands here are

permafrost driven and diminish as the permafrost subsides, a condition highly correlated with changes in albedo caused by vegetation disturbance. In fact, the shape (square with linear upland intersecting features) and distribution of the currently mapped wetland may be related to grid lines plowed/cleared prior to the 1950's as seen in historic imagery. This would indicate that the wetlands have not changed since recovery from this original disturbance, and have existed in their current configuration since then. The current configuration is setback from the lake indicating the lake expansion was in uplands and not in these original wetlands.

Permafrost driven wetlands are impermeable to the underlying aquifer and though they may be adjacent to a waterbody such as Clear Creek, they do not have a subsurface hydrologic connection. Even so the present wetlands are adjacent to the modern pathway of Clear Creek (a ditch) and due to this they themselves are likely jurisdictional. We postulate that the Lake was not excavated in these wetlands and is not hydrologically connected to them, and therefore is not hydrologically connected to Clear Creek Ditch, a TNW.

Ellen Lyons, Chief
NORTH CENTRAL Section

Date April 29, 2020