

**TUNGAK CREEK**  
**HUC 30502, Zone 2, Kuskokwim River Region**

**FINAL**  
**INTERIM SUMMARY REPORT**

Prepared by Edwin Shoaf, ACC, Historian  
Office of History and Archaeology  
Department of Natural Resources  
State of Alaska

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## PREFACE

The research and writing of this study is funded by the U.S. Department of the Interior, Bureau of Land Management (BLM) through the Navigability Assistance Agreement (Cooperative Agreement # LO9AC15466). The State of Alaska (State) and the BLM established an assistance agreement in 2004 to facilitate the preparation of navigability reports that could be used for a variety of purposes, including the process for determining who owns title to the land under inland water bodies. Under the Statehood Compact, land under navigable waterways is reserved to the State. Navigability is based on historic use of water bodies for travel, trade and commerce up to the time of Statehood (1959), or recent use of the water bodies that demonstrates susceptibility to travel, trade and commerce in 1959.

The Navigability Assistance Agreement began as a pilot project focused on researching the history of use of water bodies in the Kuskokwim River region. The scope of work for the Assistance Agreement calls for identifying potentially navigable water bodies where the United States is an upland landowner or has a potential interest in the submerged lands; gathering information from BLM records and a 1985 regional history of the Kuskokwim River region; writing narrative histories of each water body summarizing land status, land conveyance decisions, past navigability determinations, physical character of the water body, and a history of use. These reports are prepared in stages. The first stage (Phase I-A) consists of land status. An interim summary report (Phase II-B) is generally limited to information in the files of the U.S. Department of Interior and a regional history of the Kuskokwim River region written by C. Michael Brown in 1985. A final summary report (Phase IV) incorporates expanded research in materials located in other state and federal agency files, the holdings of various libraries and archives in Alaska, and interviews with people who have knowledge of use of the water body.

The present report represents work at the Phase II-B level. The research and writing of this report was conducted by State employees working under the guidance of an Assistance Agreement Management Team composed of representatives of BLM and the State. The management team sets priorities, reviews the reports on water bodies at various stages, and decides at what point enough research, analyses and writing has been completed on each specific water body. The management team directed the authors of these reports to refrain from drawing conclusions about the water body's navigability or susceptibility to navigability. Rather, the management team directed the authors to provide an overview at the end of the report summarizing the types of evidence of historic and contemporary use and highlighting those areas (such as portions of the water body) where gaps in knowledge remain and additional research might be warranted.

Documents that are key to understanding agency decision making or the point of view of an interested party are indicated as Attachment 1, Attachment 2, etc., which appear after the corresponding endnotes. These documents are listed in the Table of Attachments and can be viewed in their entirety in a separate PDF file that supplements this report. For other completed Navigable Waters Research Reports in this series, see the Alaska Department of Natural Resources website: <http://www.dnr.state.ak.us/mlw/nav/naar/>

# Table of Contents

Preface.....	1
Table of Contents .....	2
Table of Figures .....	2
Table of Tables .....	2
Attachments (in PDF format).....	2
I. Introduction .....	1
II. Land Status .....	2
III. BLM Navigability Determinations .....	5
IV. Physical Character of the Waterway.....	7
V. Evidence of Use of the Waterway.....	8
Early Native Use of Tungak Creek.....	8
Recent Native Use of Tungak Creek Documented in Native Allotment Files .....	8
VI. Summary.....	12
Endnotes.....	12

# Table of Figures

<b>Figure 1.</b> Map showing the location of Tungak Creek within Zone 2 of HUC 30502 in the Kuskokwim River Region.....	1
<b>Figure 2.</b> The lower portion of Tungak Creek showing lands selected by Native corporations and Native allotments.....	3
<b>Figure 3.</b> The upper portion of Tungak Creek showing lands selected by Native corporations and Native allotments.....	4
<b>Figure 4.</b> Navigability determinations for lower Tungak Creek.....	6
<b>Figure 5.</b> Tungak Creek through Native allotment AA-31284-A (Mile 1).....	9
<b>Figure 6.</b> Tungak Creek through Native allotment AA-37776-A (Mile 8).....	10
<b>Figure 7.</b> Tungak Creek through Native allotment AA-37810-A.....	10

# Table of Tables

<b>Table 1.</b> Summary of BLM Navigability Determinations for Tungak Creek.....	5
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# Attachments (in PDF format)

- Attachment 1.** Wayne A. Boden, memorandum on Navigable Waters on or along Small Tracts in Quinhagak (Window 1562), February 21, 1989, BLM files, F-14885-EE.
- Attachment 2.** Master Title Plats (MTPs) for Tungak Creek.

# TUNGAK CREEK

## HUC 30502, Zone 2, Kuskokwim River Region

### II-B Interim Summary Report

#### I. Introduction

Tungak Creek is located in the Yukon-Kuskokwim Delta Region, within Zone 2 of HUC 30502 (Figure 1). Tungak Creek empties into the Kuskokwim Bay.

Tungak Creek originates in small lakes southwest of the Ugaklik River and Kuskokwak Creek, about 64 air miles<sup>i</sup> south of Bethel. Tungak Creek flows northwest to Kuskokwim Bay. The confluence of Tungak Creek with Kuskokwim Bay is approximately 18 air miles southwest of Eek and 59 air miles southwest of Bethel.

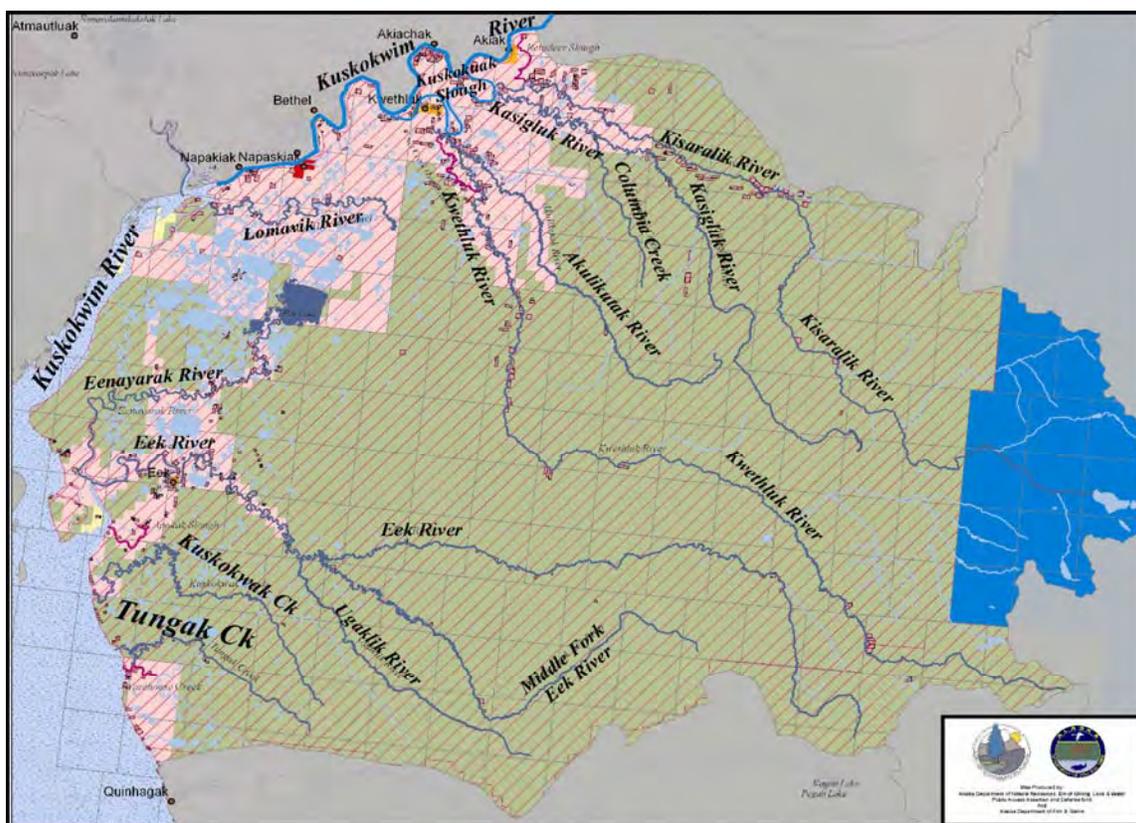


Figure 1. Map showing the location of Tungak Creek within Zone 2 of HUC-30502 of the Kuskokwim River Region.

<sup>i</sup> All air mile distances in this report are based on measurements from: <http://sdms.ak.blm.gov/isdms/imf.jsp?site=sdms>

The Eskimo name of Tungak was reported in 1938 by the Alaska Road Commission (ARC).<sup>1</sup> The creek is one of ten water bodies that drain the Kilbuck Mountains and the south-central portion of the Yukon Delta National Wildlife Refuge (Yukon Delta NWR). Bethel is the nearest regional hub.

Tungak Creek comprises seven townships:

TRM: Township (T.), Range (R.), Seward Meridian (SM):

T. 3 S., R. 71 W., SM	T. 2 S., R. 74 W., SM
T. 3 S., R. 72 W., SM	T. 3 S., R. 74 W., SM
T. 2 S., R. 73 W., SM	T. 2 S., R. 75 W., SM
T. 3 S., R. 73 W., SM	

## **II. Land Status**

Tungak Creek is surrounded by federal lands and Native allotments (Figures 2-3). The upper, middle and lower portions of Tungak Creek flow through the Yukon Delta NWR.

There are nine Native allotments located along the lower portion of Tungak Creek within the Yukon Delta NWR (Figure 2). Eight of those allotments were certificated in 1991; the ninth was certificated in 1993.

This portion of the Yukon Delta NWR was withdrawn from unreserved public lands managed by the BLM in 1972 (Public Land Order 5184, March 9, 1972) and transferred to the federal refuge system under the Alaska National Interest Lands Conservation Act (ANILCA, PL 96-487) of 1980. Title to federal refuge lands in Alaska is held by the United States and the U.S. Fish and Wildlife Service (USF&WS) is the manager of the Yukon Delta NWR.

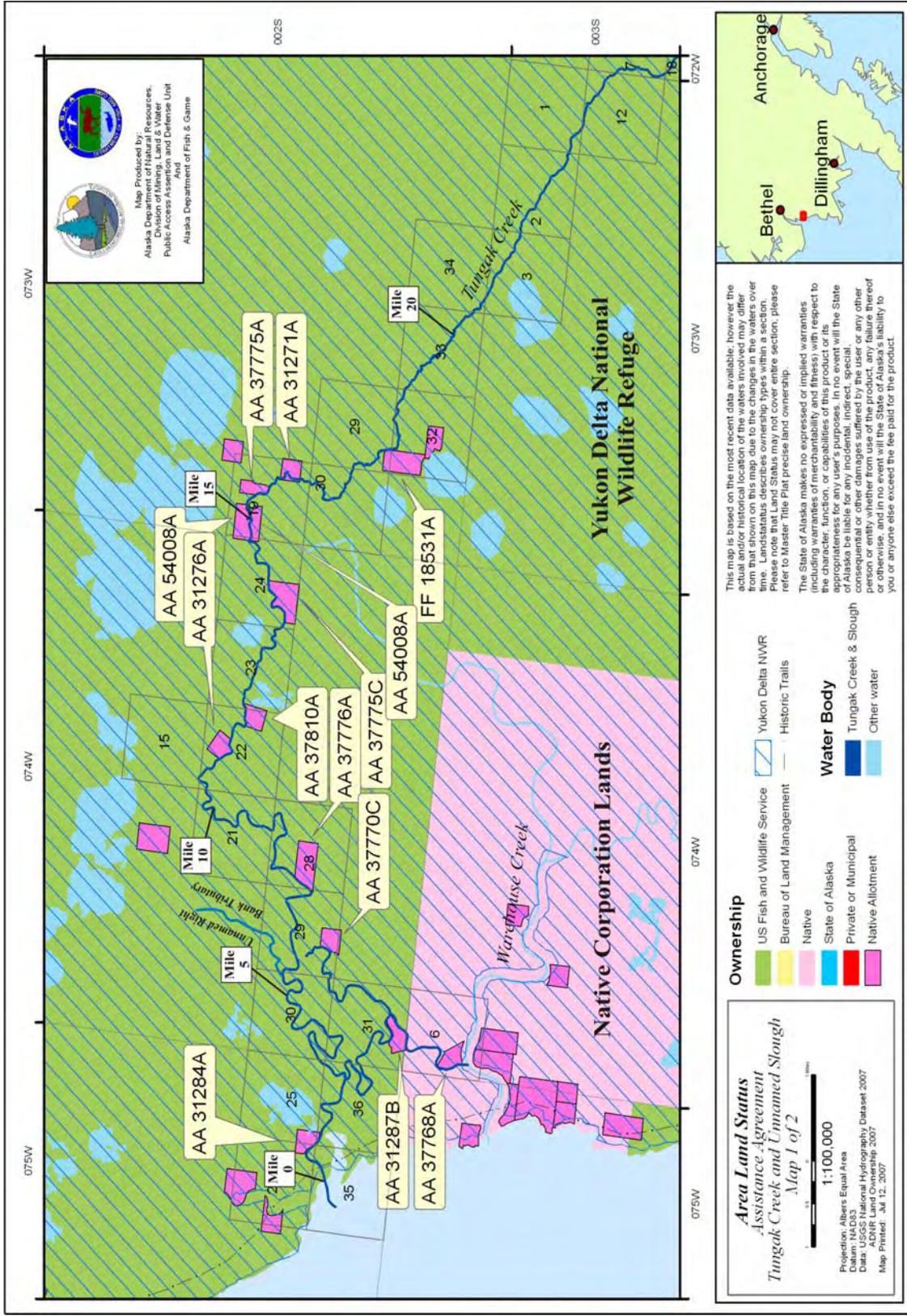


Figure 2. The lower portion of Tungak Creek showing land selected by Native corporations and Native allotments

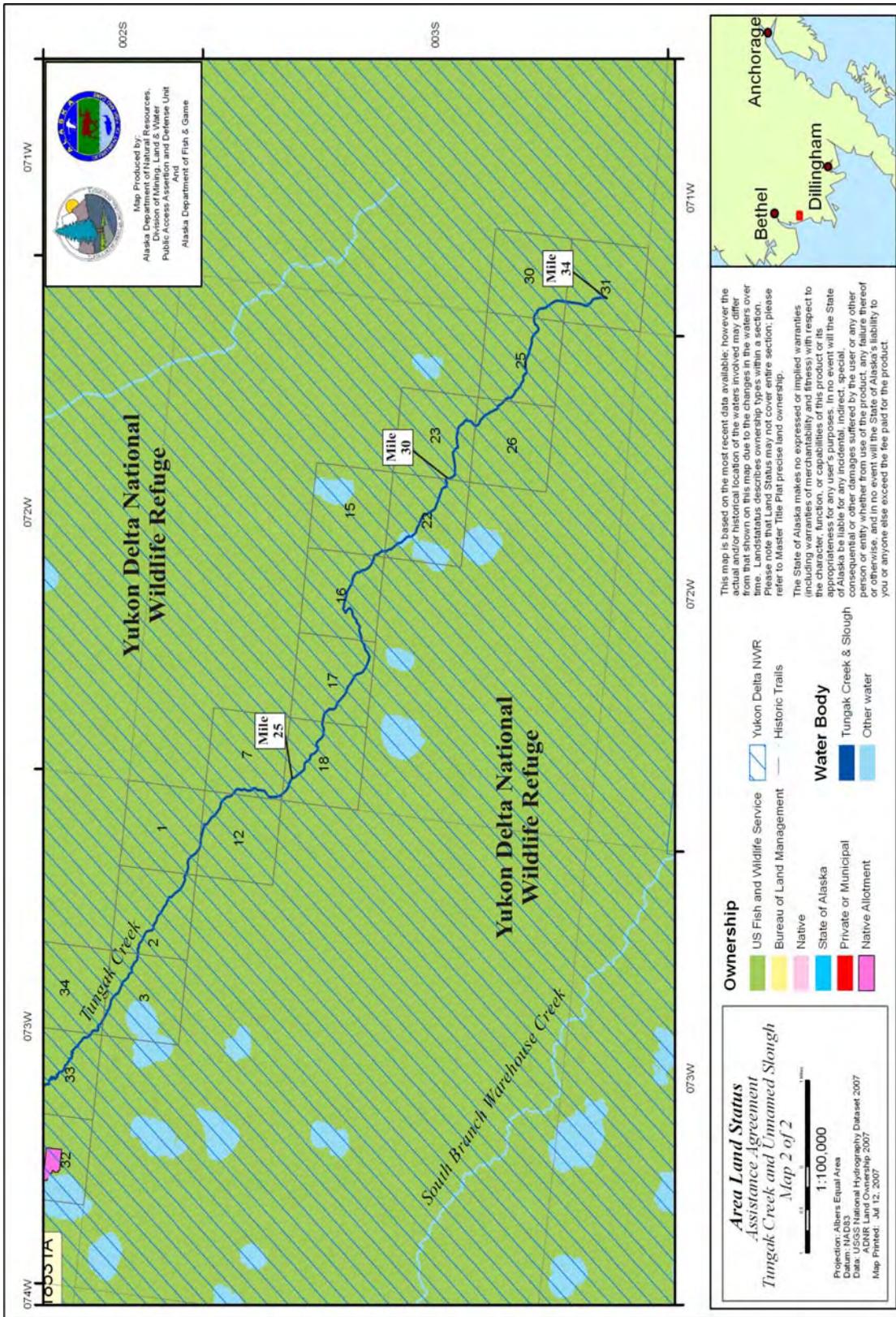


Figure 3. The upper portion of Tungak Creek showing lands selected by Native corporations and Native allotments

### III. BLM Navigability Determinations

After Congress passed the Alaska Native Claims Settlement Act (ANCSA), the villages of Eek and Quinhagak selected ANCSA lands in the area around but not immediately adjacent to lower Tungak Creek. The BLM began actively seeking information on navigable waters on Tungak Creek as part of its adjudication of Native land selections.

In 1989 the BLM considered the navigability of Tungak Creek where nine Native allotments abutted the creek. In a navigability memo dated February 21, 1989, the BLM determined Tungak Creek navigable “for crafts larger than a one-person kayak” through six Native allotments on lower Tungak Creek. The BLM also stated that:

Pictures of the creek in Sec. 28, T. 2 S., R. 74 W., SM., show a mud bottom and banks, indicating that the creek is tidal at least to this point.... I determine Tungak Creek navigable in or along small tracts located on the creek to and through Native allotment AA-37775-C in Sec. 24, T. 2 S., R. 74 W., SM [river mile 14]. Local residents testified to the use of boats to reach their land claims along this creek.<sup>2</sup> (Attachment 1)

There are four Native allotments located along Tungak Creek upstream of river mile 14, the farthest point determined navigable. On MTPs the creek is shown meandered upstream as far as Sec. 19 of T. 2 S., R. 73 W., SM, through two Native allotments (AA-54008-A and AA-37775-A) which straddle the creek at river miles 15 and 16.<sup>3</sup> (Attachment 2) The creek has not been meandered where it flows through Native allotment AA-31271-A at river mile 17 and Native allotment FF-18531-A at river mile 18, which according to the U.S. Survey 9991, does not abut the allotment parcel. The MTPs do not show the mouth of Tungak creek.

Tungak Creek was not mentioned in the BLM’s *Kuskokwim River Region: A History*, by C. Michael Brown.

There is a significant difference in the definition of the extent of Tungak Creek between the BLM’s 1989 memorandum and the current definition outlined by the Geographic Names Information System (GNIS). According to the BLM’s 1989 navigability memorandum: Tungak Creek “heads in a small lake in Sec. 19, T. 2 S., R. 73 W., SM.”<sup>4</sup> The GNIS definition places the headwaters of Tungak Creek 13 miles upstream of the source indicated by the BLM. Two Native allotments are present along the upper reach that is included in the GNIS definition.



#### IV. Physical Character of the Waterway

Tungak Creek is a meandering creek 34 miles long.<sup>ii</sup> The entire extent of Tungak Creek crosses Yukon-Delta NWR lands and empties into the Kuskokwim Bay roughly midway between the villages of Eek and Quinhagak. The river heads in the Kuskokwim Flats at Sec. 31, T. 3 S., R. 71 W., SM, approximately 100 feet above sea level. There are no major lakes or glaciers that head Tungak Creek. The creek flows generally northwest into Kuskokwim Bay in Sec. 35, T. 2 S., R. 75 W., SM. Tungak Creek has one unnamed major tributary, which enters from the north in Sec. 30, T. 2 S., R. 74 W., SM. There is no information available pertaining to the vegetation along the length of Tungak Creek.

In a BLM Navigable Waters memorandum dated February 21, 1989, Tungak Creek is described as follows:

This creek empties in Kuskokwim Bay about two miles north of Warehouse Creek, in Sec. 35, T. 2 S., R. 75 W., SM [river mile 0]. It heads in a small lake in Sec. 19, T. 2 S., R. 73 W., SM [river miles 15-16]... The creek exhibits little or no gradient... The creek narrows to about seventy-five feet at the forks in the SE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 30, T. 2 S., R. 74 W., SM. The tributary that empties into the creek at this point is as wide as the creek, and nearly maintains this width for a distance of two miles.<sup>5</sup> (Attachment 1)

There is no detailed information available regarding the upper portion of Tungak Creek (river miles 16-34).<sup>6</sup> (Attachment 1)

To date, the extent of tidal influence on Tungak Creek has not been determined. However, the BLM in its 1989 determination noted that tidal influence on Tungak Creek existed in “Pictures of the [Tungak] Creek in Sec. 28, T. 2 S., R. 74 W., SM, [river mile 9] show a mud bottom and banks, indicating that the creek is tidal at least to this point.”<sup>7</sup> (Attachment 1)

Tungak Creek is within the transitional climate zone, which is between the maritime and continental climatic zones. This transition zone in the Yukon-Kuskokwim Delta area extends 100 to 150 miles inland.<sup>8</sup> No weather-gathering stations are located along or near Tungak Creek. The nearest station is at Bethel, about 64 miles from the river. The average annual precipitation near Bethel is 16 inches.<sup>9</sup>

There is no detailed hydrologic information available with regard to Tungak Creek. No information is available indicating that the natural and ordinary condition of Tungak Creek has changed.

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<sup>ii</sup> Different sources estimate the length of the river at 15 to 34 miles. The length of Tungak Creek and the river miles used in this report are based on GIS calculations using the National Hydrography Data Set derived from U.S. Geological Survey quadrangle maps.

## V. Evidence of Use of the Waterway

### *Early Native Use of Tungak Creek*

Human occupation of the Kuskokwim area goes back 11,000 years to nomadic hunters of Pleistocene animals. These hunters were supplanted about 1,900 B.C., when Eskimos from the north moved into the lower Kuskokwim drainage, bringing with them the so-called Arctic Small Tool tradition.<sup>10</sup> Permanent occupation of the interior Kuskokwim Delta with chronological continuity began about AD 600.<sup>11</sup> Their descendents, the *Kusquqvagmiut* (also known as Yup'ik Eskimos or mainland southwest Alaskan Eskimos), have inhabited the Kuskokwim River and its tributaries down to the present as far inland as the village of Aniak. By 1880, their population was estimated at 3,100.<sup>12</sup>

### *Recent Native Use of Tungak Creek Documented in Native Allotment Files*

The BLM began collecting information in the 1970s to adjudicate Native allotment applications filed by local Natives who have fished, hunted and picked berries along Tungak Creek. The Natives accessed favorite spots along the river for hunting, trapping, fishing and berry picking. These favorite spots, through custom, developed into exclusive use areas. The federal government recognized many of these allotments and transferred title to the sites to the applicants. Eight individuals filed Native allotment applications for nine parcels along Tungak Creek between river mile 0 and river mile 18 in the Yukon Delta NWR.

Native allotment files for these nine parcels indicate that three were used in the fall; two were used in the fall and winter; one was used in the summer, fall, and winter; two were used year round; and one was lacking seasonal information. Documents in eight of these Native allotment files, including application forms and BLM field inspection reports, indicate the applicants accessed their parcels during the open season (when the water bodies are not frozen) by boat. In the remaining parcel, a means of access was not indicated, but the owner stated that part of his seasonal use was during an open season for the creek.

Julia Williams of Quinagak filed an application on December 5, 1979 for a Native allotment split into three parcels. Parcel A is located along Tungak Creek (AA-31284-A) and consists of 40 acres. The parcel lies in Secs. 25, 26, 35, and 36, T. 2 S., R. 75 W., SM, on the right bank of Tungak Creek at river mile 1 (Figure 5). Williams claimed use and occupancy of the land since 1958 for berry picking, fishing, and hunting during unspecified seasons.<sup>13</sup> In the Native allotment Field Report, Williams reportedly stated that she accessed her parcel by boat.<sup>14</sup>



**Figure 5. Tungak Creek through Native allotment AA-31284-A (Mile 1), 1985. Photo by Carl Neufelder, BLM files, AA-31284.**

Martha F. Mark of Quinhagak filed an application on December 5, 1979 for a Native allotment split into three parcels. The parcel along Tungak Creek (AA-37776-A) is 79.97 acres. It lies in Secs. 28-29, T. 2 S., R. 74 W., SM, on the left bank of Tungak Creek between river miles 7 and 8 (Figure 6). Mark claimed use and occupancy of the land since 1950 for fall berry picking, fishing, and hunting.<sup>15</sup> In the Native allotment Field Report, Mark reportedly stated that she accessed her parcel by boat.<sup>16</sup>

Carrie Cleveland of Quinhagak filed an application on December 5, 1979 for a Native allotment split into three parcels. The parcel along Tungak Creek (AA-31276-A) is 39.97 acres. It lies in Sec. 22, T. 2 S., R. 74 W., SM, on the right bank of Tungak Creek near river mile 11. Cleveland claimed use and occupancy of the land since 1950 for berry picking, hunting, and fishing year round.<sup>17</sup> In the Native allotment Field Report, Cleveland reportedly stated that she accessed her parcel by boat.<sup>18</sup>

Martha F. Matthew of Quinhagak filed an application on December 5, 1979 for a Native allotment split into two parcels. The parcel along Tungak Creek (AA-37810-A) is 40 acres. It lies in Secs. 23 and 22, T. 2 S., R. 74 W., SM, on the left bank (south) of Tungak Creek at river mile 12 (Figure 7). Matthew claimed use and occupancy of the land since 1950 for fishing, berry picking, hunting and trapping in the fall.<sup>19</sup> In the Native allotment Field Report, Matthew stated that she accessed her parcel by boat.<sup>20</sup>



**Figure 6. Tungak Creek as it flows through Native allotment AA-37776-A (Mile 8), 1984. Photo by Carl Neufelder, BLM files, AA-37776.**



**Figure 7. Tungak Creek as it flows through Native allotment AA-37810-A (Mile 12), 1984. Photo by Meg Jensen, BLM files, AA-37810.**

Martha Oldfriend of Quinhagak filed an application on December 5, 1979 for a Native allotment split into three parcels. The first parcel on Tungak Creek (AA-37775-C) is 80 acres. It lies in Sec. 24, T. 2 S., R. 74 W., SM, on the left bank of Tungak Creek at river mile 14. Oldfriend claimed use and occupancy of this parcel since 1950 for fall berry picking.<sup>21</sup> In the Native allotment Field Report, Oldfriend reportedly stated that she accessed this parcel by boat.<sup>22</sup> Her second parcel on Tungak Creek (AA-37775-A) is 40 acres. It lies in Sec. 19, T. 2 S., R. 73 W., SM, on the right bank of Tungak Creek between river miles 15 and 16. Oldfriend claimed use and occupancy of this parcel since 1950 for seasonal berry picking.<sup>23</sup> In the Native allotment Field Report, Oldfriend reportedly stated that she accessed this parcel by boat.<sup>24</sup>

Between the parcels AA-37775-C and AA-37775-A is the parcel of Kenneth Cleveland of Quinhagak (AA-54008-A). Kenneth Cleveland filed an application on June 28, 1984 for a Native allotment split into three parcels. Parcel A is on Tungak Creek and consists of 79.97 acres. It lies in Sec. 19, T. 2 S., R., 73 W., and Sec. 24, T. 2 S., R. 74 W., SM, straddling Tungak Creek at river mile 15. Cleveland claimed use and occupancy of this parcel since 1943 for year round seasonal hunting and fishing.<sup>25</sup> In the Native Allotment Field Report, Cleveland reportedly stated that he accessed his parcel by boat.<sup>26</sup>

Mary S. Cleveland of Twin Hills filed an application on December 5, 1979 for a Native allotment split into three parcels. The parcel on Tungak Creek (AA-31271-A) is 40 acres. It lies in Secs. 19 and 20, T. 2 S., R. 73 W., SM, straddling Tungak Creek at river mile 16. Mary Cleveland claimed use and occupancy of this parcel since 1965 for fall berry picking.<sup>27</sup> In the Native allotment Field Report, Mary Cleveland reportedly stated that she accessed her parcel by boat.<sup>28</sup>

Ham Cleveland Sr. of Quinhagak filed an application on April 21, 1972 for a Native allotment split into two parcels. The parcel on Tungak Creek (FF-18531-A) is 79.98 acres. It lies in Secs. 29 and 32, T. 2 S., R. 73 W., SM, on the left bank of Tungak Creek at river mile 18. Ham Cleveland claimed use and occupancy of this land since 1947 in the summer, fall and winter for fishing, hunting, and berry picking.<sup>29</sup> There was no mention in the Native allotment application or field report of how Ham Cleveland accessed the parcel.<sup>30</sup>

While BLM Native allotment files do not provide information about the types of boats used on Tungak Creek. Skiffs are the most widely used watercraft in Quinhagak, and they are the major subsistence transportation in the summer and used in commercial fishing. Aluminum skiffs replaced the larger wooden skiffs in the 1970s and 1980s.<sup>31</sup> Most Quinhagak fishermen utilize aluminum or plywood skiffs, about 16 to 20 feet in length, with small outboard engines in the 35 to 75 horsepower range. The semi-V hull aluminum Lund is the preferred make, about 16 to 18 feet in length, with load capacities of about 1,500 to 2,000 pounds. The flat bottomed wooden skiffs vary in size. Some are narrow and long, about 3-1/2 to 4-1/2 feet wide and 18 to 21 feet long, resembling the skiffs used along the Kuskokwim River. Others are larger, between 4 to 9 feet wide and 18 to 24 feet long. These larger crafts are powered by outboards ranging between 70 and

140 horsepower. At Quinhagak, a person's boat typically does double duty as both subsistence and commercial fishing craft. The aluminum Lund skiff is relatively inexpensive. Quinhagak fishermen operate primarily 16 to 20 foot open aluminum skiffs with a few larger vessels.<sup>32</sup>

## VI. Summary

The BLM determined Tungak Creek navigable in 1989 in or along small tracts from the mouth of the creek (river mile 0) through Native allotment AA-37775-C (river mile 14). At the same time the BLM noted evidence of tidal influence on Tungak Creek upstream through Sec. 28, T. 2 S., R. 74 W., SM (river miles 8-9).

Tungak Creek is a meandering stream approximately 34 miles in length. It is known to be approximately 75 feet wide between river miles 0 and 5. The banks and bottom of Tungak Creek through river mile 9 are known to be mud, and are thought to indicate tidal influence to that point.

There was one type of use of Tungak Creek during the historic period prior to Statehood. The use of Tungak Creek prior to statehood involved six Native allottees accessing their allotment parcels by boat during the open seasons from 1943 to 1959 for subsistence purposes. Allotees specified traveling by boat on the creek to reach parcels as far upstream as river mile 16, but BLM Native allotment documents did not indicate what type of craft was used.

There has been one type of use of Tungak Creek during the period since statehood. The type of use since statehood involves seven Native allottees with parcels along Tungak Creek accessing their parcels by boat in the open seasons. They traveled on the creek from 1959 to at least the mid-1980s. Allotees specified traveling by boat on the creek to reach parcels as far upstream as river mile 16, but BLM Native allotment documents did not indicate what type of craft was used.

## Endnotes

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<sup>1</sup> Donald J. Orth, *Dictionary of Alaska Place Names*. Geological Survey Professional Paper 506, United States Geological Survey, Washington, D.C.: U.S. Government Printing Office, 1971, p. 992.

<sup>2</sup> Wayne A. Boden, Navigable Waters on or along Small Tracts in Quinhagak (Window 1562), February 21, 1989, pp. 5-6, BLM files, F-14885-EE.

<sup>3</sup> MTP's and U.S. Surveys for Tungak Creek.

<sup>4</sup> Boden, Navigable Waters on or along Small Tracts in Quinhagak (Window 1562), February 21, 1989, p. 5, BLM files, F-14885-EE.

<sup>5</sup> *Ibid.*

<sup>6</sup> *Ibid.*

<sup>7</sup> *Ibid.*

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- <sup>8</sup> Harza Engineering Company, *Bethel Area Power Plan Feasibility Assessment*, Appendix B, December 1982.
- <sup>9</sup> <http://www.citytowninfo.com/places/alaska/bethel>
- <sup>10</sup> James W. Vanstone, "Mainland Southwest Alaska Eskimo," in *Handbook of North American Indians, Volume V, Arctic*, David Damas, editor, Smithsonian Institute, Washington, D.C., 1984, pp. 227-229.
- <sup>11</sup> Robert D. Shaw, *Cultural Resources Survey Preceding Construction of a Water and Sewer System in Kwethluk, Alaska*, a report done under contract to the Alaska Native Tribal Health Consortium, Anchorage, 2002, p. 10.
- <sup>12</sup> Vanstone, "Mainland Southwest Alaska Eskimo," pp. 227-229.
- <sup>13</sup> Julia Williams, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-31284, National Archives and Records Administration (NARA), Anchorage.
- <sup>14</sup> Carl Neufelder, Native Allotment Field Report for the allotment of Julia Williams, January 24, 1985, BLM files, AA-31284, NARA, Anchorage.
- <sup>15</sup> Martha F. Mark, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-37776, NARA, Anchorage.
- <sup>16</sup> Carl Neufelder, Native Allotment Field Report, March 25, 1985, BLM files, AA-37776, NARA, Anchorage.
- <sup>17</sup> Carrie Cleveland, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-31276, NARA, Anchorage.
- <sup>18</sup> Clifford D. Ells, Native Allotment Field Report, October 15, 1985, BLM files, AA-31276, NARA, Anchorage.
- <sup>19</sup> Martha F. Matthew, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-37810, NARA, Anchorage.
- <sup>20</sup> Meg Jensen, Native Allotment Field Report, September 19, 1985, AA-37810, BLM files, NARA, Anchorage.
- <sup>21</sup> Martha Oldfriend, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-37775, NARA, Anchorage.
- <sup>22</sup> Sylvia K. Hale, Native Allotment Field Report, September 12, 1986, BLM files, AA-37775, NARA, Anchorage.
- <sup>23</sup> Martha Oldfriend, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-37775, NARA, Anchorage.
- <sup>24</sup> Sylvia K. Hale, Native Allotment Field Report, September 12, 1986, BLM files, AA-37775, NARA, Anchorage.
- <sup>25</sup> Kenneth Cleveland, Native Allotment Application and Evidence of Occupancy, June 28, 1984, BLM files, AA-54008, NARA, Anchorage.
- <sup>26</sup> Van Waggoner, Native Allotment Field Report, November 19, 1986, BLM files, AA-54008, NARA, Anchorage.
- <sup>27</sup> Mary S. Cleveland, Native Allotment Application and Evidence of Occupancy, December 5, 1979, BLM files, AA-31271, NARA, Anchorage.
- <sup>28</sup> Carl E. Neufelder, Native Allotment Field Report, February 5, 1985, BLM files, AA-31271, NARA, Anchorage.
- <sup>29</sup> Ham Cleveland Sr., Native Allotment Application and Evidence of Occupancy, April 21, 1972, BLM files, FF-18531, NARA, Anchorage.
- <sup>30</sup> Wayne R. Dawson, Native Allotment Field Report, September 29, 1978, BLM files, FF-18531, NARA, Anchorage.
- <sup>31</sup> Robert J. Wolfe, Joseph J. Gross, Steven J. Langdon, John M. Wright, George K. Sherrod, Linda J. Ellanna, Valery Sumida, and Peter J. Usher, *Subsistence-Based Economies in Coastal Communities of Southwest Alaska*, Technical Paper Number 89, Juneau, Alaska: ADF&G, Division of Subsistence, February, 1984, pp. 142, 242.
- <sup>32</sup> *Ibid.*, pp. 269-271.