National Park Service

**U.S. Department of the Interior**

**Klondike Gold Rush National Historical Park**
**Skagway, Alaska**

# Phase 1 Cultural Resource Survey Report for the Proposed Parking Lot Area at the Chilkoot Trailhead in Dyea, Alaska.


*Dyea, Alaska, in 1899. Photo by Arthur Pillsbury, Seattle Public Library, Arthur C. Pillsbury Collection, 28-136; KLGO DO-36-7720.*

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# Introduction

This report summarizes archeological fieldwork undertaken in 2018 and 2020 as part of the Proposed Parking Lot (PPL) project in Dyea, Alaska. The proposed development is located on an active point-bar along the east-bank of the Taiya River (Figure 1). Fieldwork included pedestrian survey, metal detection, and 119 shovel test pits. The Area of Potential Effect (APE) for the PPL project encompasses roughly 6 acres, and its proximity to the historic Dyea townsite, the Chilkoot Trail corridor, and several prehistoric sites warranted meticulous surface and subsurface investigations.[1]

Cultural resource investigations were initiated in the planning process of a proposed parking area and visitor facility at the Chilkoot Trail trailhead to ensure compliance with Federal, Tribal, State, and local mandates. The PPL project aims to expand day and overnight parking at the Chilkoot Trail entrance and enhance visitor experience through the creation of a *sense of arrival* to the Chilkoot Trail and Dyea National Historic Landmark. Current parking facilities at the trailhead have proven insufficient for the volume of park visitors and resulted in informal ad-hoc parking along the shoulder of Dyea Road. The project also seeks to enhance traffic flow through the existing campground by joining two cul-de-sacs into one larger loop. Lastly, a proposed widening of the footpath that currently extends from the existing campground infrastructure to the Chilkoot Trail trailhead will improve accessibility to campground amenities and to public safety personnel at the Dyea Ranger Station.

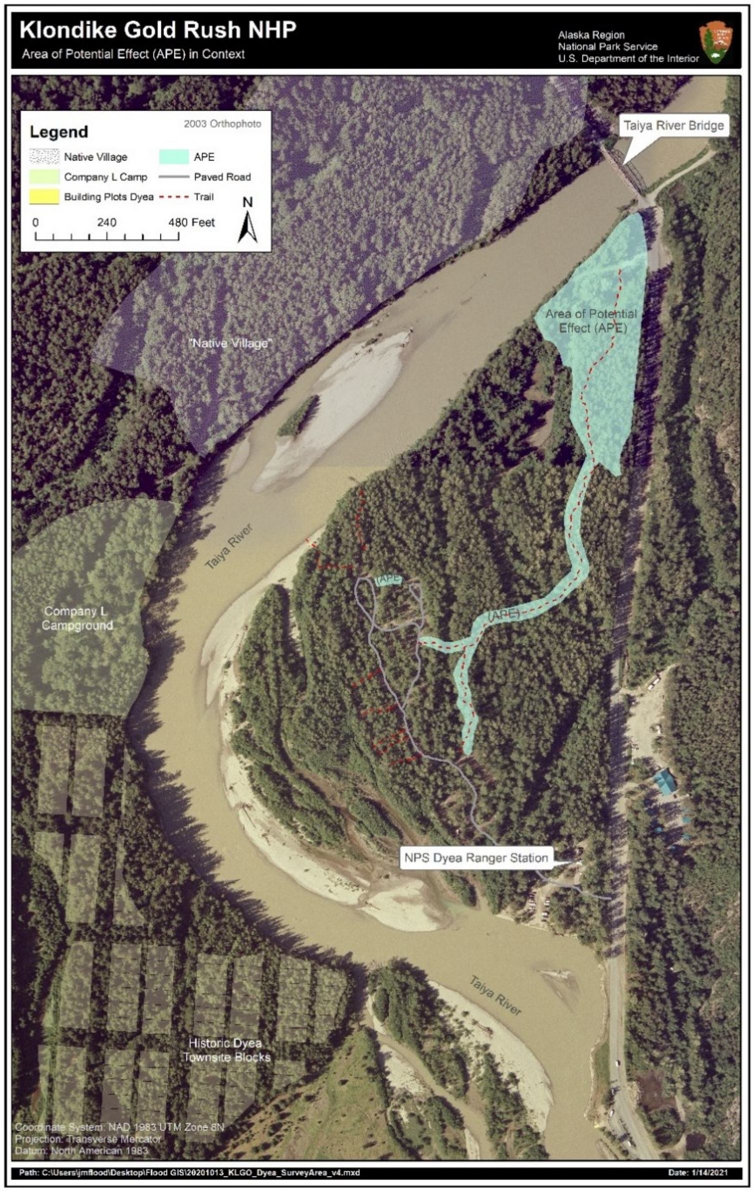

*Figure 1: Area of Potential Effect (APE) in context of river and development (NPS Map)*

[1] 253,766.7 square feet = 5.8 acres

Data from subsurface investigations combined with aerial imagery, historic photographs, and hydrological publications demonstrate that the APE with its associated National Park Service (NPS) campground and ranger station is located on a point-bar that has dynamically developed over the last 150 years. As will be discussed in this report, much—if not all—of the APE was within the main channel of the Taiya River in the late 1800s. From at least 1881 to the 1920s, the river's main stem occupied the eastern edge of the lower Taiya valley and continuously transported sediment into and out of what is now the emerged study location (Krause & Krause, 1993, p. 202).[2] The slough east of the study area that now functions as a drainage ditch for road runoff is a section of this abandoned main stem (Curran, 2020). According to Department of the Interior (DOI) hydrologists and geomorphologists (Inglis & Pranger, 2002), the westward migration of the river's meander in the zone of the APE began in the 1920s, and construction of a dike in 1952 that blocked flow into the former main stem ensured the continued accretion of the point-bar now under study. Due to the relatively recent emergence of the project area, intact stratified cultural features may only date post-1920, unless washed in. In spite of the geomorphic realities of this nascent parcel of land, NPS archeologists thoroughly tested the now buried river channel and cobble matrixes for chance primary deposits (i.e., wood and/or stone fish weirs, boat hardware, etc.) and secondary cultural materials (i.e., washed in lithics, ceramics, bone, etc.).

The survey was performed under the jurisdiction of the NPS by archeological staff at Klondike Gold Rush National Historical Park (KLGO). The APE and the entire point-bar are located on Federal land, with 52 percent (1,015,133.6 $ft^2$ or 94,309 $m^2$) within the boundary of the Chilkoot Trail and Dyea National Historic Landmark.

## Environmental Context

An environmental context is essential to understand the formation and integrity of any archaeological deposit (Butzer, 1982). The impact of the Taiya River on cultural deposits within the valley floor make the hydrologic context especially pertinent in this report. Since older terrestrial deposits are destroyed and new ones created as a river migrates, a basic understanding of the Taiya River's past position can elucidate where stratified cultural deposits might be found and where they cannot.

The lower Taiya River valley where the APE is located was formed and continues to be sculpted by an array of physical factors that interact in a complex, dynamic manner. The principal components governing the evolution of the Taiya River floodplain are: 1) tidal/base-level dynamics; 2) glacial influences; 3) vegetation and ground cover; 4) precipitation; and 5) human land-use activity. A brief exploration of each of these variables provides necessary context for the later discussion of the channel's past position within the APE.

(1) Base-level is the elevation to which a stream will work to transport sediment. It is an elevational end to the erosional process of streams. At base-level, the downward pull of gravity

[2] See Arthur Krause's map of the northern Lynn Canal and Taiya River Valley from 1881. In Krause, Aurel, and Arthur Krause. *To the Chukchi Peninsula and to the Tlingit Indians, 1881/1882: Journals and Letters by Aurel and Arthur Krause*. The Rasmuson Library historical translation series, v. 8. (Fairbanks, AK: University of Alaska Press, 1993).

that gives rivers their energy across a landscape relents, stream velocity plummets, and sediment drops from suspension. This regularly leads to the accumulation of sediment at a river's confluence with the sea or ocean, often creating a half-submerged landform called a delta. Base-level in the Taiya watershed is sea-level, which happens to be a moving-target as the tide ebbs and flows on a 12-hour cycle. The shifting elevational mark results in a wide depositional zone in the Taiya watershed, creating a broad, gently sloping delta. Local uplift of the lower Taiya river valley due to glacial rebound (described below) further intensifies sediment accumulation and the southward expansion of the deltaic tidal floodplain (the Dyea Flats).

Base-level and delta construction is important for this study because it sheds light on watershed-wide processes that have directly influenced the evolution of the APE. Since the Klondike Gold Rush era, the delta has expanded (500 meters) (Curran, 2020, p. 7). Some of the sediments incorporated in the recent delta progradation come from erosion caused by deforestation, cultivation, and infrastructure creation over the last 150 years. By the very extension of the Taiya delta, a picture of human-induced watershed disturbance begins to develop. More importantly, increased sediment loads in the lower reaches of prograding streams often result in increased channel sinuosity and accentuation of existing meander bends, like the meander system that is the APE (Hood, 2006; Overeem et al., 2003).

(2) Glaciers influence the lower Taiya River in three interrelated ways. First, the U-shaped erosional scar carved during glacial advance and retreat created the broad valley floor of the Taiya watershed and covered it with an apron of glacial till.[3] In addition to the anthropogenic sediments mentioned above, the Taiya River constantly conveys a baseline of glacial materials that include the clay-sized particles that generate its milky appearance. Of paramount importance to the location, shape, and permanency of landmasses in the valley are the existence of several alluvial fans that eject glacial sediments into the channel's main corridor. Where West Creek joins the main corridor of the Taiya valley, a large low angle fan protrudes eastward and pushes the main stem of the river towards the valley's east wall, in effect aiming flow toward the APE (Figure 2). The influence of the West Creek fan on the river's eastern position has also resulted in the belt of relatively stable sediments whereon the historic Dyea townsite developed. The West Creek fan has deflected the river eastward in the vicinity of the APE since at least 1894 (Curran, 2020, p. 49).

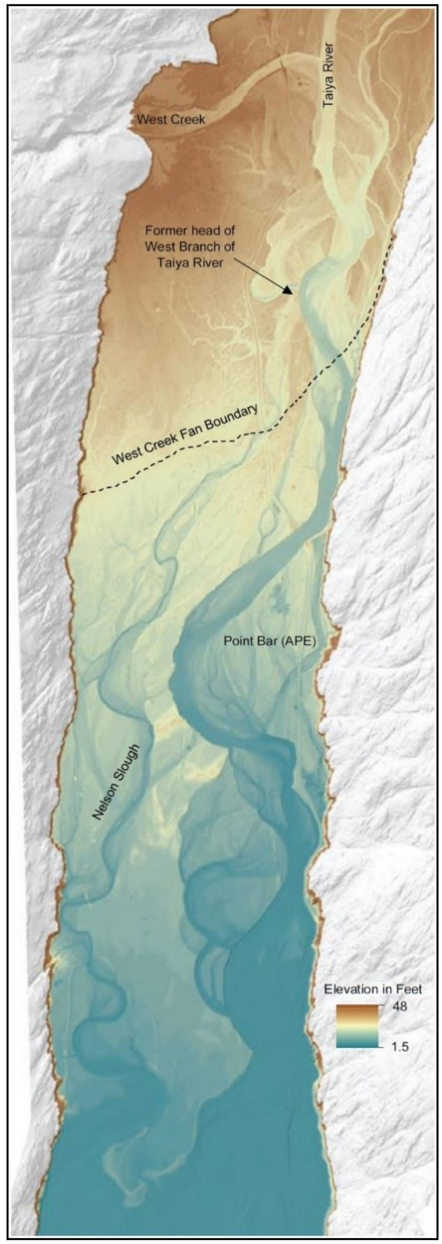

*Figure 2: West Creek fan and Nelson Slough (NPS Map)*

[3] Glacial till is sediment pulverized, pushed, and left by the ice-body and comes in every grain size, from nano-clays to boulders.

Today, the glacial mass that occupied the Taiya valley 12,000 years ago has retreated into the alpine zones of the watershed, and now collectively covers just 29 percent of Taiya River Basin (Curran, 2020, p. 7). Absence of its enormous weight on the valley floor has resulted in an uplift of the landscape known as isostatic rebound.[4] Uplift in the lower reaches of the Taiya valley has resulted in significant changes in stream morphology and thus influenced the study area. In the zone of the APE, uplift rates are estimated at 16 millimeters per year (mm/yr), which calculates to almost 6.6 meters of uplift since the Klondike Gold Rush (Larsen et al., 2005; Bernatz et al., 2011). This uplift has severed important hydrologic connections, like that with the so-called Nelson Slough (Figure 2). The Nelson Slough once transported enough flow that the 1890s inhabitants of Dyea considered it the West Branch of the Taiya River. Disconnection with the Nelson Slough resulted in higher flowrates through the main channel in the area of the APE. Incision due to uplift also further exacerbates cutbank erosion and hastens bank failure, like that recorded along the eastern edge of the historic Dyea townsite since 1975 (discussed later in this report).

While infrequent, repositories of glacial meltwater have burst and released enormous volumes of water into the lower Taiya valley. These events are referred to as glacial lake outburst floods (GLOFs) and have the potential to be major reshaping events in a watershed. The most recent GLOF occurred on July 23, 2002, originating in the West Creek sub-watershed. The outburst flood discharged water at a peak rate of 527 cubic meters per second ($m^3/s$), measured at the USGS stream gauge located at the north end of the APE.[5] The flow inundated the evacuated NPS campground (Capps, 2004). Other historical GLOFs within the Taiya watershed include the Stone House Flood or Sheep Camp avalanche on September 18, 1897 and the possible 1920s flood that initiated the westward migration of the main channel through the historic townsite (*Sacramento Daily Union*, 1897; *The Seattle Post-Intelligencer*, 1897; Gurcke, 2010; Inglis & Pranger, 2002). The influence of the 1920s flood on the APE will be discussed in detail later in this section. But in brief, Inglis and Pranger (2002) believe this flood was the "threshold event" that initiated the westward migration of the river from the zone of the APE and towards its current location.

(3) Ground cover, soils conditions, and the mosaic of vegetation across a watershed influence the volume, timing, and sediment load of runoff into a stream during and after precipitation events. Expansion of vegetation cover often exerts a stabilizing effect on channel banks and lower sediment recruitment into streams (Easson & Yarborough, 2002; Collins & Montgomery, 2002; Abbe & Montgomery, 2003; Montgomery & Abbe, 2006; Ziemer, 1981). Groundcover has changed appreciably in the Taiya watershed since the 1890s. A visual example from Karpilo and Venator's (2015) repeat photography report illustrates this change across the Taiya valley floor (Figure 3). The figure shows an overlay of Frank La Roche's 1897 image from Canyon City overtop a 2013 photo from the same location. In the 1897 image, the river's main stem is visible along the valley's east edge and the lack of early successional vegetation on the valley floor in the foreground implies a frequent disturbance regime. Over the intervening 116 years, a maturing successional forest has established in the formerly disturbed riparian areas.

[4] Isostatic rebound or post-glacial rebound is the rise of land masses that were depressed under the enormous weight of ice sheets during the last ice age.

[5] USGS Monitoring Station 15056210

*Figure 3: View of Taiya River valley from Canyon City in 2013 and 1897. From Karpilo and Venator 2015.*

The relationship between deforestation and erosion and fluvial geomorphic change is neither linear nor simple. Deforestation in high energy riparian systems, like the Taiya River, may cause localized deposition and temporarily diminish instream sediment transport. As Montgomery and colleagues have repeatedly documented, large woody debris can aggregate to dam flow and armor banks. This may have been an important variable in the Taiya River following the Klondike Gold Rush deforestation (Figure 4) that created plugs of sediment that were released episodically in the decades that followed. Figure 4 shows deforestation in the Canyon City area north of the APE in the summer of 1898 and a collection of large woody debris accumulated along the cutbank associated with the APE in 2002 (Figure 5).

*Figure 4: Deforestation at Canyon City in 1898. (KLGO CC-55-6733)*

*Figure 5: Woody Debris at Dyea townsite cutbank in 2002 (Image from Inglis & Pranger, 2002)*

(4) Precipitation is the annual driver of streamflow in the Taiya watershed. Within the basin, temperate maritime conditions are expressed in cool wet autumns, cold winters, and moderate summers. Coastal peaks west of the valley are responsible for a rain-shadow that manifest in lower precipitation averages than neighboring watersheds in southeastern Alaska. The bulk of annual precipitation falls as rain in autumn and snow in winter. Based on data from 1971 to 2000, the annual average precipitation in the Taiya watershed is 76 inches (1,930 mm). Massive rainfall events have occurred and resulted in geomorphic changes and flooding. A late summer storm on September 14-15, 1967 dropped 5 inches (130 mm) and triggered a large flood (Boning, 1972). During the event, flooding was widespread around the river's main trunk and peak discharge was estimated at over 7621 $ft^2/s$ (708 $m^3/s$) (USGS waterdata.gov). For

comparison, the average flow in the Taiya during water-year 2020 was 1236 $ft^3/s$ (35 $m^3/s$) and the 2002 GLOF peak was 18611 $ft^3/s$ (527 $m^3/s$).[6]

(5) Human activity is always a hydrologic factor in watersheds where humans are present. Human's hydrologic impacts fall on a spectrum of influence, from negligible to predominant, and result from either incidental or intentional actions. Incidental watershed impacts are those that occur as a side effect of land-use activities. For example, through herbivory and frugivory, non-sedentary societies may alter the vegetation structure and increase soil compaction along frequently used paths. Incidental pollination, seed dispersal, and soil augmentation cascade into ecosystem changes that influence runoff and streamflow (Rindos, 1984). Intentional water management techniques are more conspicuous and generally more influential on flow regimes, aquatic habitats, and stream morphology.

Major channel modifications in the study area include bank armoring and dike construction. Channel armoring is present in the north-end of the APE and is associated with the Taiya River bridge constructed by the Alaska Department of Transportation in 1948. Bank armoring is in the form of large boulders stacked from channel bottom extending well above the annual bankfull level, a technique called rip-rap. Channel armoring arrests sediment recruitment in the rip-rapped area by only presenting the river with clasts too large for its velocity to move.[7] Energy that would have been used in the sediment recruitment process is deflected downstream; in the case of the APE towards the historic Dyea townsite. Bank protection was extended in 1952 to include a dike that effectively dammed the former main stem.[8] Visitors hiking the Chilkoot Trail currently begin by walking over the 1952 dike (Figure 6). Similar to the severed hydrologic connection with the Nelson Slough mentioned above, the volume of water that previously flowed through the channel blocked by the dike must pass through the river's main stem. This results in higher annual discharge past the APE and elevates stream velocity

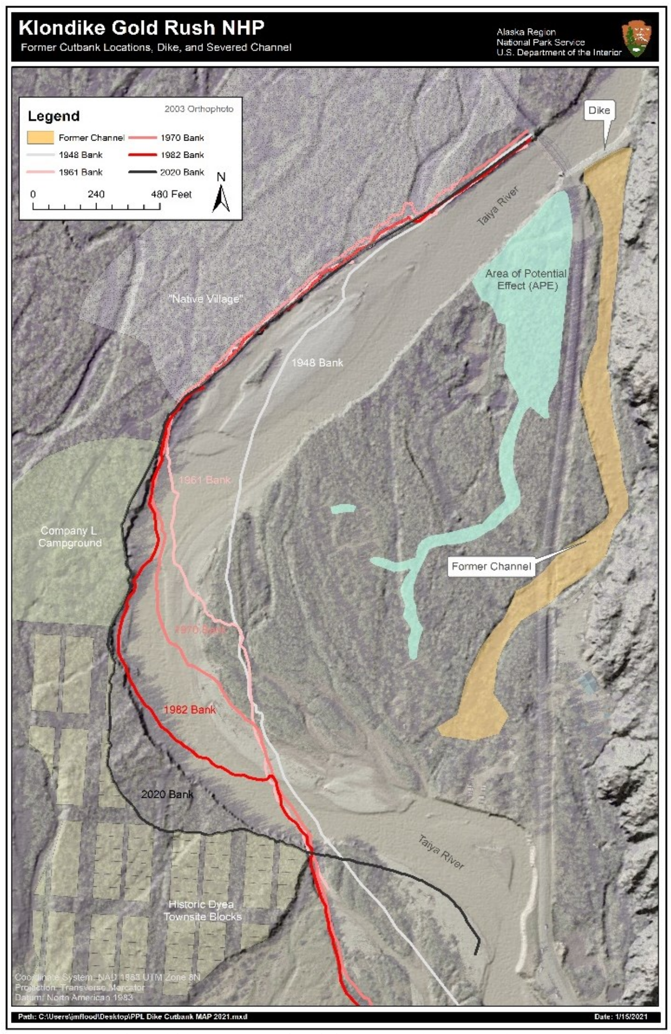


*Figure 4: Dike and Former Cutbank locations (NPS Map)*

[6] Water-year is measured from October 1 until September 30 of the next calendar year. It is the common annual context for hydrologist.
[7] See William Rubey's seminal 1938 USGS report for explanation of Hjulström Curve for more information on velocity and clast-size dynamics.
[8] Alaska Department of Transportation and Public Facilities, 2010, Structure inventory and appraisal sheet—Bridge 0309: Alaska Department of Transportation and Public Facilities.

along the cutbank at the historic Dyea townsite. In sum, banking armor along at north-end of the APE and the dike deflect flow away from the study area and towards the historic Dyea townsite. These channel modifications also increase flowrate through the detachment of channels that once displaced a portion of the river's volume and energy. The 49° angle of the bank modification (dike and bridge) may have also influenced angle of downstream flow and ensured the widening of the point-bar that is the APE and concomitant expansion of the cutbank into the historic Dyea townsite (Figure 6).

Before a chronological summation of the above hydrologic contexts, it is essential to emphasize the indivisible relationship between a cutbank and a point-bar. In geomorphology, these are two features generated by a single process, two sides of the same face.[9] As the lower Taiya River becomes more sinuous, the zone of highest velocity and lowest drag is deflected from one side of the stream surface to the other as it encounters resistance, the rip-rap for instance. In cross-section, this creates an erosive edge on one side of the channel and depositional side where velocity lags. One side of the channel erodes (cutbank), while the other deposits (point-bar). The physics of sinuous open-channel inextricably link the formation of a cutbank with a corresponding point-bar. Thus, information that concerns cutbank erosion at the historic Dyea townsite holds inherent information about the corresponding point-bar that is the APE.

*Historic Conditions of the lower Taiya River:*

Historic photographs, historic maps, aerial imagery, stream discharge data, and hydrologic reports make it possible to construct a general timeline of the Taiya River's position and character over the last 150 years. Historic photographs from the KLGO collection were instrumental in the reconstruction of the river's position at the APE pre-1948. Although the entire APE is rarely featured in the direct line of sight, several photographs from the gold rush era and subsequent homesteading capture important portions of the study area.

**1948 to present**: Aerial photography over the lower Taiya valley began in 1948 and subsequent imagery from satellites and airborne platforms only enhanced what is known about the river and its recent evolution. Curran (2020) reports that on the watershed-scale, the Taiya River is settling down in its lateral movements. Since the 1890s, the river evolved from a stream with multiple major channels to a single dominant path by 1948. The single corridor has not changed appreciably since 1948, except in the APE. Downstream of West Creek, reaches on the order of 1 km long have changed in a complex manner since 1894. These changes are episodic, with periods of relative stability (on the order of decades) interrupted by rapid channel migrations (on the order of single to multiple years).

At the APE, the meander wavelength has increased episodically since 1948, manifesting in a general westward progression of the point-bar. Importantly, the 1948 aerial photograph (Figure 7) reveals the main channel had already shifted out of its former location against the east valley wall. The absence of vegetation in the former main-channel and across much of the APE is evidence of regular hydrologic connection during high-flow periods of the year. Vegetation is established on the higher ground across the eastern half of the APE.

[9] For an explanation of how meanders form visit https://www.nps.gov/articles/meandering-stream.htm

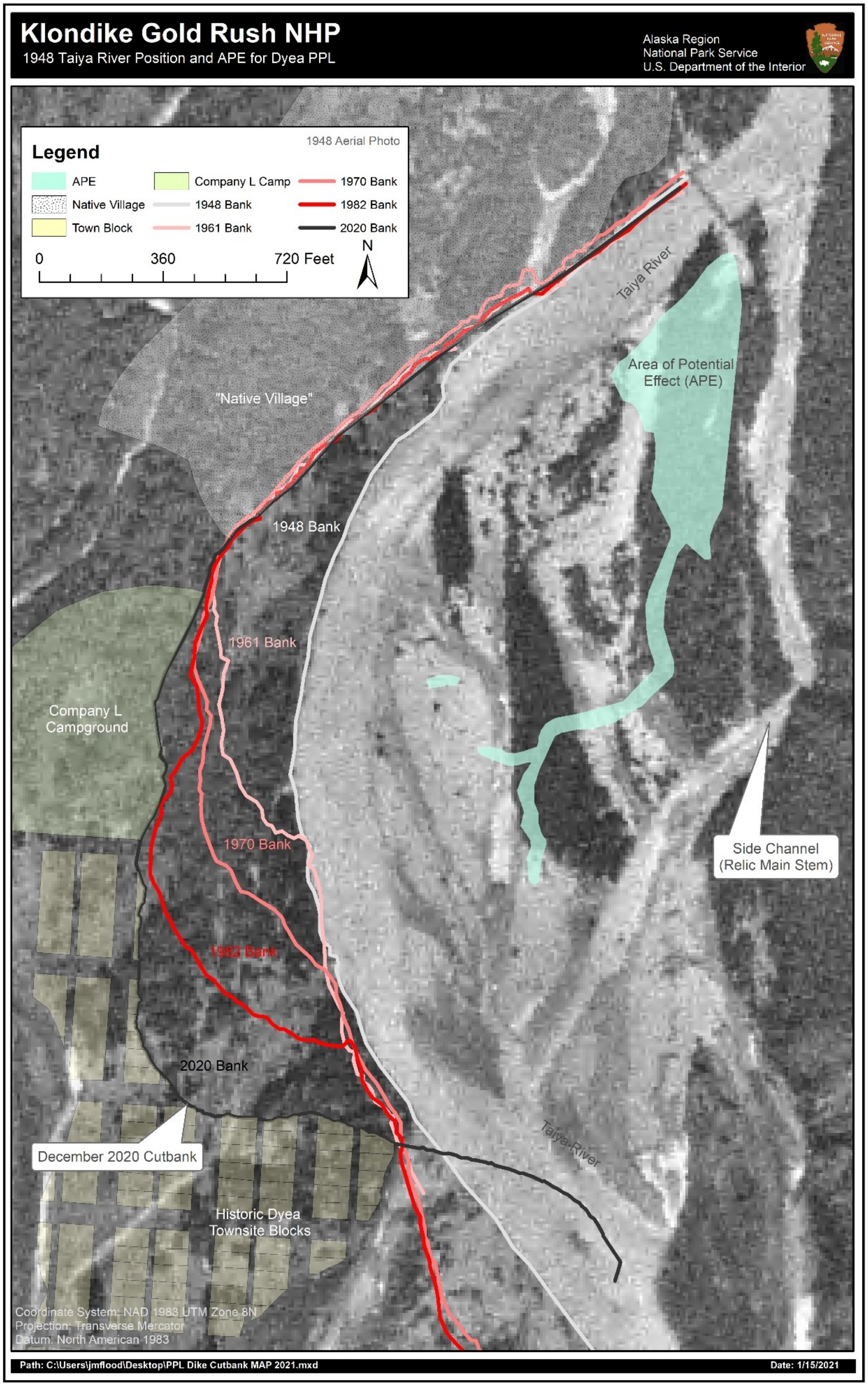


*Figure 5: Taiya River cutbank migration since 1948. (NPS Map)*

**1920 to 1948**: Before aerial photography and after the flurry of gold rush photographs, conditions and position of the Taiya River are more difficult to determine. Fieldwork and geomorphic analysis along with stream discharge data are the most reliable sources of information. Following fieldwork in 2002 at the cutbank associated with the APE, Inglis and Pranger report that a "threshold geomorphic event" occurred in the 1920s and sent the river into its current phase of lateral migration (2002, p.12). They suggest that a flood like the 1967 precipitation event or a GLOF may have triggered the channel's sudden migration. Whatever the cause, it was this event that pushed the main channel away from the valley wall east of the APE into the current channel west of the APE. Prior to this event the APE was inundated for part of the year if not perennially. Inglis and Pranger also suggest that the current westward channel migration will continue sweeping across the floodplain, destroying the historic Dyea townsite. Curran (2002, p. 49) confirms their hypothesis of inevitable erasure of the NHL townsite. Figure 8 taken in the area of the APE confirms Inglis and Pranger hypothesis and further refines the timeline to an event prior to 1922. The image captures the cutbank erosion advancing westward across from the APE into the abandoned historic Dyea townsite. Absence of vegetation and accumulated debris on the exposed cutbank in the image indicates that the erosion then undermining the barn had progressed rapidly. By 1948, the two structures featured in the image had washed away.

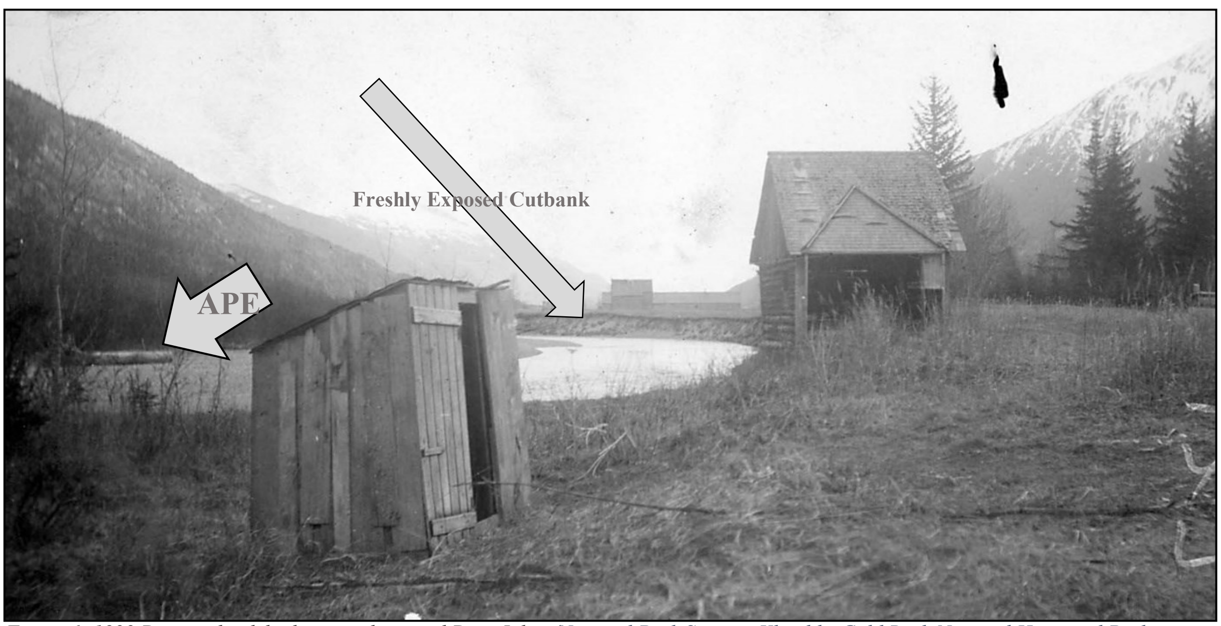


*Figure 6: 1922 Dyea cutbank looking south toward Dyea Inlet. (National Park Service, Klondike Gold Rush National Historical Park, George & Edna Rapuzzi Collection, KLGO 59771a. Gift of the Rasmuson Foundation.)*

**1892 to 1920**: The earliest photograph taken near the APE dates to 1892 and features a group of Tlingit children and adults standing in front of Healy and Wilson's trading post (Figure 9).[10] Though the image is looking northwest and away from the Taiya River, the coordinate location of the photo positions the main channel against valley wall and on of top of the APE when the photo was taken.

The vast majority of historic photographs taken within and of the APE coincide with the gold rush stampede and development of the Dyea townsite in 1897-1899. Maps of the Dyea townsite and historical images taken in 1897-1899 confirm the river's location against the east valley wall and on top of the APE at this time (Figure 10). Photographs also attest to greater flow west of the townsite through the Nelson Slough, which was then referred to as the West Branch of the Taiya River. An oblique photo from AB mountain shows that as late as 1917, the Nelson Slough was still drawing flow from the main branch (Figure 11). This photo also offers the last glimpse of the Taiya before the 1920s event. In the photograph, the main channel is heavily braided, with vegetation even established on some mid-channel bars.

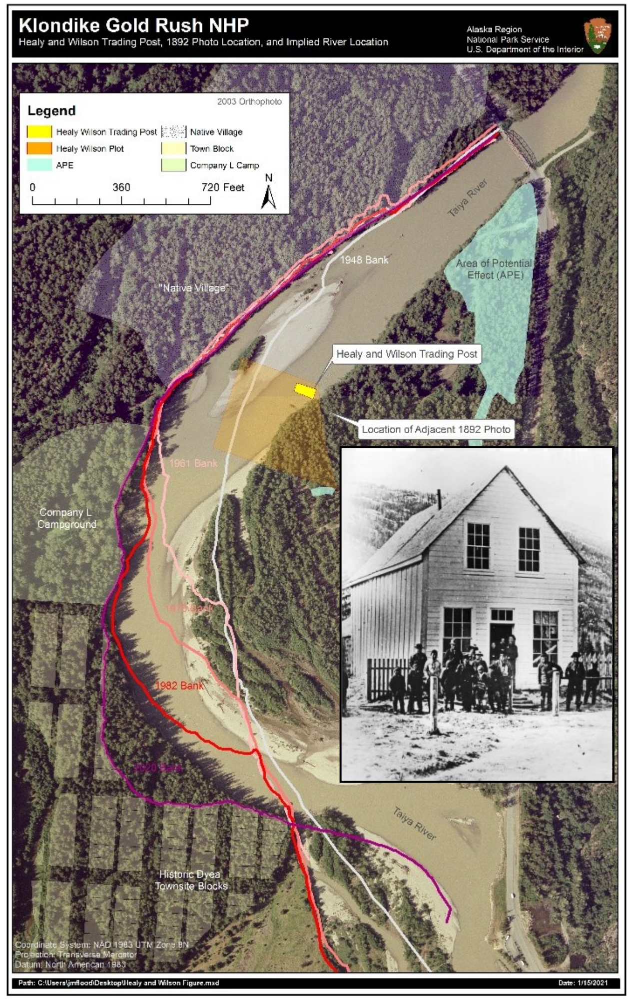

*Figure 7: Healy and Wilson Trading Post Location and APE*

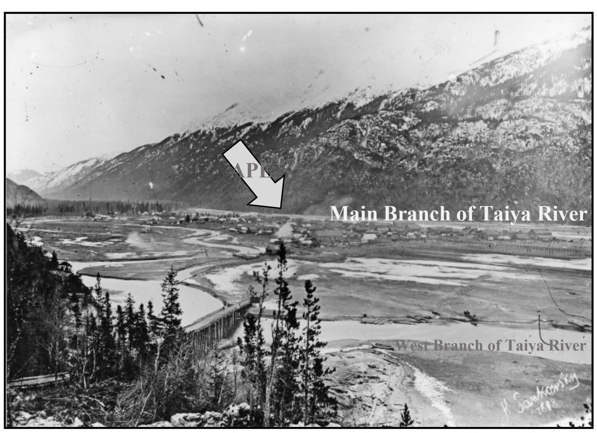

*Figure 10: 1898 Dyea with Taiya River along east valley wall (Alaska State Library, Skinner Collection, PCA 044-3-16 /19; KLGO DO-3-99)*

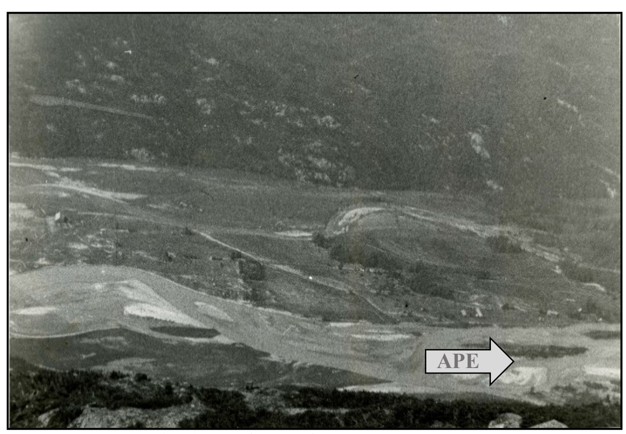

*Figure 11: Beierly photo of Dyea from AB Mountain circa 1917 (Andrew Beierly collection KLGO DO-24-1917)*

[10] Image inset in Figure 9 can be found in Yukon Archives, Alaska Historical Library Collection, 4195; KLGO HW-19-1560. Alaska State Library, Klondike Gold Rush Photograph Collection, PCA 232-77.

**Pre-1890s**: What is known about the location and morphology of the Taiya River pre-1890s comes from several firsthand accounts of explorers and cartographers and the maps they produced. Arthur Krause who will be discussed in the next section, visited the Taiya River valley in April 1882 led by Tlingit guides. He arrived during a eulachon run and reports setting up camp on “a small island where low alders and willows grew, in the at present mostly dry riverbed…” (Krause & Krause, 1993, p. 196). He traveled over the Chilkoot Trail and produced a relatively detailed map of the Taiya River valley (Figure 12). The Krause map positions the Taiya’s main stem along the east wall of the valley (see inset). In June the next year, First Lieutenant Frederick Schwatka arrived at the mouth of the Taiya River and produced the first American survey of the Taiya River valley. His map and written accounts also locate the Taiya River along the east wall of the valley, with considerable flow moving through what is now the Nelson Slough (Schwatka, 1885).

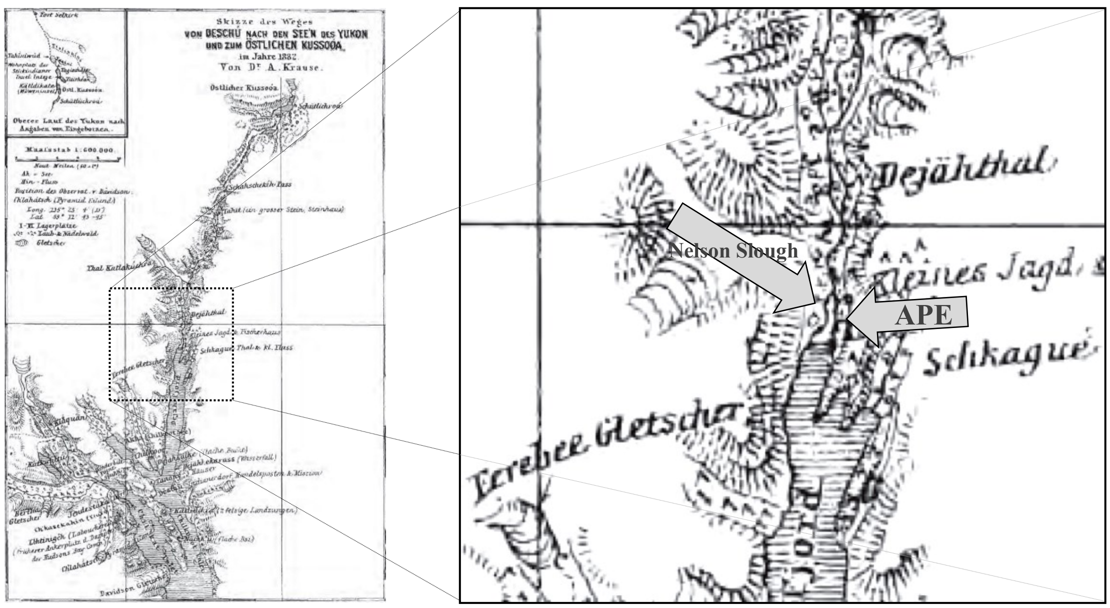


*Figure 12: Krause's 1882 Map of Upper Lynn Canal (note east location of Taiya River in inset map) (Krause & Krause, 1993)*

## Cultural Background

Between the mountain peaks and the river’s meandering path, a whole host of human activity has taken place in the Taiya River valley. Its location at the nexus of marine, estuarine, riverine, woodland, and upland ecosystems provides a rich assemblage of resources. Fish capture and filet smoking, shellfish collection, fish oil production, sea-otter hunting, and trapping have been common activities in valleys of the Upper Lynn Canal for centuries and continue to the present (Betts, 1994). In addition to resource extraction and intermittent habitation, the Taiya watershed has functioned as a conduit between the Yukon watershed and the coast, a route known as the Chilkoot Trail. The antiquity of this artery of materials, people, and information long pre-dates Euroamerican arrival in the Upper Lynn Canal (Rasic, 1998, p. 3; Devereaux, 2010). The thirtythousand or so prospectors who stampeded from Dyea to the Yukon in the final years of the 19th century, knowingly or not, trammeled an ancient route in their quest for personal fortune.[11]

Information about human activity in the Taiya River watershed prior to the arrival of Euroamerican traders and prospectors comes from oral histories, ethnography, and archeology. The study area is within the traditional lands of the Chilkat/Chilkoot Tlingit. The exact timing of Tlingit expansion into the upper Lynn Canal is difficult to establish due to (1) a paucity in dated archaeological sites and (2) the troublesome nature of linking contemporary ethnic groups with archaeological evidence; however, a general chronology of human migration and technological diffusion has been established for Southeast Alaska (Thornton, 2004; Gillespie, 2018). As is common to archaeologically derived data worldwide, information concerning human settlement patterns and material culture in Alaska generally becomes less detailed as the scope of analysis is moved further back in time. This temporal decay of information currently facilitates only a basic picture of the earliest cultures to inhabit the Lynn Canal corridor and neighboring fjords.

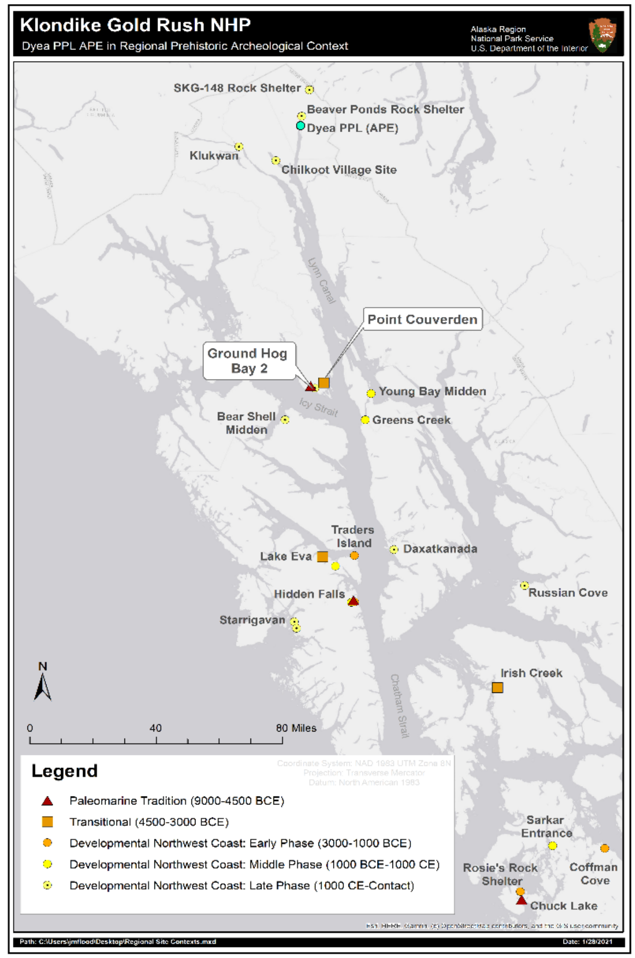

*Figure 13: Selected archeological sites in Lynn Canal area (NPS Map)*

The earliest documented human activity in the Lynn Canal area dates to around 7500 BCE,[12] a time of relatively warm temperatures between major and minor glacial advances (Ackerman et al., 1979). Stone artifacts from the lower deposits of the multicomponent site[13] of Ground Hog Bay 2 link the site's occupants to a way of life typified by water transport and marine-based subsistence (Figure 13). This cultural period is termed the Paleomarine Tradition and spanned from 9000 BCE to 4500 BCE (Carlson, 1990, p. 67). The initial occupation of the Ground Hog

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[11] Bronson 1977 and or Satterfield 1973 for the 30K figure

[12] BCE and CE stand for "Before the Common Era" and "Common Era" respectively. These notations allow researchers to adhere to the widely accepted Gregorian calendar without having to implicitly declare Jesus Christ as Lord. *Anno Domini* (AD) translates to "in the year of the lord" with its root as *Anno Domini nostri Jesu Christi* (in the year of our lord Jesus Christ). BCE/CE is commonly used in the natural and social sciences as a more inclusive substitution to the Christian exclusive notations of Gregorian calendrical system.

[13] The term "multicomponent site" is used for locations where multiple layers of distinct cultural materials overlay one another. In the Ground Hog Bay 2 example, older layers of sediment containing microblades dating to 7500 BCE were covered over by younger sediments containing distinct cultural materials that included stone bowls dating to 1100 CE, which was also covered by sediment containing historical materials. Multicomponent sites may or may not denote cultural continuity between layers. In the case of Ground Hog Bay 2, a developed soil layer between the oldest and newer deposits suggests the site was abandoned for some time before being reoccupied (Ackerman, Hamilton, and Stuckenrath 1979: 201).

Bay 2 site is linked to specific rock sources for tool production (i.e., chert, argillite, slate). Excavators have interpreted this early occupation at the base of the Lynn Canal as intermittent, possibly cyclical, and focused on the procurement of specific rock types to fashion specific tool assemblages (Ackerman et al., 1979, p. 201).

The toolkit that typifies the Paleomarine Tradition—small blades stripped and flaked from a larger silicious stone core, referred to as *microblades*—begins to include ground-stone implements in deposits dating between 4500 BCE to 3000 BCE (Davis, 1990, p. 198). The appearance of ground-stone tools defines the Transitional phase in the cultural chronology of Southeast Alaska. Ground-stone implements were used to pulverize and reduce materials, often foodstuffs, through percussive and abrasive action (Adams, 2014). The appearance of this new technology at sites like Point Couverdon coincided with environmental changes along the Lynn Canal (Figure 13). Between 4500 BCE and 3000 BCE, the position of regional shorelines stabilized, and the development of forested valley bottoms with diverse riparian habitats was underway (Gillispie, 2018, p. 21). Ground-stone technology that characterizes the Transitional phase signals an expansion in subsistence strategies that included collection and processing of resources from emergent terrestrial ecosystems (Holloway, 1982).

Pollen recovered in lake bottom sediments in Southeast Alaska and British Columbia indicate major vegetation changes took place in the region around 3000 BCE (Rosenberg et al., 2003; Pellatt & Mathewes, 1997; Hallett & Hills, 2006). Higher pollen accumulation rates signify the proliferation of terrestrial vegetation in general, and analysis of pollen-types reveal that forests established in the lower elevations during the Transitional cultural phase pioneered upper watersheds. Increased ecosystem productivity around 3000 BCE coincided with establishment of larger and more permanent human settlements and specialized subsistence camps in Southeast Alaska (Davis, 1990, p. 199). Postholes dated between 2670 BCE and 1265 BCE at the Hidden Falls site (Figure 13) indicate inhabitants utilized the emergent forest as timber in the creation of structures (Davis, 1984). The earliest shell midden sites in Southeast Alaska also coincide with the sweeping environmental changes of the 3rd millennium; expansive clam and mussel beds required to create midden sites suggest terrestrial vegetation changes had positively impacted nutrient loads in streams, the primary food source for estuarine bivalves (Davis, 1990, p. 199). Mann and colleagues (1998, pp. 118-119) further linked this period to the maturation of riverine and estuarine habitat and suggested major increases in the productivity of anadromous fish, like salmon and eulachon, occurred in Southeast Alaska around 3000 BCE.

Increased terrestrial, riverine, and estuarine ecosystem productivity in Southeast Alaska around 3000 BCE facilitated a cultural transition towards a more sedentary way of life than possible in previous periods. Fladmark (1975) traced definitive cultural behaviors—such as settlement orientation and subsistence technologies—of modern Northwest Coast peoples back to 3000 BCE. Archeologists have labeled the cultural period that spans 3000 BCE (regular runs of salmonid occur) to 1741 CE (initial Russian contact) as the Developmental Northwest Coast Tradition. The cultural impact of bountiful annual anadromous fish harvest is hard to overstate; runs of chinook, sockeye, pink, chum, and coho would eventually come to dictate the Tlingit economic cycle (De Laguna, 1990, p. 210). Post-3000 BCE, settlement locations tended to be river-focused and fish bones become a more regular feature in archeological deposits (Moss & Cannon, 2011). As riparian ecosystems developed in watersheds previously occupied by glaciers, so too did the technology to capture the diverse assemblage of anadromous fish.

Intertidal fish traps and weir structures are evident in the Alaskan archaeological record as early as 4360 BCE (Smith, 2011; Smith et al., 1999). Of the 198 published ancient weir sites with wooden stakes in Southeast Alaska, radiocarbon dates exist for 108. Collectively, this data suggests that weir technology took root in the southern Alaska panhandle around 3000 BCE and migrated northward over the centuries. The use of weir entrapments proliferated between 1500 and 500 BCE, then boomed between 500 BCE to 500 CE (Figure 14 from Smith, 2011, p. 19). Increased reliance on salmon and fin-fish harvest as inferred through the weir data coincides with the Middle Phase within the context of Developmental Northwest Coast cultural chronology, a period also characterized by many large shell midden sites (Ames & Maschner, 1999, p. 88; Moss, 1998, p. 100). Use of intertidal weirs appears to have waned in the centuries that preceded European contact and was eventually prohibited by federal regulations in the 1890s (Langdon, 2006, p. 62). An ancient weir site has yet to be discovered in the Taiya watershed; however, excavators in the APE were particularly aware of their possible presence because of the zone's riparian past. The gentle gradient and lower discharge of the Nelson Slough, former West Branch of the Taiya River, has more potential to yield an ancient weir based on the hydrologic setting of documented weir sites (Smith, 2011, p.18). An estuarine weir system (SKG-00204) has been discovered in Chilkoot Bay, just 21 miles south of Dyea, with wood stakes dating to 160 CE (±60).

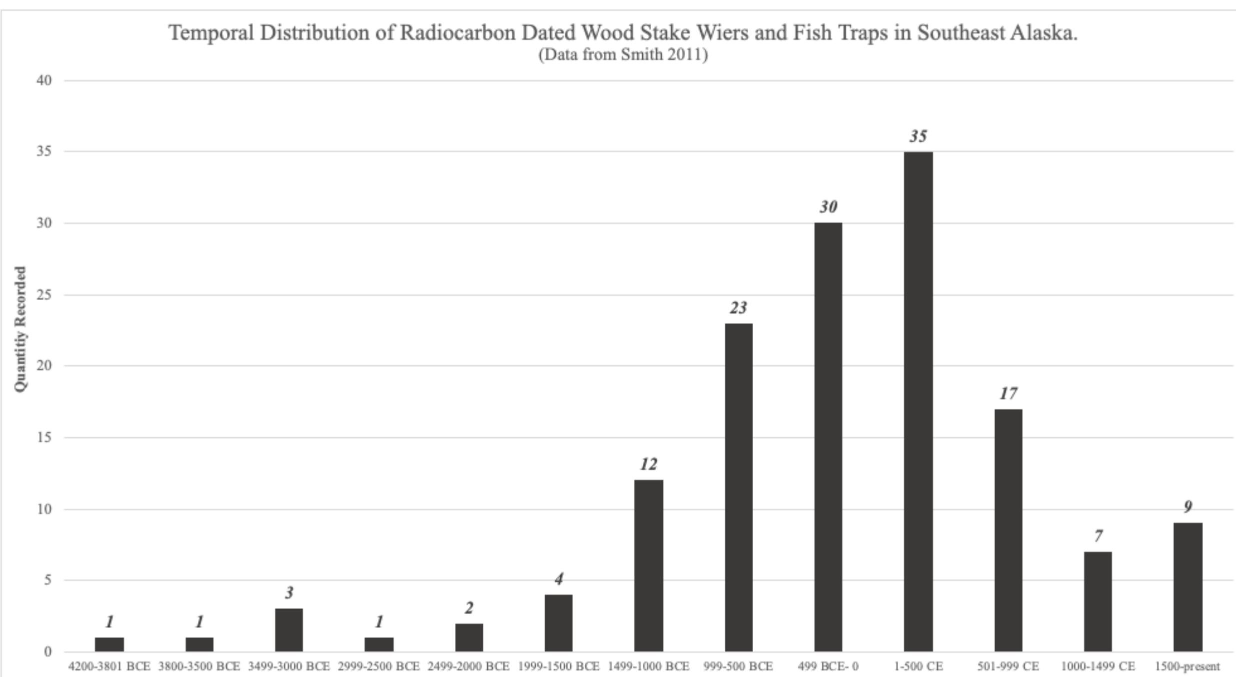



*Figure 14: Temporal Distribution of Fish Traps in SE Alaska (after Smith 2011)*

Tlingit oral history and archaeological deposits in the upper Lynn Canal suggest that Tlingit expansion into the area may have been relatively recent, within the last 500-600 years

(Devereaux, 2010; Sackett, 1979). Thornton (2004, p.16) relays that the “Box of Daylight” creation story localizes Tlingit beginnings at Nass River (Naas’) in what is now British Columbia. Thornton further distills a general movement of Tlingit clans from Glacier Bay into what is now Chilkat and Chilkoot territory from a selection of oral histories (2004, pp. 17-27). The exact timing of these migrations is difficult to discern through narrative and ethnography, but radiocarbon dates recently established at several archaeological sites in the Taiya valley indicate definitive human occupation by at least the 15th century CE.

The oldest date from an archaeological deposit in the Taiya watershed comes from a hearth deposit discovered in a rock shelter adjacent the Chilkoot Trail in the area of Long Hill (KLGO 00050.00).[14] Based on accelerated mass spectrometry (AMS) radiocarbon dating, charcoal from the hearth dates to a calibrated age of 1460-1660 CE (Devereaux 2010). Downstream and closer to the APE, Jones and Richards (2013) reinvestigated a rock shelter at Beaver Ponds and discovered lithic tools, bone, and charcoal that produced a calibrated date of 1590 CE. Both sites fall within the Late Phase of the Developmental Northwest Coast Tradition, which spanned 1000 CE to 1800 CE. According to Moss (1998, p. 101), most Late Phase archaeological sites in the region are associated with Tlingit placenames and are known through oral histories, with some sites still in use. The Late Phase is characterized by a shift towards larger, more permanent and defensible structures in the lower elevations; many of these sites are referred to as forts in ethnohistory (Moss, 1998, p. 102). Maschner (1992) tied the Late Period to a general growth in population along the Northwest Coast and the development of the first perennially occupied, multi-family settlements, or villages.

A third rock shelter in the Taiya watershed also pre-dates the Klondike stampede of 1897-1899. Site SKG-148 (Alaska Heritage Resource Survey or AHRS number) is also located on the Long Hill section of the Chilkoot Trail, just above the timberline, at the base of a steep slope covered in granodiorite boulders. In several places, the boulder configuration has created small shelters. SKG-148 is formed by a boulder measuring 26 x 15 ft naturally propped up by smaller stones to create a covered area of approximately 270 sq-ft (Rasic, 1998, p. 10). From the thin soil that generated on the shelter’s floor, a diverse assemblage of cultural materials was recovered. Chipped stone artifacts of non-local materials, obsidian and chert, along with colored glass beads, ammunition, and a United States quarter dollar coin minted in 1854 collectively depict the shelter as a waypoint, as a place in between, at a time of monumental transition in Southeast Alaska. The morphology of the beads, the .38 caliber Smith and Wesson bullet, and the currency correlate with the radiocarbon date from a buried hearth in the shelter, 1840 to 1860 +/- 70 CE (Rasic, 1998, p.19). This predates known Euroamerican foot-traffic across the Chilkoot Pass, but the industrial materials resonate their increasing gravity in the region.

Manufactured goods were not the only foreign materials circulating through the Tlingit communities in the mid-1800s; pathogens, like smallpox and measles were also transmitted from non-Natives to Natives. Between 1835-1838 and again in 1862, smallpox decimated much of the

[14] KLGO 00050.00 is the rock shelter’s unique identifier in the Archeological Sites Management Information System (ASMIS), the National Park Service’s standardized database for basic registration and management of park prehistoric and historical archeological resources. This site may receive an AHRS number from the Alaska Office of History and Archaeology (aka: SHPO) in coming years. AHRS stands for Alaska Heritage Resource Survey.

Northwest Coast and depopulated whole villages.[15] Emmons records that rotted timbers of houses could still be observed in 1900. That was not the first wave of the virus either, as Captain Portlock in 1787 observed an old man and a girl of fourteen both scared with smallpox on the west coast of Chichagof Island in the Sitka territory (Emmons & De Laguna, 1991, p. 19).

A shell-midden located 0.52 miles (0.84 km) south of the APE, and outside National Park Service boundaries, is the fourth definitive pre-gold rush site in the Taiya River valley. Excavators of site SKG-00087 (AHRS number) defined it as a seasonal campsite with a shell midden. Concentrations of shell, fire-cracked stone, and charcoal in at least two soil layers (stratum 3 and stratum 4) indicate repeated use of the location (Ertec, 1983, p. IV-18). Blue mussel (Mytilus edulis) comprise most of the shell deposit, with littorines (Littorina sp.), large barnacle (Balanus sp.), and shelled gastropods (whelk: Nucella sp.) present in lower concentrations. Although charcoal was collected it was not radiocarbon dated. The deposit was not fully excavated in 1983, so charcoal could be collected and dated in the future.

Only two other shell middens are known in the Upper Lynn Canal at present. They are both located in the Chilkat estuary on the northwest coast of Pyramid Island. Midden (SKG-00136) was discovered in 1996 and dates between 1800-1850 CE. The other midden (SKG-0013), site name "Shell Midden 2" is located about 984 ft (300 m) southwest of aforementioned site. Charcoal from the midden produced a date between 1800-1850 CE.

Archaeological sites on the Yukon River watershed side of the Chilkoot Trail may push the antiquity of the trade conduit further back in time than the three radiocarbon dates imply, while shared elements in oral traditions between Tagish Athapaskans and Tlingit point to linkages developed in the distant past (Thornton, 2004, p. 27). Human occupation in the headwater lake region of the Yukon River extends back to approximately 5000 BCE (Greer, 1993), but there is little indication that these inhabitants near Bennet Lake had any connection with the tidewater in Dyea.[16] In fact the excavator of the Annie Lake site points southeast towards lithic similarities at sites on the Canadian plateau and the Great Plains (Greer, 1993, p. 40). Later sites at the terminus of the Chilkoot Trail do however suggest the route may have been established by approximately 705 BCE (Thomson & Hems, 1996, p. 35).

Ethnography, oral history, and early Euroamerican accounts work in concert to generate a clearer picture of the Tlingit cultural landscape in the Northern Lynn Canal in the decades immediately preceding the Klondike Gold Rush. The Tlingit follow an exogamous matrilineal system, through which social characteristics of clan membership, rank, and place-based-identities are prescribed. Tlingit clans belong to one of two moieties or descent groups, the Raven or the Eagle, which have been determined genetically distinct from one another (De los Santos, et al., 2020). Matrilineal clan membership is the oldest and most foundational unit of Tlingit social structure, defining ownership and use rights to physical property, that include salmon streams, shellfish beds, canoe-landing beaches, and trading paths. Clan membership is further spatially refined by localized clan segments, known as house-groups (*hit*). The house-group distinction,

[15] Coates, in Best Left as Indians, pp. 10-11. notes that illnesses other than smallpox struck the Kutchin at Fort Yukon between 1847 and 1851.
[16] Other NPS reports indicate a connection between the two watersheds based on the Annie Lake site. Though not outside the realm of possibility, there is zero evidence either in the Canadian assemblages or those in the Lynn Canal.

for example, further refined who could fish which streams and exert other territorial rights within a landscape (Thornton, 2004, p. 38). The Tlingit term *at.óow* captures the western concept of property, but penetrates into deeper concepts of personal identity, belonging, and ancestral connections. The Lukaaxh.ádi is the primary clan in the upper Lynn Canal and may be further spatially divided into Chilkoot and Chilkat house-groups. The Chilkoot village archeological district (SKG-00018) is 21 miles (34 km) over water to Dyea. The Taiya watershed and surrounding environs were and still are the territory (*at.óow*) of the Chilkat/Chilkoot Tlingit. It was the Chilkoot Tlingit that utilized, owned, and introduced the first Euroamericans to the Taiya watershed in the 1870s CE.

The first Euroamerican to travel the Chilkoot Trail roundtrip was led by Chilkoot Jack and two Indian slaves over what was recorded as the "Chilkat" Pass (Dawson, 1887-1888, p. 179; Thornton, 2004, p. 119). George Holt returned from this guided trip with news of gold in 1874, but few believed him. George Pilz, one of the few inspired by Holt's account, led an expedition to the mouth of the Taiya River where he was turned away by "hostile and now vigilant Indians who maintained their hold on the route"(Friesen, 1977, p. 13). Partially in response to Pilz's rebuff, partially due to pressure from other white prospectors, a U.S. Navy gunboat proceeded with threat-and-intimations maneuvers and discharged a Gatling gun and howitzer into waters off of Taiya delta after marginal diplomatic efforts in 1880 (Beardslee, 1882). A stream of prospectors and surveyors soon followed.

The first detailed written accounts of the Taiya watershed and what would become the study area for this report came from German ethnographer, Arthur Krause. In 1882, after documenting Tlingit life in the village/house-group of Chilkoot with his brother Aurel, Arthur was accompanied by Kasko (a local Chilkoot) to the Taiya River valley. His trip occurred in April and his party arrived at the Taiya River delta at high tide. He described that by using the tide, the Taiya River could be partially navigated to a place where other boats were pulled ashore. Arthur specifies that they approached on the east. Once ashore, he describes a crowded landscape busy with fish capture and processing during the seasonal eulachon run. A cabin or structure was filled to capacity, so his party were forced to make camp "on a small island where low alders and willows grew, in the at present mostly dry riverbed…" (Krause, 1882, p. 196). He describes trade items of "smoked salmon, fish oil and flour, snowshoes, guns, and axe" carried by a leader from the Chilkoot village, Chlunat (sp. Lunáat'), bound for Tagish Athabaskan territory at the trail's terminus. Arthur Krause returned to the valley a month later, in May 1882, this time at low tide. He and two Tlingit guides had to paddle up stream until they reached a grassy area where they could camp. The next morning the Tlingits pulled and pushed the canoe up the swift moving Taiya River, eventually reaching "the place where the waters of the Katlakuchra and the Ssidrajik join," what is now where West Creek joins the Taiya River. The Tlingit placename that Krause recorded as "Katlakuchra" is more likely Kaxhla Khu.aa ("puking into"), which is the enthnohistoric placename for West Creek and is an accurate geomorphic description of the protruding alluvial fan. Over the next few days Krause described a well-defined Tlingit trail corridor and even camped in the natural rock-shelters at the foot of what would become Long Hill. The ethnography and accompanying map he created as a result of this trip over the Chilkoot Pass illustrates the intimate knowledge and habitual use of the watershed by the Chilkoot Tlingit

(Figure 12). The map also depicts that the Taiya River was positioned flowing over the APE in 1882.

In May 1883, one year after Krause's first trip to the Dyea inlet, First Lieutenant Frederick Schwatka arrived under orders to lead the Alaska Military Reconnaissance. His party was considerably larger than Krause's and anchored in the Dyea inlet then shuttled ashore in smaller crafts. He also positions the Taiya River on the east wall of the valley in the area of the APE. Like Krause he hired Tlingit packers, but also hired Tagish packers from a camp he encountered near the Dyea flats. Schwatka also describes weirs in the river and purchasing trout, before reflecting on the impossibility of catching fish with bait or fly due to the milk-like turbidity of the water (1885, p.15). His account of the Chilkoot Trail basically conforms to the same route Krause traversed the year before, with the same camp areas utilized, and was even undertaken at the same month. This speaks volumes to the Tlingit knowledge and mastery of the watershed, which evidently included the most fortuitous time of year to shepherd white folk over the pass.

After Krause and Schwatka passed through the lower Taiya River valley in 1882 and 1883, Edgar Wilson opened a small trading post near the traditional Tlingit encampment/village in 1884. In 1886, John Healy partnered with Wilson and operated a steam ship in the Lynn Canal, the *Yukon*, to enhance trade. In 1886, Healy estimated the Native population at fifty, which included men, women, and children who were primarily engaged in packing and transporting goods up and over the Chilkoot Pass. By 1887, William Ogilvie (Canadian government surveyor) noted 138 Native people in the Dyea village. The Native population increase likely reflected the growth in packing and transport work as an increasing stream of prospectors trickled into the Yukon. In 1886, an estimated 200 prospectors were guided over the Chilkoot Trail, and in 1887 an estimated 500 (Horton et al., 2002: 33). A conflict soon developed between John Healy and local Tlingits over ownership of the Chilkoot Trail. One of the Chilkoot leaders, Lunáat', complained to the U.S. government during the Alaska Boundary Tribunal: "Mr Haley [*sic*] wishes to take away our road or trail to the Yukon, which my tribe does not like, as we made it long ago, and it has always been in my tribe."[17] Healy and Wilson abandoned the contested toll-road idea, but continued to direct packing operations and augment the traditional trail. It was in their trading post that the news of gold on Bonanza Creek in the Yukon arrived in March of 1897, and from there it echoed around the world.

The Klondike Gold Rush, 1897-1898, wrought profound cultural and environmental effects on the Taiya River valley. Approximately 30,000 individuals traveled to the Yukon Territory via the Chilkoot Trail in 1897-1898, while many more sold materials and services in the boomtown of Dyea. Extensive timbering, imported machinery, and manufactured materials turned the former Native village and trading post into one of the most populous places in the region. Boomtown Dyea swelled to a population of roughly 8,000 people by March of 1898. The town extended from high-tide line on the Dyea flats to the first river crossing at the Kinney Bridge, located north of the APE. Historic photographs and maps position the Taiya River along the eastern boundary of the sprawling town. Based on the position of the Healy and Wilson Trading Post,

[17] Alaska Boundary Tribunal, pg. 394; Proceedings of the Alaskan Boundary Tribunal (1902-03). S Doc. 162, 58th Congress, 2nd Session, Volume 1, part 2: Appendix to the Case of the United States. In Senate Documents, vol 15: 393-395. (Washington, D.C.: 1904).

the APE can be seen as part of the Taiya River main stem in Figures 15 and Figure 16 (see Figure 9 for map-based reference).

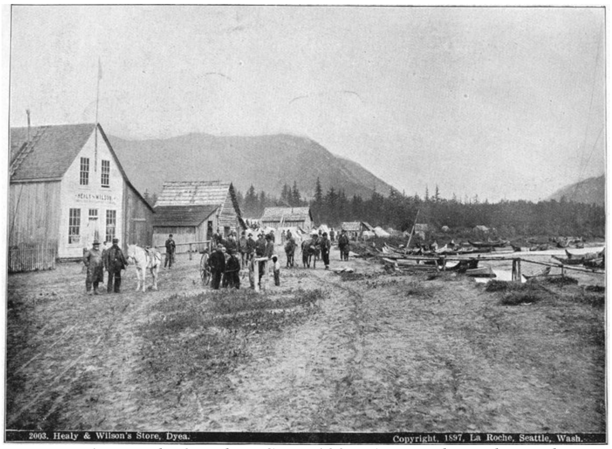



*Figure 15: Healy & Wilson Store 1897, APE is channel to right. (Library of Congress, 3a50275u; KLGO HW-25-10007)*

*Figure 16: Healy & Wilson Store fall 1897, APE to right of men. (Yukon Archives, Vancouver Public Library; KLGO HW-17-1301)*

Tlingit hegemony of the Chilkoot Trail deteriorated under the rapid influx of thousands of eager prospectors and opportunistic capitalists. Construction of the Dyea townsite likely obliterated what Tlingit structures may have stood and what shallow subsurface deposits were in the gridded townsite. In addition to Krause's account of a bustling seasonal village with at least one cabin, Paddy Goenette describes three smokehouses in pre-Klondike Gold Rush Dyea owned by the Lukaax.ádi people in an oral history interview (Goldschmidt & Haas, 1946, p. 33). The exact location of any of these structure remains unknown, and their construction materials may have been integrated into town building.

The historic Dyea townsite is a cultural landmark of a different sort, neither tuned to seasonal cycles nor tailored to landscape. It was and is a monument to capitalism and the pursuit of the American "rags-to-riches" fantasy, which for a few came true in the waning years of the 19th century. Unlike the Tlingit history in Dyea, much has been published on the historic town and its rapid manifestation then disintegration in valley. The Dyea Cultural Landscape Report (CLR) (2012) and the Chilkoot Trail CLR (2011) are two excellent places to begin more in-depth research on what hotels and shops were erected and torn down. For this report, the photographs of the site and watershed reveal what could not be said for certain about preceding periods: that the Taiya River was flowing on top of the APE. Figure 17 in addition to this report's cover photo reveal that areas east of the Healy and Wilson trading post were part of the Taiya's main channel. Several historic photographs indicate that a slough or seasonal channel meandered towards the Healy and Wilson building


*Figure 17: Dyea 1898 looking east with APE at base distant hill) (United States Geological Survey, Walter Curran Mendenhall Collection, Mendenhall; KLGO DO-30-5855)*

created a natural harbor for canoes away from river's main current (Figure 18). This is a potential reason for the location of the Native village and original trading post there. Since the river has migrated so far westward since 1898 that the coordinate location of the Healy and Wilson trading post is now on the east-side of the river channel, immediately adjacent to the APE, the space left for the photographed side channel (canoe-harbor) and the mainstem in 1898 is only 980 feet (300 m) before the mountain bedrock (Figure 9).

*Figure 18: Canoes east of Healy & Wilson Store 1897 (La Roche). APE is lower right quarter of image. (KLGO DW-44-10002. Photograph also found in the Library of Congress 3b16875u)*

By June of 1900, population in Dyea had plummeted to 122 people. The best gold claims had long been staked, Skagway's White Pass & Yukon Route railroad siphoned what traffic still desired the Yukon, and as the grand staging grounds for Yukon expeditions, Dyea had lost its purpose. Yet the land did not revert to its previous Tlingit cultural landscape, because another American ideal needed to play out: Homesteading. The Jeffersonian ideal of America as a collection of self-sustaining family farms was encapsulated in the Homestead Act of 1862 and the first to make a claim in Dyea was the unsuccessful prospector, Emil Klatt. His submission of 160-acres was locally recognized and Klatt farmed in the former Dyea townsite for 10 years, specializing in potatoes. Klatt selected the best abandoned building for his residence and used lumber from other structures to construct fencing (Jones, 1907). His most profitable crops were turnips and potatoes, both root-crops with obvious impacts on the nascent historical archaeological site now part of a National Historical Landmark. After nearly a decade of lone homesteading, William Edward Matthews claimed a 160-acre farm north of Klatt in 1913. Klatt's claim was eventually acquired by Harriet Pullen of Skagway in 1915, and she received the official homestead patent in 1922. Her claim included the former Healy and Wilson building and a portion of what would become the APE. The 1918 map for her homestead patent (Figure 19) depicts the continued existence of the same intermittent channel east of the trading post where the canoe photo (Figure 18) was taken 20 years earlier. The map also shows the APE within the annual highwater mark of the main branch of the Taiya, which was sketched along the valley's east wall.

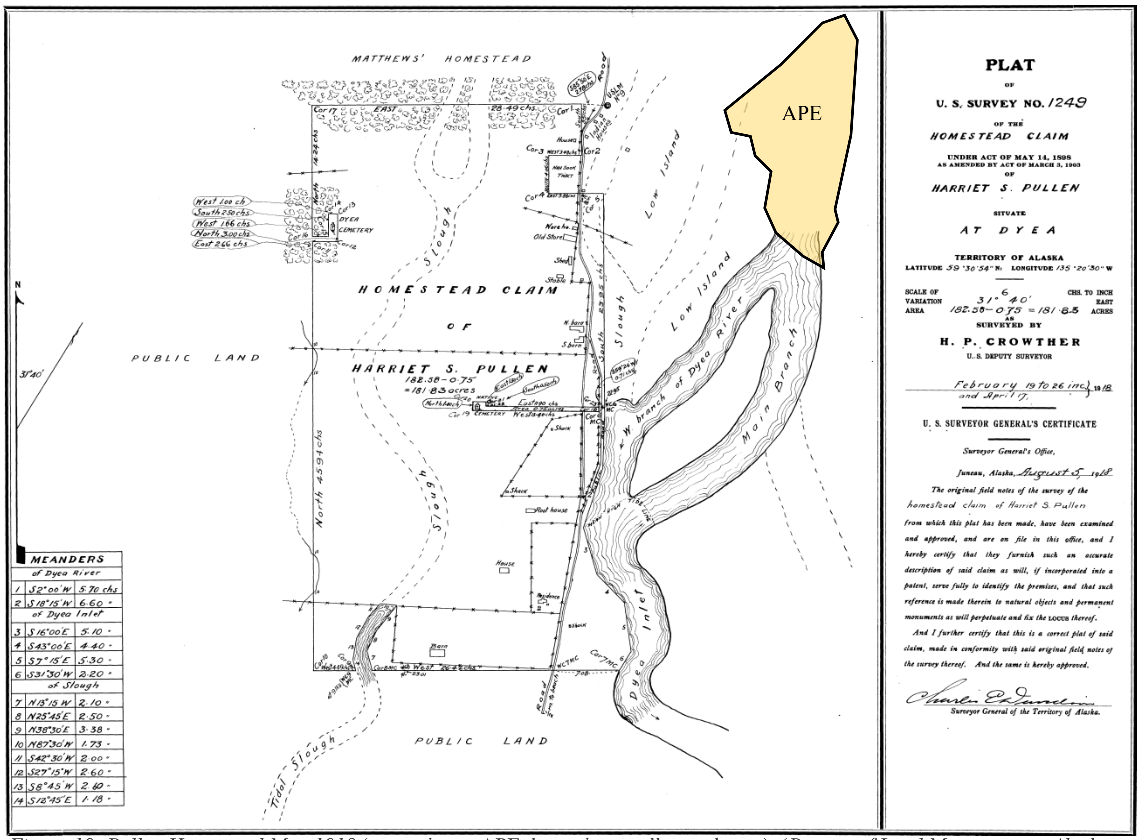


*Figure 19: Pullen Homestead Map 1918* (approximate APE drawn in as yellow polygon). (*Bureau of Land Management, Alaska Spatial Data Management System. Found online at https://sdms.ak.blm.gov/scanned_images/surveyindex.html (last accessed online, 23 September 2020).*

Few photographs and fewer documents exist that describe activities in Dyea from the 1920s to the 1940s. Prior to 1948 and the creation of the Dyea Road, the only way to travel to Dyea was by boat. The only recorded resident of Dyea in the 1930s and 1940s was Al Nelson, whose name was bestowed on the former West Branch of the Taiya River, now the Nelson Slough. Nelson reportedly cut and sold timber to Skagway residents, calling his business the "Dyea Wood Company."[18] After eight years of work, the Alaska Road Commission (ARC) completed the Dyea Road and Taiya bridge in 1948. A section of the road was constructed on the point-bar where the APE is located; the road defines the east side of the PPL project's boundary. The new

[18]*Lady Emma Mining Company Journal*, 78-80 (KLGO Archives).

connectivity between Skagway and Dyea resulted in an influx of homebuilders, with six new residences sited in the former townsite (NPS, 2012, p. 83).

Informal plans to commemorate the Klondike Gold Rush in Dyea as a place of identity-building (similar to the Tlingit concept of *at.óow*) were intermingled with the 1959 Alaska Statehood Act. As nation-building is part narrative-building, Alaska as a distinct region within the broader American identity necessarily needed a history all its own. The gold rush of 1897-98 was one of those unique historical moments, even if many stampeders were non-Americans and their destination Canada. The NPS Historic Sites Inventory of Alaska in 1961 identified Dyea and the Chilkoot Trail as candidates for National Historical Landmark designations. On August 11, 1972 an agreement between the State of Alaska, the NPS, the Bureau of Land Management was signed establishing a collectively managed park. Once the agreement expired, Congress enacted legislation to create the Klondike Gold Rush National Historical Park in June 1976.

In the years between Alaska's statehood and the establishment of the Klondike Gold Rush National Historical Park, a locally important activity occurred within the study area. Sometime between 1948 and 1970, a gravel extraction operation occurred in the APE and created the network of concave depressions visible in the 2003 LiDAR image of the areas surface elevation (Figure 20). A crescent-shaped road was installed to access the extraction pits. A 2012 NPS report identified the borrow-pits as part of the "Hosford gravel operation" and date its creation to sometime in the 1940s to 1960s (NPS, 2012, p. 135). An aerial photograph from 1948 shows neither pit nor road in the area (Figure 7), but the access road and pits are visible in a 1961 image (see inset in Figure 18). By 1979, the pits are pictured full of water (see inset in Figure 18).

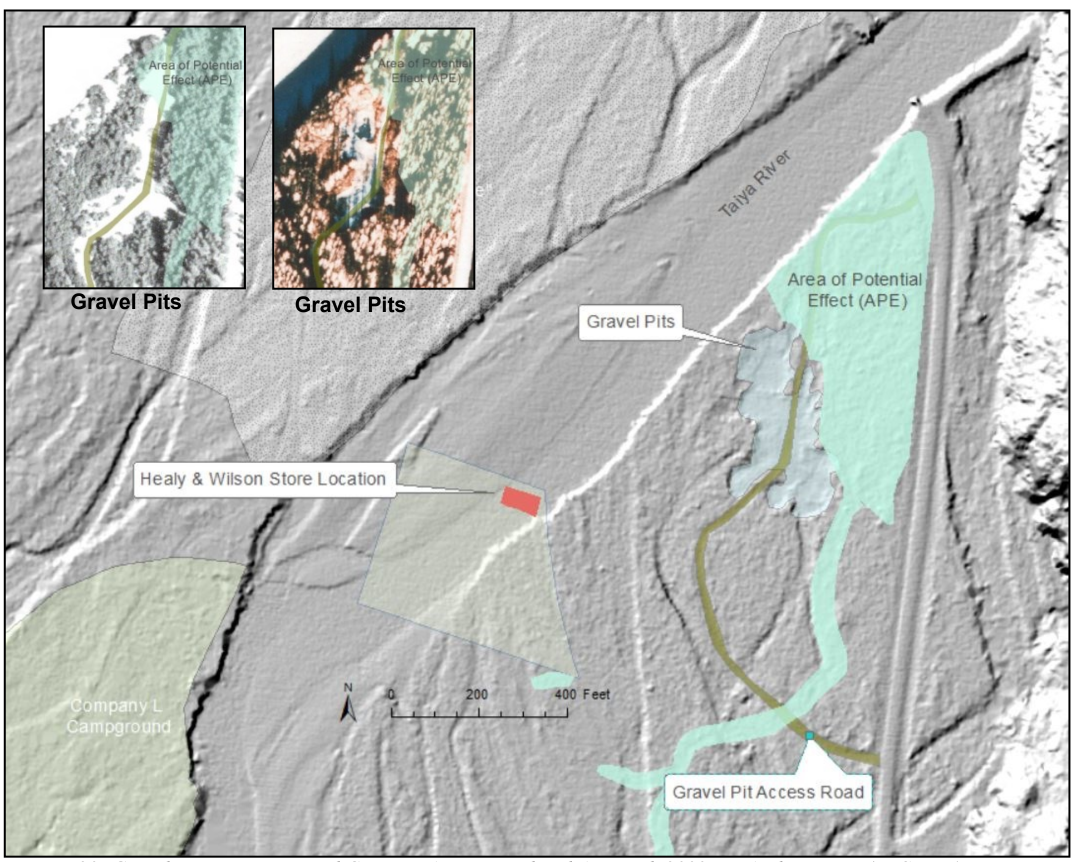



*Figure 20: Gravel Pit Depression and Crescent Access Road and APE with 2003 LiDAR base-map (NPS Map)*

## Previous Archeological Studies

The APE had not received a systematic cultural resource study prior to this report; however, surface and subsurface investigations have taken place in areas surrounding the APE. This includes extensive surface and subsurface testing and remote sensing survey in the historic Dyea townsite, located on the west bank of the Taiya River. Work on the east side of the river south of the Taiya River bridge has been comparatively scant. A surface survey was performed in 1981 along the road corridor that forms the eastern boundary of the current APE. The surface survey was deemed insufficient by the Alaska State Historic Preservation Office (SHPO) and Ertec Northwest, Incorporated completed a follow-up investigation in 1983.

The 1981 and 1983 archeological work along the Dyea Road, immediately east of the APE, was undertaken as part of the compliance process for a proposed hydroelectric facility at West Creek. The project required burying transmission lines next to the existing road south of the Taiya River bridge. After a visual survey, Environaid Inc. (1981) deemed the crescent landform where the APE is located as unlikely to yield cultural deposits; no shovel testing occurred. In the research plan submitted by Ertec, Inc. (1983) the study area is described as: "located on delta flats of the Taiya River and has been cut and filled by the river channels since the turn of the century. This section had a low probability for containing sites as it was very unlikely that significant undisturbed cultural resources would be found" (Ertec, 1983, p. A-3). The Ertec, Inc. (1983) research plan was approved by the NPS and SHPO before fieldwork began.

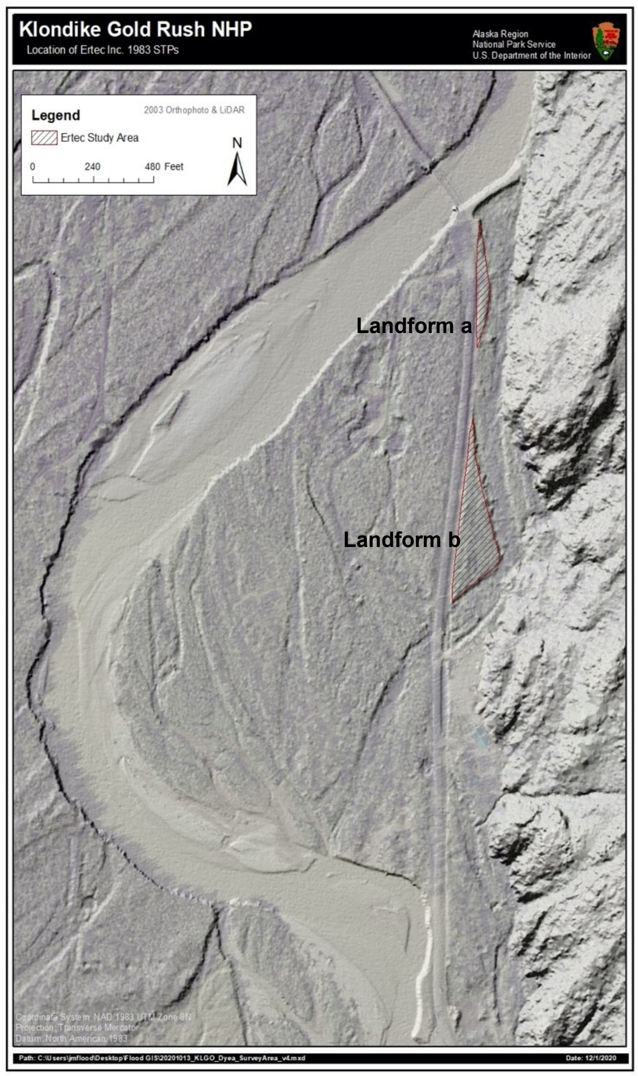


*Figure 21: Ertec Inc. areas of investigation in 1982. (NPS Map)*

Archeologists from Ertec Inc. placed seven shovel-test adjacent to the roadway east of the current APE. The proposed transmission line was to run parallel along the east side of the road. There, two landforms were identified and tested, *Landform a* and *Landform b*. *Landform a* was identified as a strip of land between the abandoned former main-stem and the existing road. *Landform b* was identified as an old flat bench 787 ft south of the trailhead that extended approximately 295 ft farther south. The LiDAR imagery in Figure 21 reveal that both landforms are sections of the same relict streambank of the Taiya River. Their shovel test pits (STP) measured 20 inches x 20 inches and were excavated to a depth of 20 inches below the surface. Their test pit interval was 98.5 feet and none of the seven STPs yielded cultural materials. Surface survey in *Landform a* did find salmon colored fence posts and rails that dated to the 1960s, a red PVC pipe (2-inch diameter), and a pile of 3/4 inch welded pipe (Ertec, 1982, p. IV-11 to IV-13). Although nothing older than 1960 CE was discovered adjacent the APE, the Ertec team did excavate shell-midden (SKG-00087) located further south of the APE and discussed in the Cultural Background section of this report.

Previous archeological efforts west of the APE are more numerous, extensive, and thorough than the transect of STPs to the east. Several archeological surveys and field-schools have targeted sectors of the Dyea boomtown, including the historic Native village and town cemetery located southwest of the former Healy and Wilson trading post. For a detailed overview of all archeological work done at the historic Dyea townsite reference the Dyea Cultural Landscape Report (2014) or Jones et al., (2015). What follows is an overview of archeological work in historic Dyea that directly pertains to the APE, either through discussions of cultural activities and artifacts, or through descriptions of bank erosion and channel migration. As explained in the Environmental Context section, a cutbank and point-bar are complementary features of the same process, wherein the expansion of one equates to expansion of the other. Thus, an erosional timeline based on environmental and cultural condition assessments on the cutbank side (townsite) reflects conditions on the point-bar side (APE), even if the depositional side is not directly mentioned.

Archeological work in the lower Taiya River valley began before the Chilkoot Trail or historic Dyea townsite were designated as a National Historic Landmark (1978), and even predate the establishment of the Klondike Gold Rush National Historical Park (KLGO) in 1976. On May 29, 1975, three archaeologists from Wilsey and Ham Incorporated based in Seattle, Washington surveyed Dyea to locate and assess conditions at the Native village and cemetery within the historic townsite. They found nothing “distinctly native” on the surface and did not excavate. They noted heavy erosion caused by meandering of the Taiya River and suggested that the Native village may have been carried off by the river’s current (Wilsey & Ham Inc., 1975).

In response to a plea from the unofficial caretaker of the Dyea Cemetery, Mr. Bill Matthews, for state authorities to stabilize the eroding graves, emergency excavations took place in May of 1978. Mr. Matthews had relatives interred in the cemetery (Davis 1978:1). Eight of nine identified graves were exhumed and the individuals reinterred at the nearby Slide Cemetery, located further from the channel’s edge. Three large trees grew over the nineth grave and prevented exhumation of that individual. In the intervening years, the Taiya River eroded that grave along with others in the cemetery (Jones, 2015; Gurcke personal communication).

In the summer of 1979, a team of archaeologists lead by Caroline Carley surveyed the archaeological resources of the Chilkoot Trail, which included a systematic study of the Dyea area. Notably, her survey design omitted the entire point-bar on which this report focuses (Carley, 1981). Carley’s documentation and discussion of cutbank erosion into the eastern flank of the townsite and cemetery suggests she understood the recent age of the adjacent point bar. Her maps of the Dyea area clearly demonstrate the ingress of the Taiya River’s recent meander into the historic cemetery and the subsequent growth of the accompanying point bar to the east (Carley, 1981, p. 31).

On a one-day visit to Dyea in September 1980, archeologist Susan Morton from the University of Alaska-Fairbanks surveyed the cutbank area immediately west of the APE. Her goal was to follow up on the 1975 survey that "found no trace of Native occupation." After documenting the "freshly eroded profile of the river bank," Morton arrived at the conclusion that "[w]hatever remains that might once have existed at that location are now gone, perhaps obliterated by non-Native activity during the Klondike gold rush… or flooding of the Taiya River" (1980, p. 5).

In 1982, archeologists McDonald and Davenport-Sinnott used Carley's work to inventory artifacts in Dyea and assess their suitability for the KLGO Museum Collection. They also conducted condition assessments on cultural features and artifacts to remain in situ. Their survey located an almost complete stove that they warned would erode into the river if "not attended to." Additionally, they mention that many other artifacts were eroding out of the bank including tin cans and another complete stove southwest of the APE.

In 1984-1985, Karl Gurcke, park archeologist at the time (now park historian), and his NPS team mapped and excavated in the historic Dyea townsite, with most work focused on "downtown" and "midtown." The midtown portion of Dyea was/is west of the APE, across the Taiya channel. Gurcke's efforts yielded 7,411 artifacts from 21 test units and 5 auger holes, with 44% of the material being tin cans (n=3286). Gurcke's work did not recover any Tlingit or otherwise prehistoric materials, but he did document severe erosion in the area of the former Native village and cemetery (1986, p. 50). Directly west of the APE at the apex of the cutbank, he documents that "[e]rosion appears to be occurring there faster than elsewhere along the Taiya river" (Gurcke 1986, p. 58).

In 1991, the Taiya River's encroachment into the historic townsite threatened a known but unexcavated feature in the area where the Dyea Methodist Episcopal Church once stood. The feature proved to be a six-foot (1.80 meters) wood-encased privy or well-shaft that yielded 386 artifacts, most of which were nails (Fenicle, 1992, p. 6). The feature washed away a few months later (Gurcke, 2006, p. 3). In her excavation report, Fenicle explained that the westward migration of the Taiya River was the primary threat to archeological resources in the area and that "almost the entire eastern half of the town has disappeared and the remainder is threatened" (1992, p. 4).

Again in 2003, cutbank migration on the westside of the Taiya River prompted emergency salvage excavations. This cutbank ingress occurred on the meander wavelength upstream of the APE, north of the Taiya River bridge. This upstream meander has direct impacts on discharge rates, channel form, and sediment load at the APE. Doreen Cooper, the primary archeologist for the project, stated "[o]ne of the most striking, and disturbing, elements of this project was the speed at which the river is gobbling up the land" (2003, p. 2). She notes that the erosion in the early 2000s was not without precedence and cites a letter sent to the Governor Heintzleman in 1953 by Dyea homesteader William Matthews that characterized the Taiya River as "on a rampage" and that by that time "the river has taken away about ten acres from the W.W.

Patterson homestead" (Norris, 1986).[19] Additionally, Cooper was acutely aware of the possibility of prehistoric riverine features (i.e., fish weirs, canoe haulouts, shell middens) within her study area, but none were detected.

Lastly, most recent comprehensive reports that address cultural resources and natural conditions in the lower Taiya River valley corroborate both erosional hazards and the lack of archeology in the APE. The Chilkoot Trail Cultural Landscape Report (2011) designates the APE as part of Zone 1 and cites numerous locations of erosion along the current trail corridor. Under "archeological resources" in Zone 1, one complete sentence explains that there are no known archaeological resources (2011, p. 142). Similarly, the more recent Dyea Cultural Landscape Report (2012) places the APE within Zone 1 (this time representing the entire point-bar), and more directly addresses erosion of the historic townsite. The Hosford gravel operation is the only cultural resource known to exist within Zone 1 (2012, p. 135).

Although previous archeological efforts have focused on areas that surround the APE, these assessments collectively depict conditions on the point-bar through associative geomorphic principles. As early as 1975, the cutbank was noted as having progressed westward, which necessitates a concurrent eastward expansion of the APE point-bar. In 1980, Morton noted freshly eroded profiles on the westside of the APE, which indicates the point-bar had expanded further still. Gurcke (1986, p. 58) and Fenicle (1992, p. 6) delineate the expansion of the depositional point-bar through descriptions and maps of the erosional cutbank. The total omission of the APE during Carley's comprehensive cultural resource survey of historic Dyea may be the most revelatory disclosure concerning the youthful age of the point-bar (1981). In sum, the archeological reports depict the APE as an actively expanding point-bar that has added considerable area since at least 1975. The study area was formed after the Klondike Gold Rush and is still in a state of flux and general westward expansion.

## Research Design and Methods

The APE was initially delineated in 2018 by Resources and Facilities staff from Klondike Gold Rush National Historical Park. Their collective input established the APE as a sweeping arc that followed the 24-foot contour in the topography and skirted the northern edge of the incidental wetlands—former gravel borrow-pits—now home to boreal toads (*Bufo boreas boreas)*. The APE was extended to include (1) the footpath that connects the PPL area and existing campground infrastructure and (2) a narrow corridor connecting two cul-de-sacs (see Figure 1).

Archeology fieldwork consisted of pedestrian surface survey and metal detection, followed by shovel test pits in zones where ground disturbance is likely if proposed construction is permitted. Field data was integrated into a geographic information system (GIS), which enhanced interpretation of subsurface conditions through aerial image overlays from 1948, 1961, 1970, 1979, 1982, 1992, 1998, and 2003 that feature the APE in detail.

[19] Letter was located by Frank Norris but is housed in the National Archives

Focused cultural resource surface survey of the APE commenced in the summer of 2018. Shawn Jones, KLGO archeologist, and Morgan Wooderson, KLGO seasonal archeological technician, conducted a total of four parallel north-south transects spaced 32.8 ft (10 m) apart (Figure 22). Ground visibility was approximately 60-percent due to extensive vegetation on the forest floor during the growing season. A second pedestrian survey occurred in the autumn of 2020 by KLGO archeologist, Jonathan Flood. This survey was conducted along northwest-southeast transects (312°) spaced 50 ft apart. Ground visibility was better, approximately 80-percent; however, leaf-litter was extensive.

Metal detection survey occurred in the summer of 2018. Technicians operated Fisher Labs F5 metal detectors with an operating frequency of 7.8 kilohertz (kHz). The two technicians used the north-south transect of the 2018 shovel test pits as a baseline. One technician surveyed a 65 ft swath of land west of the baseline, while the other surveyed 65 ft to the east, effectively creating a 130 ft wide tract of metal detection (Figure 22).

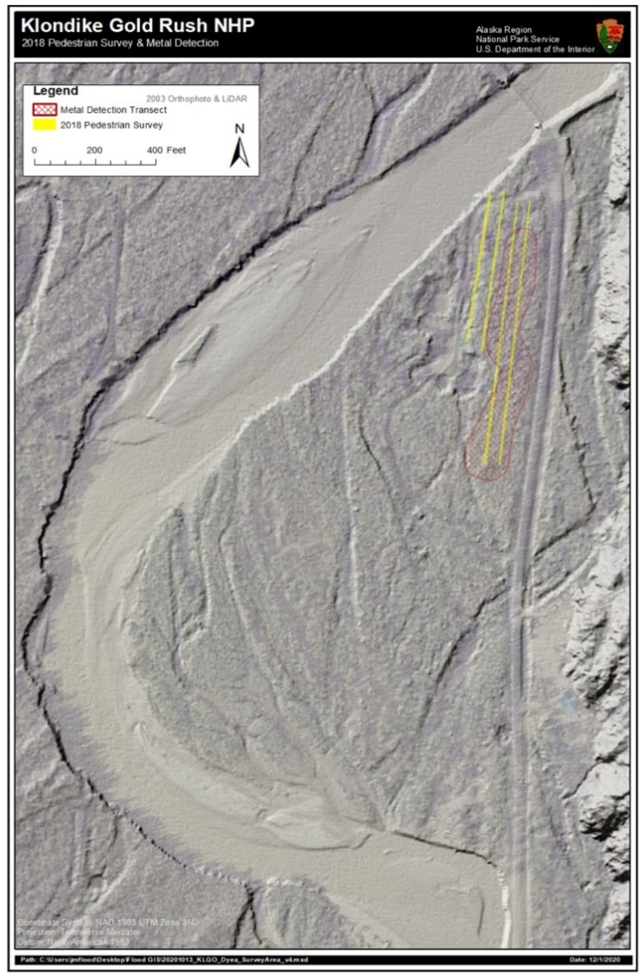


*Figure 22: Pedestrian Survey and Metal Detection. (NPS Map)*

Shovel testing occurred in the summer of 2018, the summer of 2020, and the autumn of 2020. All soil from shovel tests was sieved through quarter inch wire screen. In 2018, eight shovel test pits (STP) were placed 98.4 ft (30 meters) apart in a general north-south trend along the center of the APE, east of the foot path trail that bisects the area. These shovel tests were 1 ft in diameter and excavated to a minimal depth of 1 ft. In the summer of 2020 subsurface testing followed a similar north-south transect with 98.4 ft (30 m) spacing, but STPs were excavated west of the trail. These consisted of eight more STPs with a 1 ft diameter (30.5 cm) and an average depth of 12.2 inches (31 cm) (Figure 23).

In the autumn of 2020, one-hundred-three more STPs were placed in the APE at 49.2 ft (15 m) intervals and excavated to an average depth of 19.7 inches (50 cm) (Figure 23). Seventy-one of these STPs were placed along parallel northwest-southeast transects (bearing of 312°) spaced 49.2 ft (15 m) apart to create an orthogonal grid of subsurface tests. STP locations within the grid were flagged and recorded using global positioning system (GPS) during the pedestrian survey mentioned above. The additional thirty-one STPs followed the trail that connects the PPL area with the existing NPS campground facilities to the south. These thirty-one STPs were placed at

49.2 ft (15 m) intervals along the path, which is not a straight line. The remaining two STPs were excavated between two cul-due-sac in the current campground that the NPS proposes to join into a single loop.

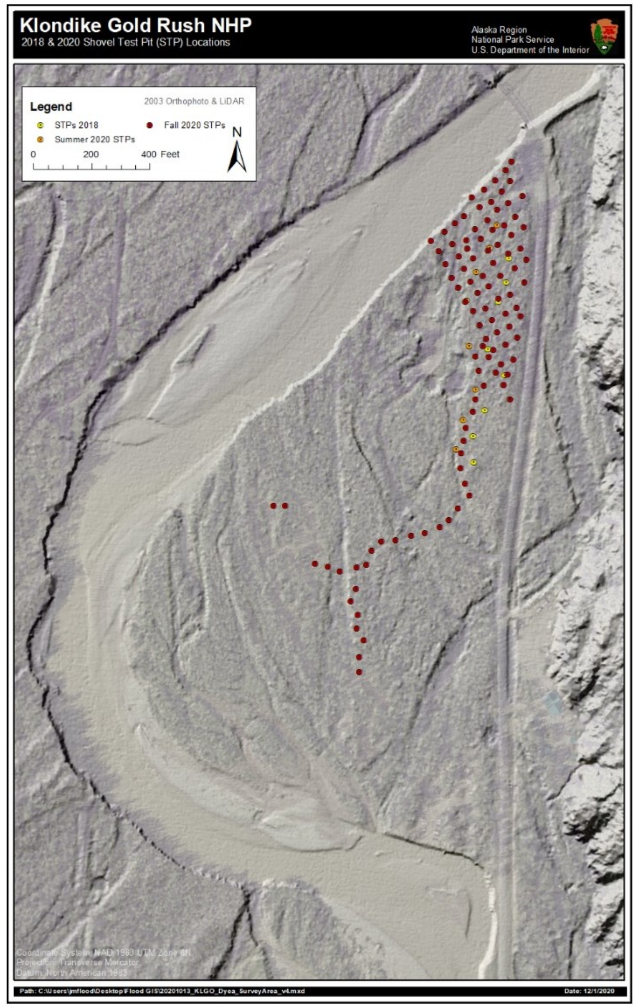


Figure 23: Shovel Test Locations 2018 and 2020. (NPS Map)

The coordinate location for each STP was recorded with a Trimble Geo7X and processed with GPS Pathfinder Office software for differential corrections. The GPS points and associated data were integrated into a geographic information system (GIS) licenced from Environmental Systems Research Institute (ESRI). Soil condition data, cultural material and landform data, and other fieldnotes were integrated into the attribute table of the STP points in the GIS. This allowed NPS researchers to plot variations in subsurface conditions and interpret them based on known landscape changes captured in the series of aerial imagery from 1961 to 2003. This will be illustrated in the results section below.

Subsurface data also included soil color analysis using the standard Munsell Color Chart. Standardization of soil color facilitates semi-quantitative analysis of horizination, organic enrichment, and the redoximorphic environment. Simply put, soil color can lend insight into annual watertable levels, past geomorphic distrubances (i.e., an abandoned borrow-pit), and the amount of time that has elapsed since a landform was significantly disturbed (i.e., a river coursing over it).

Photographs were taken during fieldwork in 2020 using an Olympus TG-2 digital camera with built-in GPS and elevation recording. Photographs recorded both landform features within the APE and subsurface soil conditions revealed during shovel testing. Photographs were also taken of cultural materials discovered during pedestrian survey and shovel testing. A series of photographs were taken on the westside of the Taiya River facing the APE to capture exposed strata visible during lower flow typical of autumn months.

## Results and Discussion

Pedestrian survey revealed very little cultural material in 2018 and 2020, but it helped delineate several landform-scale features. The former gravel operation labeled in Figure 24 and its associated crescent-shaped road was noted initially in pedestrian survey and later tied to aerial images to determine a date of operation between 1961 and 1979. Along the southern segment of the crescent road, rusted metal debris is partially buried but visible in the road-berm to the south (purple and red polygons). Additionally, a partially buried wooden rectangular-frame measuring 12.6 x 12.2 inches (32 x 31 cm) was photographed and its location recorded 164 ft (50 m) west of the rusted barrel and other roadside debris (see inset image in Figure 24). The object is outside the APE and was left in situ.

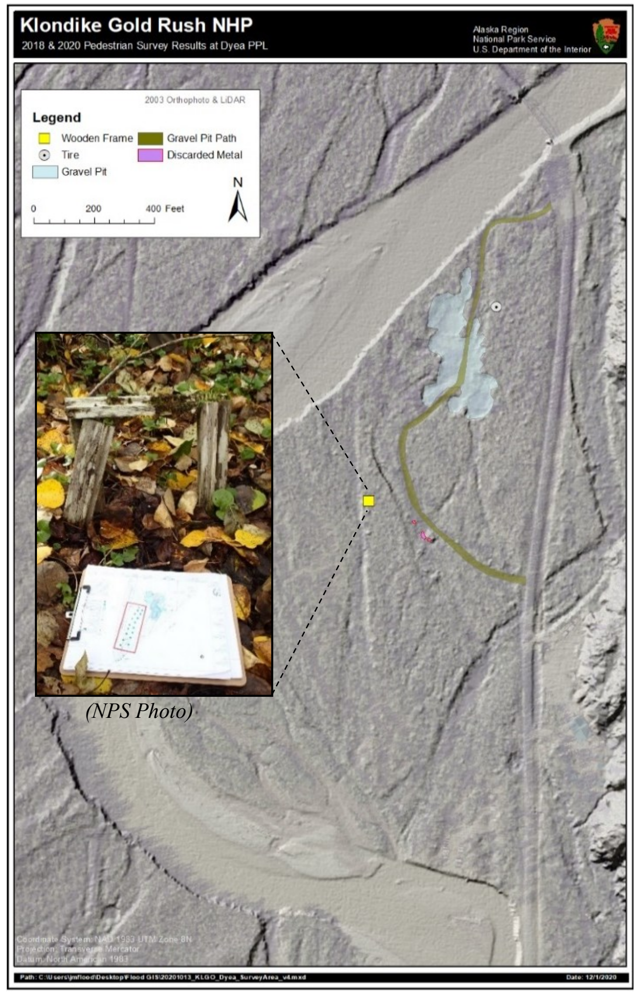


Figure 24: Pedestrian Survey Finds and Landscape Elements. (NPS Map)

There was a refreshing dearth of surface plastic and other synthetic litter across the study area. This absence of plastic partially reflects good land stewardship practiced by NPS staff and visitors, but also discloses a relative lack of recent human activity, especially when juxtaposed with the rusting refuse of the 1960s and 1970s. Soil pedogenesis, discussed below, corroborates this hypothesis of an area once disturbed and only recently left to recover.

Metal detection yielded no positive results; however, physical subsurface testing produced cultural material and clues about the environmental history of the APE. Two of the one-hundred-nineteen total STPs produced cultural materials (Figure 25). Shovel test 10 on transect 2 (T2.10) unearthed ten shards of amber glass from a depth of 21.3 inches (54 cm). One hundred eight feet northeast, shovel test 9 on transect 4 (T4.9) yielded two shards of amber glass at 14.6 inches below the surface (37cm) (see insets in Figure 25). Only shards from T2.10 were diagnostic, but the collective thickness of all twelve pieces were between 0.08 inches and 0.1 inches (0.2 - 0.25 cm), consistent with early non-returnable glass beer bottles (Miller et al., 2000).

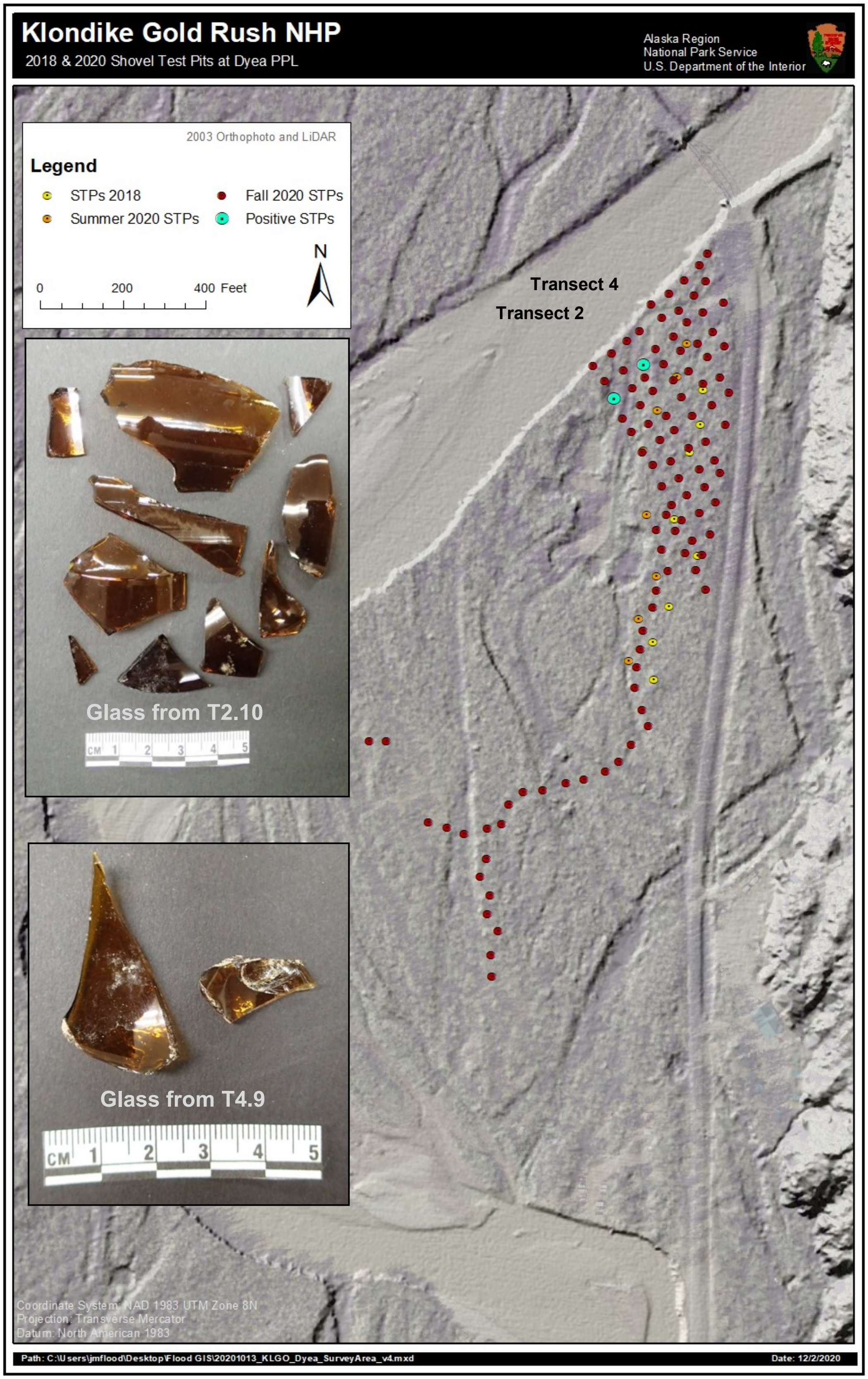



*Figure 25: Positive shovel test locations in APE with artifacts in inset images. (NPS Map and Photos)*

Three shards from T2.10 fit together to form the shoulder and side of a single vessel. Another shoulder piece was discovered, but no joins could be made with other fragments. No diagnostic bases or rims were recovered; however, the shoulder pieces are distinctive and generally indicative of the "handy" beer bottle form, one of the most popular non-returnable glass containers of the 1960s and 1970s (*Modern Packaging,* 1961, p. 42). In general form, the recovered pieces have the same two stage tapered neck as the nationally popular 1960s Anheuser-Busch Budweiser beer, but lacked an embossed letter-A with attendant eagle. Rainier Brewing Company also bottled in amber glass with a double-tapered neck from 1964 to 1969, but without embossing. The shoulder fragment featured in Figure 26 appears to be a piece of a 1960s Rainier Light non-returnable beer bottle. Rainier Brewing Company has distributed to the Upper Lynn Canal since at least 1950 and remained a close source for mass-produced beer during the 1960s and 1970s, when the gravel operation was taking place in the APE.


*Figure 26: Shoulder shard of Rainier Beer Bottle manufactured from 1964-1969. (NPS Images)*

Bottle typology establishes a *terminus post quem* between 1964 and 1969, but the depth of the shards, the soil horizon that contained them, and their geospatial position reveal more about the cultural context and environmental history. The depth of glass indicates these items were not recently discarded. Considerable time must have elapsed for sediment materials to form on top of each deposit. Both STPs encountered a 2 inch thick O-horizon (humic layer) and an incipient A-B horizon, which indicate that the glass had been buried long enough for pedogenesis to begin. Soil formation studies in the Upper Lynn Canal have determined pedogenesis to be relatively rapid, but still on the order of 70-100 years (Burt & Alexander, 1996, p. 34). Tying the materials together further, glass in both STPs was recovered from the same soil horizon, a light yellowish brown silty clay loam (10YR 6/4).

Uniformity in subsurface contexts link the two separately excavated deposits and offer general insight into the timing of their deposition. Above ground context further refines the depositional history. Both deposits were discovered on either side of the former gravel-pit access road. Shovel test T4.9 is on the east shoulder of the access road and T2.10 is just west of the road, located at the edge of the former borrow-pit. Their association with the road is evident, and bottle's age suggests that the association extends to the 1960s, when the road was developed and the gravel-pit in existence.

Beyond a rather unremarkable story of a relaxing 1960s lunchbreak, subsurface investigations further indicate the relatively young age of the point-bar landform. The consistency of soil horizons across the entire APE also indicate that the landform has experienced a uniform evolution. The consistent pattern of soil horizons is as follows (thicknesses averaged over APE):

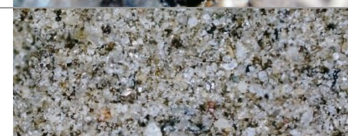
| Soil Horizon | Average Thickness | Munsell Color | Microscopy |
|---|---|---|---|
| *Organic (O) Horizon* | 2.88 inches (7.32 cm) | 2.5YR 3/2 Dusky Red |  |
| *A-B Horizon* | 2.63 inches (6.68 cm) | 10YR 6/3 Pale Brown |  |
| *C-Horizon* | 13.6 inches (34.54 cm) | 10YR 6/1 Gray |  |
| *Depth to Cobbles* | 19.2 inches (48.77 cm) | 10YR 7/1 Light Gray | N/A |

*Table 1: Soil pattern across the APE. (NPS Images)*

Older fluvial landforms are often characterized by networks of buried stream channels (paleochannels) or buried soil horizons (paleosols) capped during past flood events (Davidson & Hartley, 2010). The fact that the APE—located in a dynamic and actively migrating stream reach—has none of these features is further evidence that the point-bar developed only recently. The greater depth of sediment (as expressed by depth to cobbles in Figure 27) in the upstream sector of the APE is characteristic stratal architecture of a point-bar; that is point-bar singular (Yan et al., 2017). The bend inflection in a point-bar wavelength begins upstream and evolves downstream along the meander's arc (Lotsari et al., 2014). This translates to thicker more stable sediment upstream on a point-bar compared to downstream. The greater depth of sediment in the north of the APE indicates that the point-bar began there and evolved downstream. The upstream section of the APE as the anchor and meander inflection point is further supported by higher O-Horizon depth in that zone.

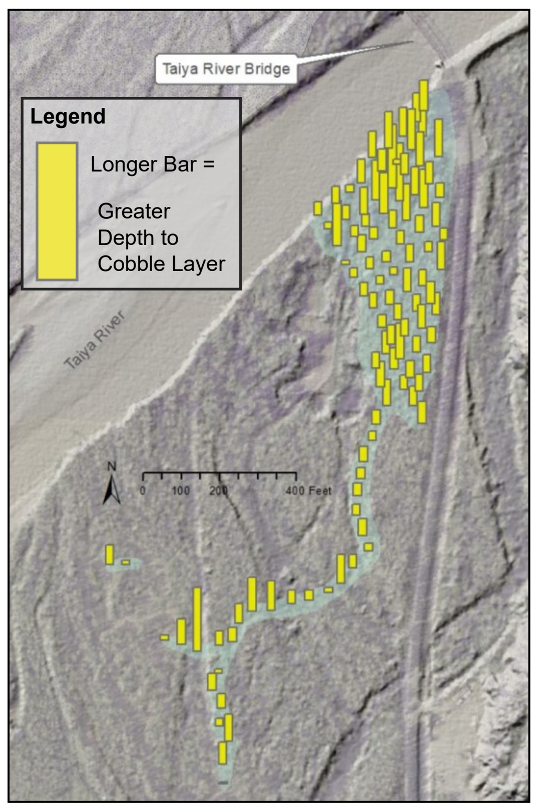


*Figure 27: Relative Depth to Cobble Layer. (NPS Map)*

To test the thickness of the river cobble layer a 3.3 x 3.3 ft test trench was placed in the area of T2.6. The former streambed was encountered at 12.2 inches (31 cm) and the pit extended another 20.5 inches (52 cm). The upper layer of cobbles was excavated with trowel, but a pickaxe was later utilized to progress through the thick layer of granodiorite clasts. Micaceous gravely sand filled the interstices between cobbles throughout the layer (Figure 28). The goal of excavating the test pit was to determine if the cobble layer rests on top of a former cultural surface. It does not. A photograph of the exposed bank along the northwest section of the APE demonstrates the buried cobbles layer continues far deeper than 33 inches (83 cm) and extends into the current channel bottom (Figure 29).

*Figure 28: Test Pit into Cobble Layer (NPS Image)*


*Figure 29: View of Cobble Layer under APE from west bank of Taiya River. (NPS Image)*

Cultural material and subsurface conditions in the APE confirm the original hypothesis that the entire landform emerged between 1900 and 1920; prior to that, the APE was part of the main channel of the Taiya River. The date of the recovered bottle coincides with sand/gravel extraction activities in the area during the 1960s and 1970s. The absence of older cultural materials is telling of the area's young geologic age. Subsurface conditions show the landform to be of a single origin and consistent with typical point-bar formation, with sediments stabilized and thickest upstream (north) and attenuating downstream (south). Thickness of organic build-up and soil-horizon development in the north versus south of APE corroborates these findings.

The fact that the APE was a river channel 120 years ago does not mean that pre-gold rush materials could not be present. Excavators were aware that instream artifacts like fish-traps or channel modification might be encountered. The size of river cobbles encountered at the bottom of every shovel test, however, made this less and less likely as excavations progressed (Figure 30). The average clast measured 2 x 1.85 x 1.65 inches (5.1 x 4.7 x 4.2 cm) and corresponds to an average stream velocity of 3.5 feet per second (force needed to transport stones that size in a stream). This indicates that when the APE was still an active stream channel, it was a

*Figure 30: Cobbles in sieving screen with ruler. (NPS Image)*

swift moving one. Other ancient weirs in southeast Alaska were installed into finer sediments (silts and clays) that indicate appropriate stream zones for the technology had an average velocity around 0.03 feet per second. Simply put, the currents were likely too swift over what would become the APE for weirs to either be installed or to have survived the currents to remain *in situ*.

# Conclusion

The APE for the Proposed Parking Lot project in Dyea has low potential for cultural materials pre-1920 CE. After 119 shovel tests, even post-1920 materials are evidently limited in the APE. Although located next to the historic Dyea townsite and within the same watershed as several pre-gold rush archaeological sites, the APE's riverine past precludes preservation of Klondike Gold Rush era or pre-gold rush era deposits. Subsurface survey was conducted with awareness of possible instream cultural materials but failed to detect weirs and/or other ancient channel hardware.

This cultural resource investigation utilized multiple lines of inquiry, with all lines of evidence indicating the same conclusion. Historic photographs (1892-1922), aerial imagery (1948-2020), and historic maps (1882-1918) work in concert to position the Taiya River along the eastern valley wall from 1892 to 1920, after which it began its westward migration. This westward migration moved the Taiya River off of the APE into its current position. The process of the river's lateral movement created the point-bar landform where the APE is situated and the cutbank that is currently eroding the historic townsite. Soil conditions revealed through shovel testing indicate that the point-bar formed upstream first (north) with downstream sections stabilizing later (the south end of the point-bar has yet to stabilize). Shovel tests also indicate that cultural materials buried above the former stream bottom date only as early as the 1960s. Finally, the literature review indicates that previous archaeological surveys all but avoided the area due to its low potential for intact cultural deposits caused by the landforms young age.

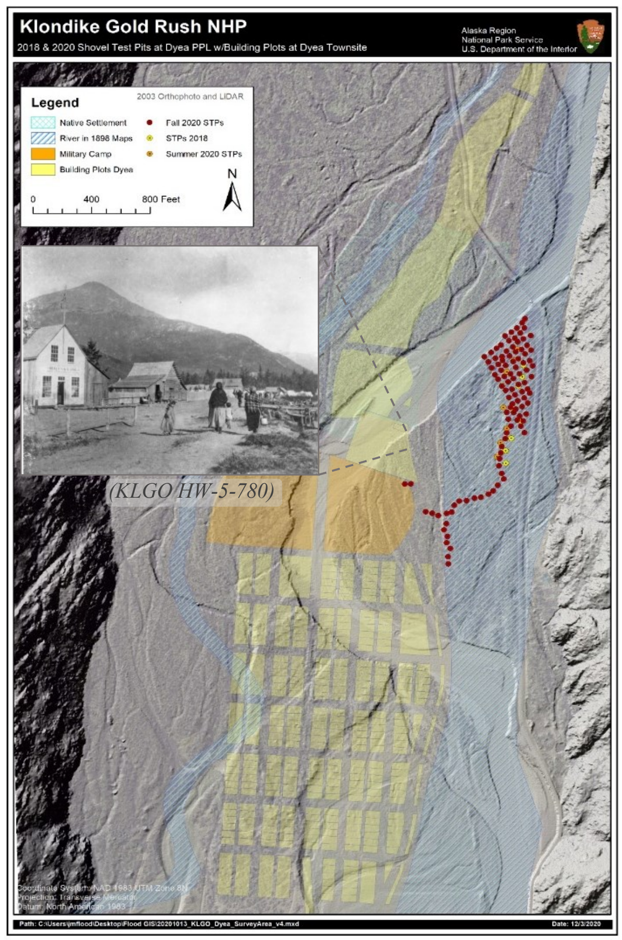



*Figure 31: Townsite, APE, and Former Channel. (NPS Map)*

Figure 31 provides a conclusive piece of visual evidence and summation of what was discovered and not by this cultural resource investigation. The map shows the shovel test locations with the historic townsite geo-rectified over a LiDAR/elevation image. The Healy and Wilson trading post formerly on the west bank of the Taiya would now be on the east bank and adjacent to the

APE. From historic photograph taken of the building in the inset, the location of the Taiya River is clearly to the structure's east, placing its channel bottom over the APE.

This study highlights how multiple lines of evidence can join to form a coherent picture of the complex Dyea landscape and cultural history. Environmental context was essential in explaining how excavations within the boundary of or less than 900 feet from a National Historic Landmark could only produce materials dating post-1960. The environmental context for this project also helps clarify the evolution of the cutbank that has eroded much of the historic Dyea townsite and how this process will likely continue.

## Recommendations and Finding of Effect

The Proposed Parking Lot Project presents no threat to archeological resources, due to the recent formation of the point-bar where the project is planned to occur. Prior to 1920 CE, the study area was within the main channel of the Taiya River. In-stream cultural features were neither detected through shovel testing nor determined likely based on past stream velocity inferred through bed material (for more detail, see p.33). The Chilkoot Trail corridor with its network of historic and prehistoric sites spans the watershed upstream of the APE, thus there exists limited potential for cultural materials eroded from upstream contexts to be deposited on the emergent point bar. Therefore, it is recommended that ground disturbance associated with the project stay within the boundary surveyed through shovel testing.

Based on the results of the survey and the research presented in this report, the National Park Service is recommending a finding of no historic properties affected.

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