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Natural Resource Stewardship and Science

Documenting Over a Century of Natural Resource Change with Repeat Photography in Klondike Gold Rush National Historical Park, Alaska

Natural Resource Report NPS/KLGO/NRR—2015/1017

ON THIS PAGE
August 3, 2014, Ron Karpilo repeats a historic photo near Inspiration Point on the WP&YR Railroad. Photo by: S.C. Venator.

ON THE COVER
Historic photo made summer 1897 by Frank La Roche of prospectors and packers resting on the Chilkoot Trail one mile north of Sheep Camp, Alaska overlaid on a repeat image made on August 5, 2014. Photos by: F. La Roche, Library and Archives Canada, C-28645 and R.D. Karpilo Jr.

Documenting Over a Century of Natural Resource Change with Repeat Photography in Klondike Gold Rush National Historical Park, Alaska

Natural Resource Report NPS/KLGO/NRR—2015/1017

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Abstract/Executive Summary

In 2013-2014, a National Park Service (NPS) inventory and monitoring project was conducted with the objective of using repeat photography techniques to document changes in the physical and biological landscape at Klondike Gold Rush National Historical Park (KLGO) in the 114 years since the gold rush. Understanding how the natural resources of KLGO have changed during the past century and how the ecosystems and landscape of the park and surrounding area are responding to climate change is critical for effective park management and public safety. Repeat photography was selected as the method of investigation for this project because it is a valuable and efficient tool for documenting landscape changes and recording and communicating the complex effects of climate change to diverse audiences including park visitors, resource managers, and scientists.

Historic photographs were selected from sources including the KLGO's archives and historic photo library and photo collections from several other institutions. The photographs were selected based on the following criteria: quality of original photograph, depiction of natural resources, seasonality of original photograph (with a preference of snow-free summer images), and photo location access and repeatability. The photos were prioritized based on the selection criteria and geographic distribution with consideration of thorough coverage of the Chilkoot Trail, Skagway, and White Pass Units of KLGO. The photographs were repeated using a Nikon D800 36.3 megapixel DSLR camera and the location of the photo stations were recorded using a GPS. Reference photos of each photo station were taken to aid in precisely relocating the sites in the future. A database was created to record detailed metadata for the historic and repeat photos and location information for each photo station.

Figure 1. Ron Karpilo reoccupies a historic photo location. Photo by: S.C. Venator.

Figure 2. August 27, 2013, Sarah Venator holds a panoramic photo taken from the same location on AB Mountain in 1894 by J.J. McArthur. Photo by: R.D. Karpilo Jr.

The project produced 52 repeat photo pairs in the Chilkoot, Skagway, and White Pass Units of KLGO that document changes in park resources including: retreating glaciers, vegetative succession, changes in ecosystem composition and connectivity, vertical advance of tree line, increase in vegetation density, changes in fluvial morphology, and anthropogenic changes. The majority of the glaciers photographed in the KLGO area have significantly retreated and thinned during the past century. In many areas of the park, tree line has advanced upslope, vegetation density has increased, and glacial moraines have become vegetated. In Skagway, anthropogenic factors have been a primary driver of change. The photo pairs produced by this project will be useful for identifying specific features or processes that may require more intensive monitoring and research and will be a useful tool for education, outreach, and resource management.

Table 1. Summary of the changes documented by the photo pairs in each unit.

Type of Change	Chilkoot Trail	Skagway Unit	White Pass Unit
Vegetation	15 of 15 pairs (100%)	6 of 7 pairs (85.7%)	30 of 30 pairs (100%)
Glacier	9 of 15 pairs (60%)	2 of 7 pairs (28.6%)	8 of 30 pairs (26.7%)
Anthropogenic	9 of 15 pairs (60%)	7 of 7 pairs (100%)	28 of 30 pairs (93.3%)

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The White Pass and Yukon Route (WP&YR) Railroad graciously provided the authors with access and transportation to all the photo sites in the White Pass (WP) Unit of KLGO. The majority of the WP Unit sites would not have been accessible without the cooperation and support of the WP&YR Railroad. Allison Hass and the WP&YR staff were immensely helpful in photo selection, project planning, and locating photo sites. Special thanks to the following individuals at WP&YR: Tyler Rose, Mark Taylor, Jay Burnham, Ken Burnham, Stu Warner, and Seth Wright.

Figure 3. *Upper Left:* Sarah Venator (NPS) and Christine Hedgecock (PC) at Bennett Lake. *Upper Center:* Christine Hedgecock, Ron Karpilo (NPS), and Sarah Venator. *Upper Right:* Stephanie Ryan (PC) and Sarah Venator near the Scales. *Middle Left:* Jay Burnham (WP&YR) and Sarah Venator at White Pass Summit. *Middle Center*: Jay Burnham and Sarah Venator at Rocky Point. *Middle Right:* Jay Burnham and Stu Warner (WP&YR). *Lower Left:* Seth Wright (WP&YR), Sarah Venator and Jay Burnham. *Lower Center*: Sarah Venator and Seth Wright. *Lower Right:* Sarah Venator and Ken Burnham (WP&YR). Photos by: R.D. Karpilo Jr.

The NPS management and staff of Klondike Gold Rush National Park and Preserve (KLGO) provided critical project coordination, planning, and logistical support. The project would not have been possible without the expert historic and geographic knowledge shared by park historian Karl Gurke and the park staff. The authors acknowledge Jessica Wilbarger and Shawn Jones for the assistance they provided with field logistics and administrative planning. Special thanks to the following KLGO staff for the many crucial roles they played in supporting the project: Mike Tranel, Theresa Thibault, Tim Steidel, Cindy Von Halle, Samantha Richert, Bruce Dansby, Gina Palmer, Kristin Thompson, Erica Francis, Aric Baldwin, Felipe Mendez, Ezra Milless, and Catherine Stewart.

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Figure 4. Members of the KLGO Trail Crew assisted the authors in recreating an iconic gold rush photo taken north of Sheep Camp on the Chilkoot Trail. *Left:* 1897, view north of prospectors and packers on the Chilkoot Trail by F. La Roche. Credit: Library and Archives Canada, C-28645. *Right:* August 5, 2013, KLGO Trail Crew members Catherine Stewart, Aric Baldwin, Ezra Milless, and Felipe Mendez recreating the 1897 photo. Photo by: R.D. Karpilo Jr.

List of Acronyms

CH	Chilkoot
DPI	Dots Per Inch
DSLR	Digital Single-Lens Reflex (camera)
EXIF	Exchangeable Image File Format
GIS	Geographic Information Systems
GPS	Global Positioning System
JPG	JPEG (File)
KLGO	Klondike Gold Rush National Historical Park
LZW	Lempel–Ziv–Welch (File Compression)
PC	Parks Canada
PSD	Photoshop Document
NPS	National Park Service
NEF	Nikon Electronic Format (RAW image file)
RRS	Really Right Stuff
SK	Skagway
TIF	Tagged Image File Format
UAF	University of Alaska Fairbanks
UCR	University of California, Riverside
USGS	U.S. Geological Survey
UW	University of Washington
WP	White Pass
WP&YR	White Pass and Yukon Route

Introduction

Despite the diminutive size of KLGO relative to other NPS managed areas in Alaska, the Chilkoot Trail, Skagway, and White Pass Units of KLGO encompass a remarkably diverse cross-section of Southeast Alaskan ecosystems ranging from intertidal zones to temperate rain forest to alpine tundra. The landscape that modern park visitors experience today is substantially different from the landscape that confronted Stampeders during the 1897-98 Klondike Gold Rush. The most notable differences are changes in glaciers, vegetation, rivers, and the construction of buildings and infrastructure. The primary drivers that have altered the KLGO landscape and ecosystems during the past century are climate change and anthropogenic activities. Other influences on the KLGO area are: isostatic rebound, fire, plant succession, glacial outburst flooding, and avalanches. These drivers influence: vegetation distribution, density, and diversity; glacier area and mass balance; and stream morphology. The magnitude and rate of glacier and vegetation change can serve as effective proxy indicators for studying climate change (Klasner and Fagre, 2002; Riedel et al., 2008).

Understanding how the natural resources of KLGO are responding to climate change is critical for effective park management and public safety. During the past century, the park and surrounding areas lost a significant amount of glacier ice and perennial snow cover. One consequence of glacial retreat in KLGO is the increased risk of glacial outburst floods and associated flood damage in the park (Post and Mayo, 1971). The glacial outburst flood that occurred July 23, 2002 at the head of West Creek and flooded a park campground underscores the importance of understanding and mitigating the risks associated with these events (Capps, 2003; Denton et al., 2005). In addition, reduction of ice and snow cover generally results in vegetation changes, alters the size and connectivity of wildlife habitat, and modifies the hydrologic regime of the watershed. Now and for the foreseeable future, ecosystem change is widely accepted as the new normal and resource managers should expect periods of relatively rapid ecosystem change and landscape evolution and derive appropriate accommodating and mitigating management strategies (Veblen, 2010).

This project utilizes repeat photography techniques to harness the historically unprecedented quantity of photographs of the 1897-98 Klondike Gold Rush to document landscape change during the past century. Repeat photography is an effective method for qualitatively and quantitatively documenting and evaluating complex changes in the landscape over time (Jorgenson et al., 2006; Molnia, 2010; Webb et al., 2010). The photo pairs may be used to identify specific features or processes that may require more intensive monitoring and research and will be a useful tool for education, outreach, and resource management. Additionally, several studies have demonstrated the value and efficiency of repeat photography as a tool for documenting landscape changes and recording and communicating the complex effects of climate change in national parks to diverse audiences including park visitors, resource managers and scientists (Adema et al. 2007; Carstensen and Hocker, 2005; Fagre and McKeon, 2010; Karpilo et. al., 2004; Karpilo et. al., 2006; Karpilo, 2009; Molnia et. al., 2004; Molnia et. al., 2007; Molnia et. al., 2007; Venator et al., 2013; Hocker and Carstensen, 2013). The results of this project will complement an additional NPS Inventory and Monitoring project, which will create a historic land cover map using aerial orthophotos, and a comparison map using modern satellite imagery.

Methods

This study used repeat photography techniques to document ecosystem and landscape changes in KLGO. The project consisted of four phases: 1) Historic photo selection, 2) Photography fieldwork, 3) Photo post-production, and 4) Photo analysis and change detection. Repeat photo pairs were analyzed and used to illustrate changes in glacier extent, vegetation distribution, human disturbance, and other physical and cultural changes to the landscape. The multiple phases of the project were conducted over two field seasons in 2013 and 2014.

Phase 1: Photo selection

In 2013, Phase 1 consisted of visiting the KLGO historic photo library and identifying and scanning historic photographs that depict natural resources in KLGO and vicinity. Additional photos were obtained from the following sources: Library and Archives Canada, Library of Congress, National Archives, Royal BC Museum, University of Alaska Fairbanks, University of California Riverside, University of Washington, U.S. Geological Survey, and Yukon Archives. Photographs were selected based on the following criteria: quality of original photograph, depiction of natural resources, seasonality of original photograph (with a preference of snow-free summer images), and photo location access and repeatability. The photos were prioritized based on the selection criteria and geographic distribution with consideration of thorough coverage of the Chilkoot Trail, Skagway, and White Pass Units of KLGO. The Dyea area was deemed a low priority because Carstensen and Hocker (2005) produced good repeat photo pairs of the area in August 2005. The overall balance of resource diversity in the selected photographs was also considered while planning sites to visit. Metadata about each photograph, including: photo description, source, photographer, date, photo number, required credit, and other relevant information were recorded and entered into a spreadsheet.

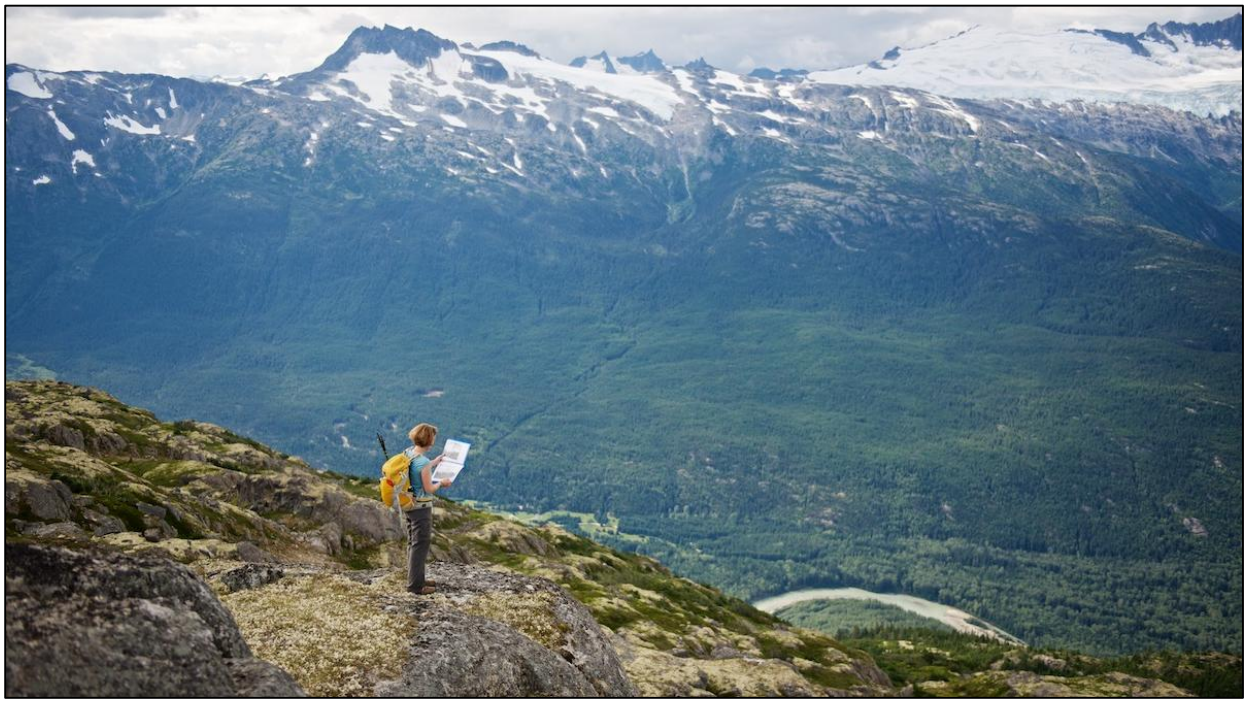

Figure 5. Sarah Venator locating a historic photo site on AB Mountain. Photo by: R.D. Karpilo Jr.

Phase 2: Repeat photography fieldwork

Field work was conducted over several weeks in 2013 and 2014. KLGO, Parks Canada, and WP&YR staff members were consulted for advice about the location and repeatability of individual photos and coordination and assistance with field logistics and planning. Field work was conducted in the month of August so that vegetation was still in full leaf, but it was late enough in the summer season that snow cover was at a minimum and the maximum area of glacier ice was exposed. Field copies of the historic photos were printed, placed in plastic sleeves, and organized in binders by unit. The location of many of the photo sites and simulated fields of view were modeled and previewed before going in to the field using satellite imagery with ArcGIS and Google Earth software.

The first period of fieldwork was conducted in August 2013 and focused on repeating historic photos located in the KLGO Skagway and Chilkoot Trail Units and surrounding area. Photo sites were accessed on foot using the Skagway streets and footpaths, Dewey Lake Trail system, AB Mountain Trail, and Chilkoot Trail. Several historic photographs in the White Pass Unit were opportunistically repeated from the moving WP&YR train while returning to Skagway after completing the Chilkoot Trail work.

The second period of fieldwork was conducted in August 2014. The accomplishments of the previous field season were reviewed and the remaining historic photo sites were reprioritized to best compliment the 2013 work. Photo sites in the White Pass Unit were the primary focus of the 2014 field season. Several additional historic photos in the Skagway and Chilkoot Units were also repeated. The WP&YR Railroad provided the authors with access and transportation by motor car to the photo sites in the White Pass Unit of KLGO. Due to safety concerns and lack of alternative access, the majority of the White Pass Unit sites would not have been accessible without the cooperation and support of the WP&YR Railroad. The WP&YR staff assisted in photo selection, project planning, and locating photo sites.

Figure 6. Ron Karpilo setting up to repeat a historic photo at Rocky Point. Photo by: S.C. Venator.

Figure 7. Setup used for repeating panoramic photos consisting of a Nikon D800 DSLR camera with 14-24mm lens and a Solmeta Geotagger Pro GPS mounted on a RRS TVC-34L tripod with a BH-55 ballhead, PCL-1 panning clamp, MPR-CLII rail nodal slide and BD800-L plate. Photo by: R.D. Karpilo Jr.

Repeat photos were made using a 36.3 megapixel Nikon D800 Digital Single-Lens Reflex (DSLR) camera with either a Nikon 14-24mm or 24-70mm zoom lens. In situations where time was limited or the exact location of a photo site was uncertain in the field, dozens of potential repeat photos were made from varying perspectives with the camera handheld and the best matching repeat was selected in post-production. A tripod was used when time constraints allowed the precise pinpointing of a photo location. Depending on the terrain and identifiable features, it is typically possible to obtain a general approximation of the historic photo in 30 to 60 minutes. Precisely locating a photo site and perfectly aligning foreground and background elements requires exactly matching the location, height, pitch, yaw, and roll of the historic photographer's camera and can take hours or longer to accomplish. In addition to repeating the historic images, a high-resolution 360-degree panoramic image was made at photo stations where a tripod was used. A specialized panning clamp and nodal slide were mounted on the tripod to create a series of individual images without parallax that could be digitally stitched together into a high-resolution seamless single-row panoramic image.

Table 2. Repeat photography camera gear used for KLGO project.

Camera Gear	Description
Camera	Nikon D800 36.3 megapixel DSLR
Lenses	Nikon AF-S Zoom Nikkor 14-24mm f/2.8G ED AF Nikon AF-S Zoom Nikkor 24-70mm f/2.8G ED AF
Tripods	Really Right Stuff (RRS) TVC-34L tripod with RRS BH-55 ballhead Gitzo 2541L tripod with RRS BH-40 ballhead
Panorama	RRS PCL-1 panning clamp RRS MPR-CLII rail nodal slide RRS BD800-L camera L-plate

Figure 8. Sarah Venator mapping a photo site. Photo by: R.D. Karpilo Jr.

The latitude, longitude, and elevation of the photo stations were recorded using the average location function of a Garmin GPSMAP 62s GPS receiver. The bearing of the camera and GPS location for each photo was also recorded using a Solmeta Geotagger Pro GPS that attaches to the hotshoe on the top of the camera and embeds location and bearing information in the Exif data of each digital image. For precisely relocated photo sites, a Trimble GeoXH 6000 mapping grade GPS unit with external antenna was used to record coordinates of the location (see Figure 8). Reference photos of each photo station were taken to aid in relocating the site in the future.

Figure 9. *Left:* Ron Karpilo repeats a 180-degree panorama taken by the 1906 International Boundary Commission on Chilkoot Pass. Photo by: S.C. Venator. *Right:* Sarah Venator using the Trimble GeoXH 6000 GPS with external antenna mounted on the tripod to record the location of the photo station. Photo by: R.D. Karpilo Jr.

Figure 10. Sarah Venator using a Trimble GeoXH 6000 mapping grade GPS unit with an external antenna mounted on a Gitzo 2541L tripod with RRS BH-40 ballhead to record the location of a photo station on Long Hill on the Chilkoot Trail, KLGO, Alaska. Photo by: R.D. Karpilo Jr.

Phase 3: Photo post-production

The Nikon Raw .NEF images files that were shot in the field were downloaded from the camera and imported into Apple Aperture photo management and editing software and were post-processed to adjust exposure, color, and white-balance. The number of images taken at each photo site varied from a dozen images at low priority sites to several hundred at sites where a multi-image panorama were repeated. The images were reviewed in Aperture and the best matching repeat images for each photo site were exported as full resolution (7360 x 4912 pixels) .TIF files. Panoramas were assembled using Adobe Photoshop CS5 and PTGui Pro panorama stitching software.

Many of the historic photos that were successfully repeated were rescanned at higher resolution or scans were purchased from the various source institutions. It was also at this time that permission and reproduction rights were obtained from the source institutions to use the historic photographs in this report and other products related to the project. In preparation for photo pair assembly, the scans of the historic photos were opened in Photoshop and they were cropped to eliminate any borders, converted to Adobe RGB (1998) colorspace, and saved as 300 dpi .TIF files.

To assemble the photo pairs, the .TIF files of the historic and repeat photos were imported into Photoshop as separate layers in a .PSD file. The historic photo was overlaid on the repeat photo and

made partially transparent. The historic photo was rotated and resized (with the aspect ratio locked so the image was not distorted) to best align with the repeat photo. The modern photograph was then cropped to the field of view of the historic photograph. For each photo pair the following files were created and saved as 300 dpi, Adobe RGB (1998), LZW compression .TIF files and quality 10 .JPG files: 1) historic photo, 2) cropped repeat photo, 3) full uncropped repeat photo, 4) historic photo overlaid on full uncropped repeat photo, 5) full uncropped repeat photo with a box showing field of view of historic photo, 6) side-by-side comparison of the historic photo and cropped repeat photo, and 7) side-by-side comparison of the historic photo and cropped repeat photo with text overlay of photo dates, photographers, and location information.

Phase 4: Photo analysis

The primary focus of this project and report is the production and delivery of the photo pairs and as a result only cursory analysis of the pairs were conducted. The photo pairs were examined and the notable changes were summarized. See the Notable Changes field in the Photo Station Metadata table that accompanies each pair or the summary of changes observed in the discussion section at the end of the report. Each pair was analyzed to identify the presence of changes in three categories: glacial extent and thickness, changes to the vegetative communities, and anthropogenic changes. Comprehensive analysis of the photo pairs, including identification of individual species present and delineation and annotation of vegetative communities is beyond the scope of this report; but could be conducted in future studies.

Results

This project produced 52 photo pairs with historic photo dates ranging from 1894 to 1971 and repeat photos taken in 2013 and 2014. The pairs present a representative cross-section of the diverse ecosystems and landscapes of KLGO and vicinity. The following is a breakdown of the geographic distribution of the photo pairs: 15 pairs in the Chilkoot Unit; 7 pairs in the Skagway area; and 30 pairs in the White Pass Unit. The map in Figure 11 presents the locations of the photo stations. The presence of vegetation, glacier, and anthropogenic change in each pair is summarized by KLGO Unit in Table 3 below.

Table 3. Summary of the major types of changes documented by the photo pairs in each unit.

Type of Change	Chilkoot Trail	Skagway Unit	White Pass Unit
Vegetation	15 of 15 pairs (100%)	6 of 7 pairs (85.7%)	30 of 30 pairs (100%)
Glacier	9 of 15 pairs (60%)	2 of 7 pairs (28.6%)	8 of 30 pairs (26.7%)
Anthropogenic	9 of 15 pairs (60%)	7 of 7 pairs (100%)	28 of 30 pairs (93.3%)

Repeats of over twenty additional historic photos were unsuccessfully attempted along the Dewey Lake Trail System, lower Chilkoot Trail, and the Canyon City, Pleasant Camp, and Sheep Camp areas. The additional repeats were not possible because in the intervening years since the original photos were taken, extremely thick vegetation has grown in the photo locations and obscured the view of all identifiable features and made precise location of the photo points extremely difficult.

Approximately a dozen additional historic photos were opportunistically repeated on the Canadian portion of the Chilkoot Trail as the authors hiked to Bennett to catch the train back to Skagway. If funding and support becomes available for postproduction, these pairs could be assembled and would extend the utility of this study and nicely complement the KLGO pairs presented in this report.

In the following section, the photo pairs are organized by unit, and then from south to north in the order a visitor would encounter the photo points if they were hiking the Chilkoot Trail from Dyea or riding on the WP&YR Railroad from Skagway.

Overview Map of Photo Stations

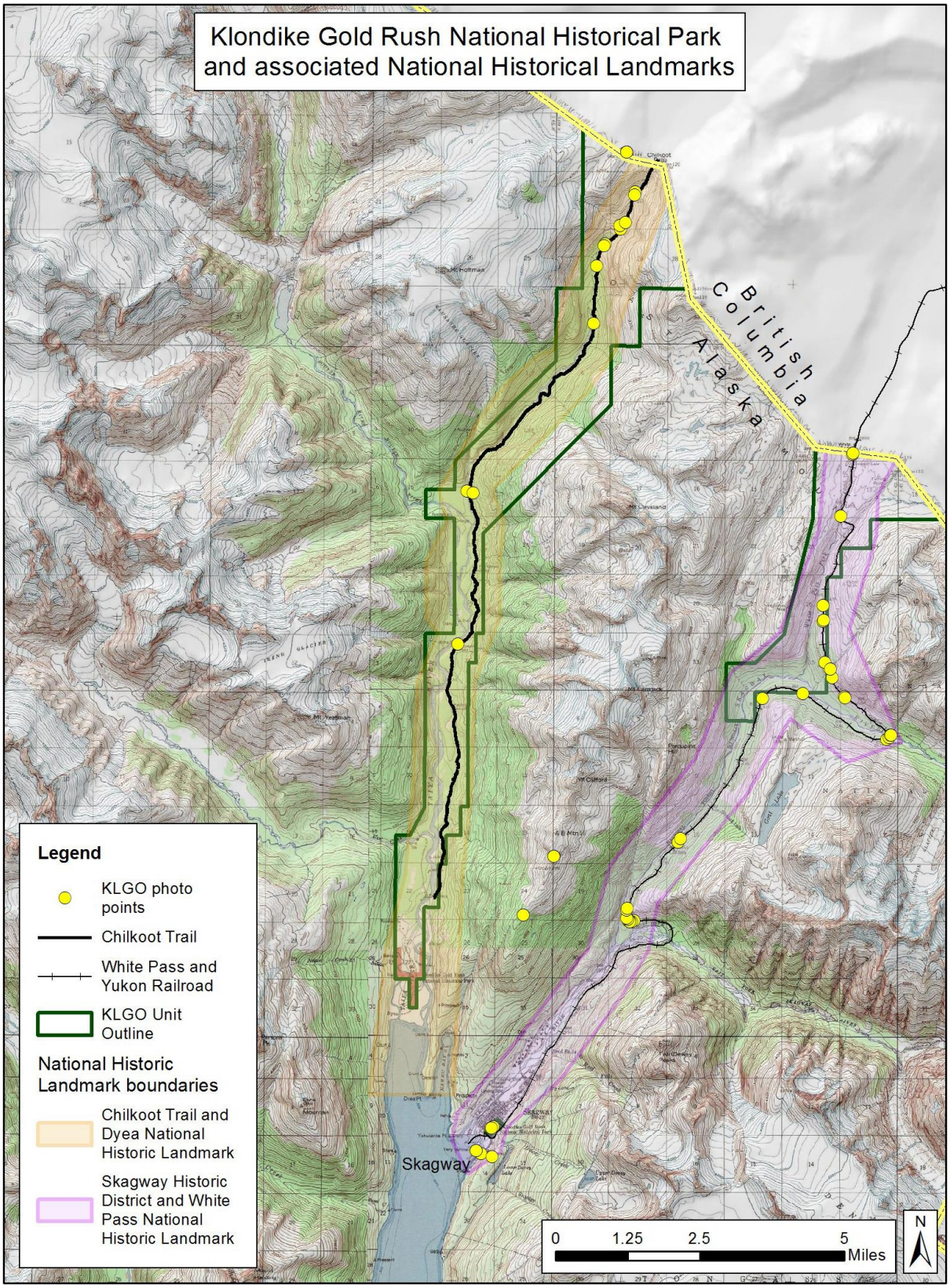

Figure 11. Overview map of the project area with locations of photo stations, KLGO, Alaska.

KLGO Photo Pair 01 – Finnegan's Point (Photo Station CH-01)

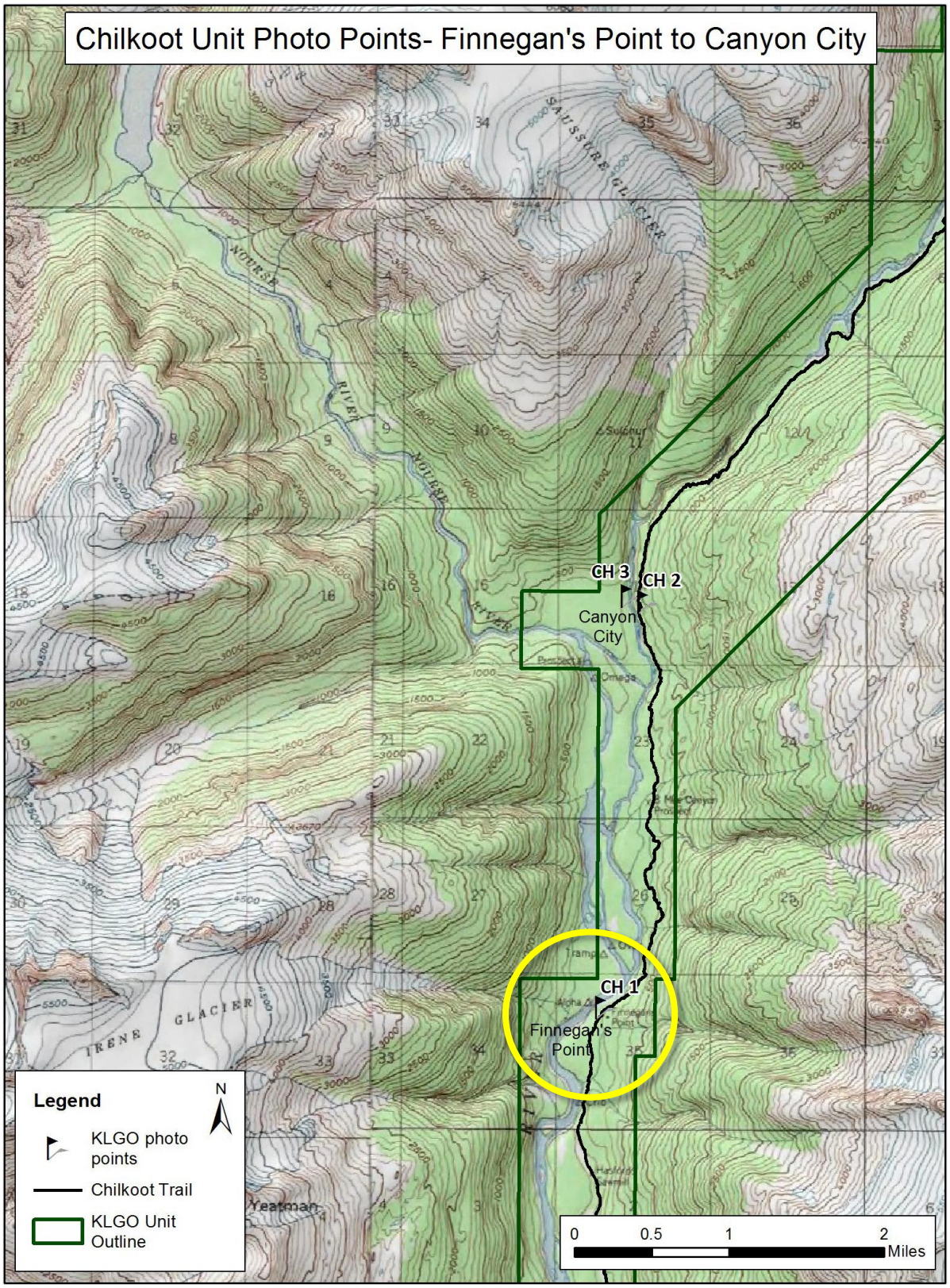

Figure 12. Detail map showing the location of photo station CH-01.

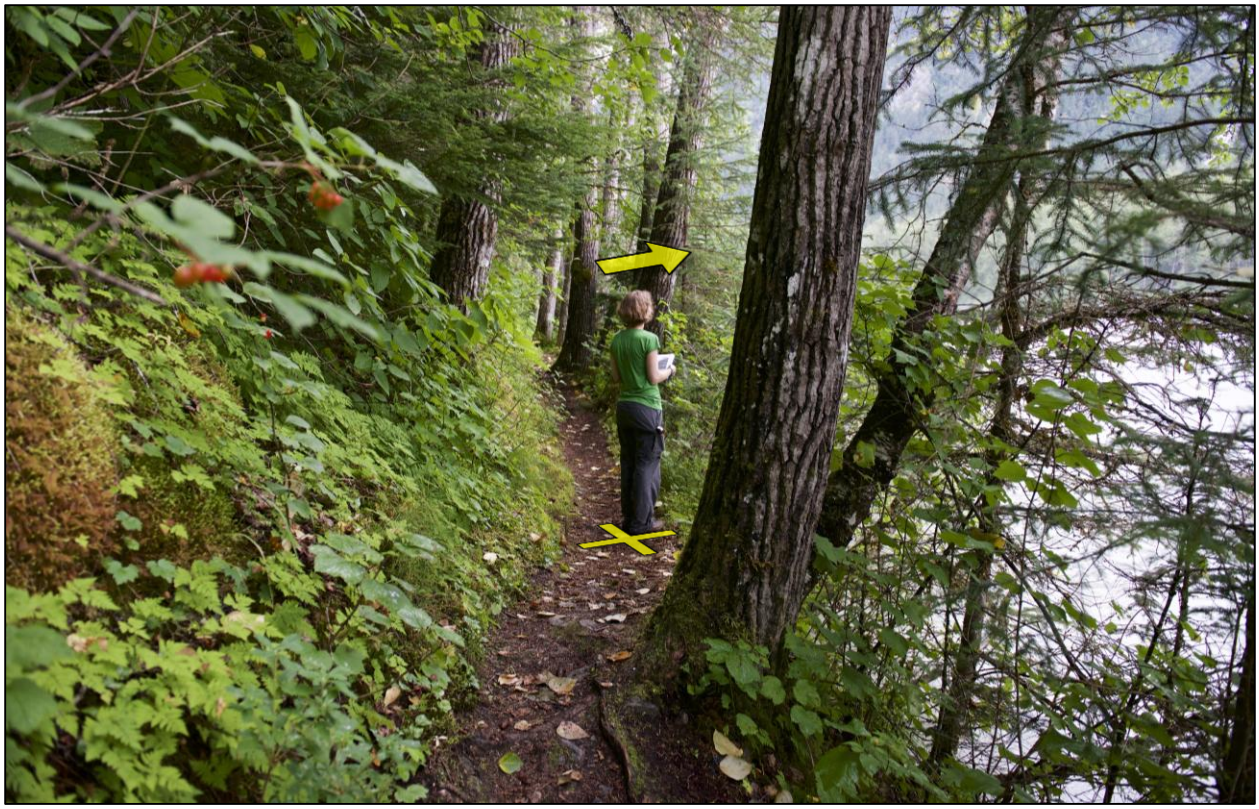

Figure 13. Photo Station CH-01 Finnegan's Point. Reference photo looking south showing an overview of the site. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the east bank of the Taiya River near Finnegan's Point on the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 4. Photo Station CH-01 Metadata.

Photo Station CH-01	**Historic Photo**	**Repeat Photo**
Date	September 28, 1971	August 17, 2013
Time	unknown	8:03:53 PM AKDT
Photographer	T.R. Merrell	R.D. Karpilo Jr.
Photo Number		Karpilo #20130817-00366
Photo Credit	Suggested Credit: Courtesy of T.R. Merrell	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 32mm
Camera Settings	unknown	ISO: 800, f/6.3, 1/200 second
Direction	west	
Latitude	59.57607° N	
Longitude	-135.33435° W	
Elevation	130 feet	
Notable Changes	Retreat and thinning of Irene Glacier and increase in vegetation along the stream flowing from the glacier.	

Figure 14. Photo Station CH-01: Finnegan's Point, September 28, 1971 by T.R. Merrell. View to the west across the Taiya River of Irene Glacier from the Chilkoot Trail at Finnegan's Point. Credit: KLGO #5578.

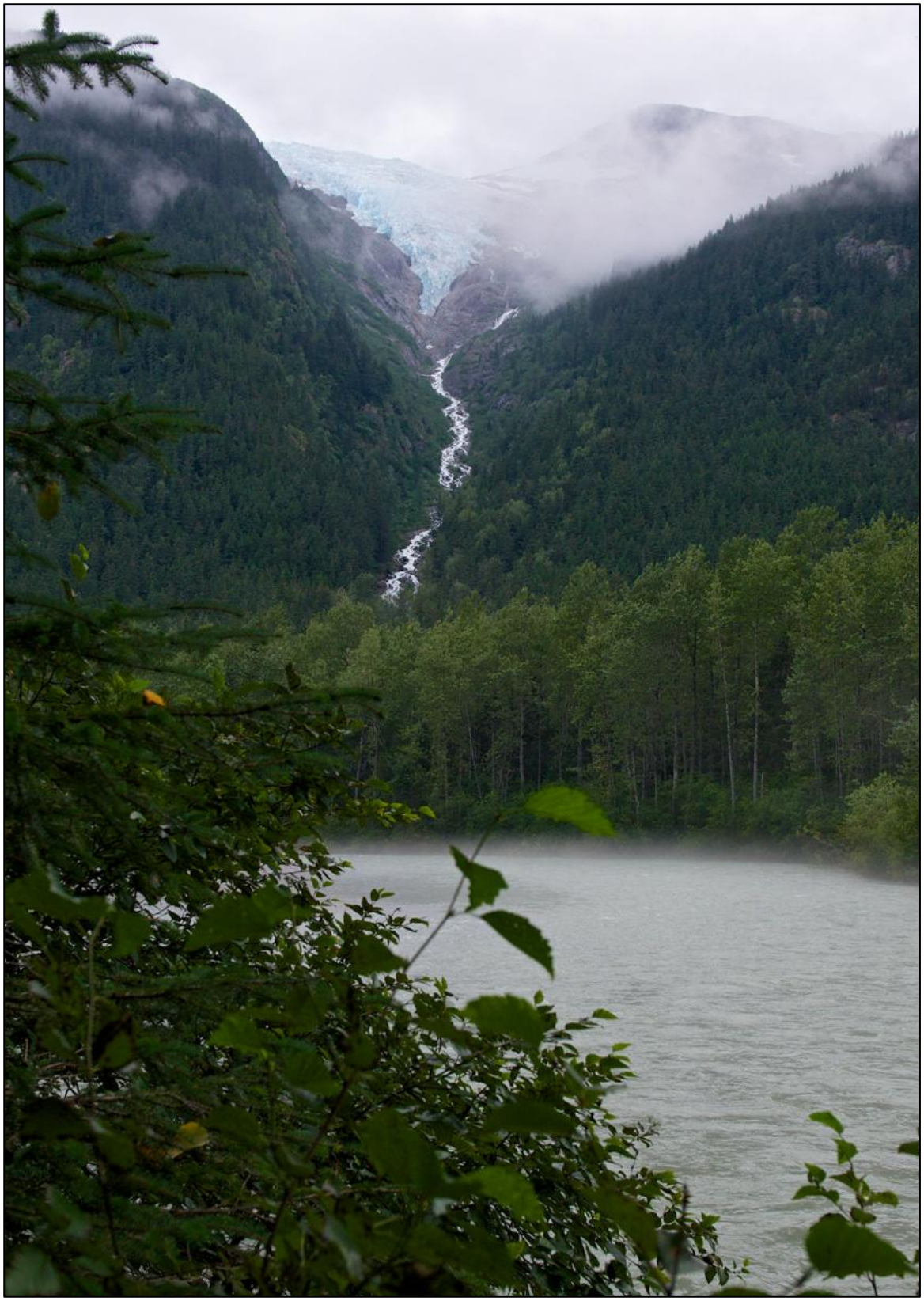

Figure 15. Photo Station CH-01: Finnegan's Point, August 17, 2013 by R.D. Karpilo Jr. View to the west across the Taiya River of Irene Glacier from the Chilkoot Trail at Finnegan's Point.

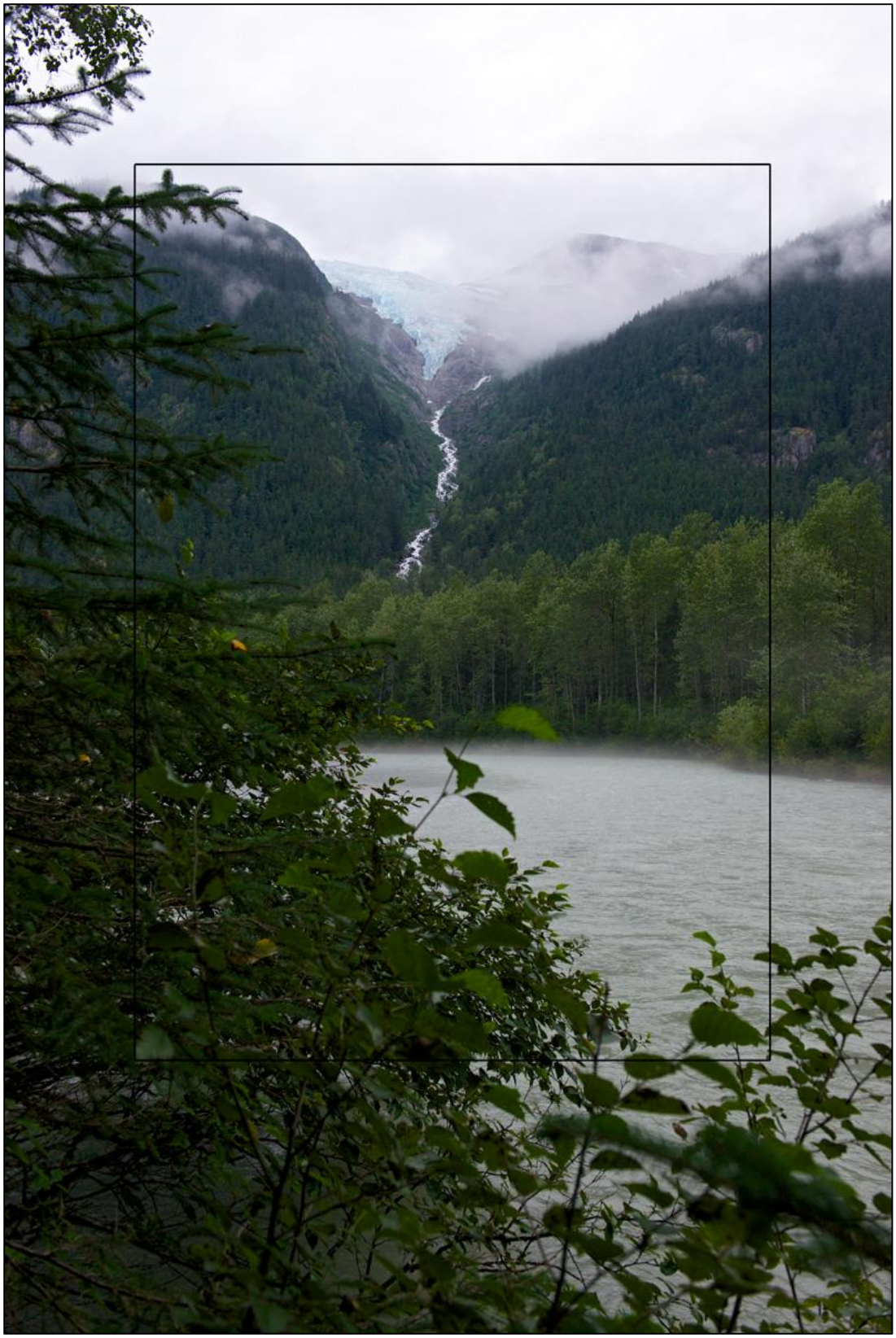

Figure 16. Photo Station CH-01: Finnegan's Point. Full uncropped repeat photo. Box represents the field of view of the historic photo.

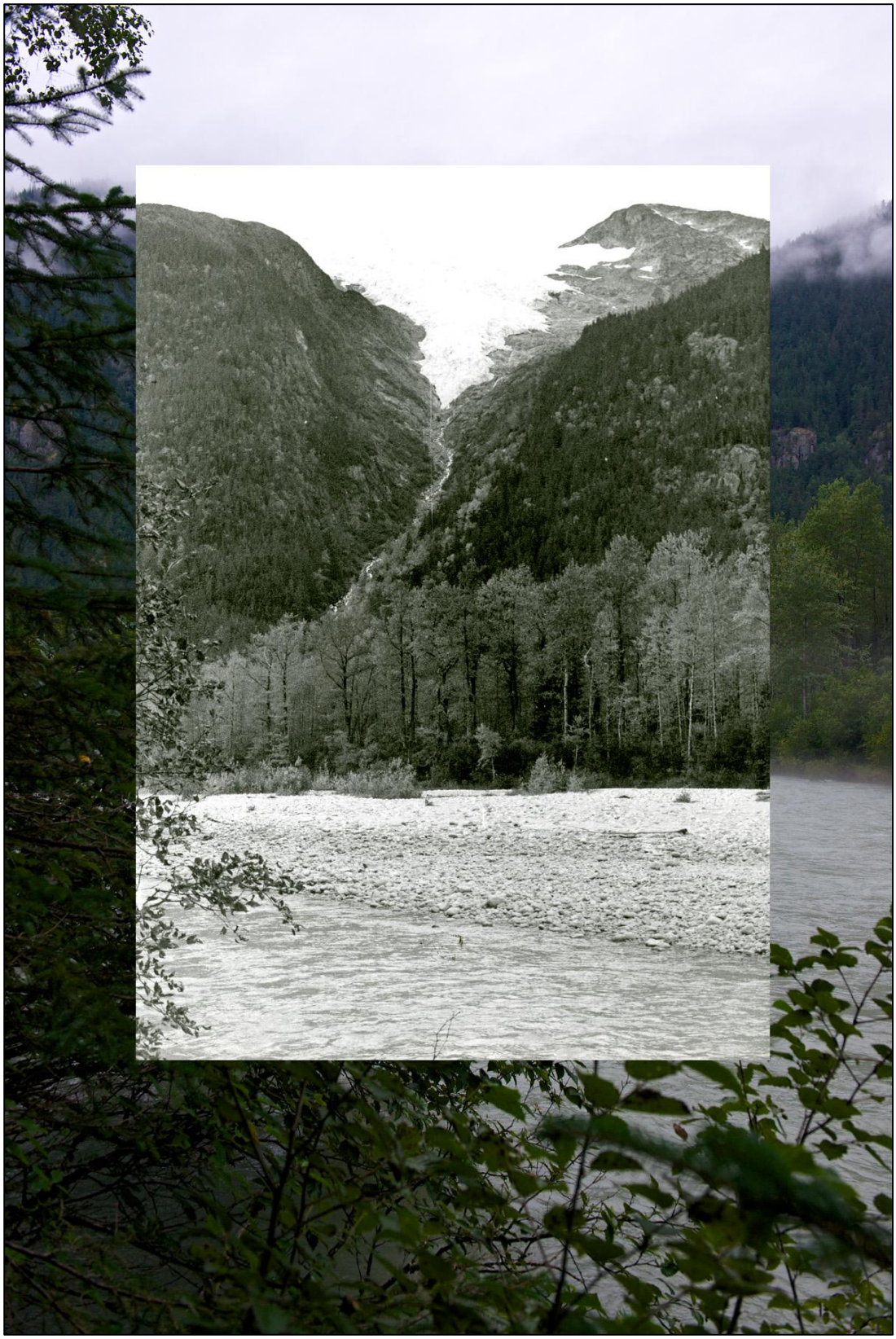

Figure 17. Photo Station CH-01 Finnegan's Point. September 28, 1971 image by Merrell overlaid on the full uncropped version of the August 17, 2013 repeat image by Karpilo.

KLGO Photo Pair 02 – Canyon City (Photo Station CH-02)

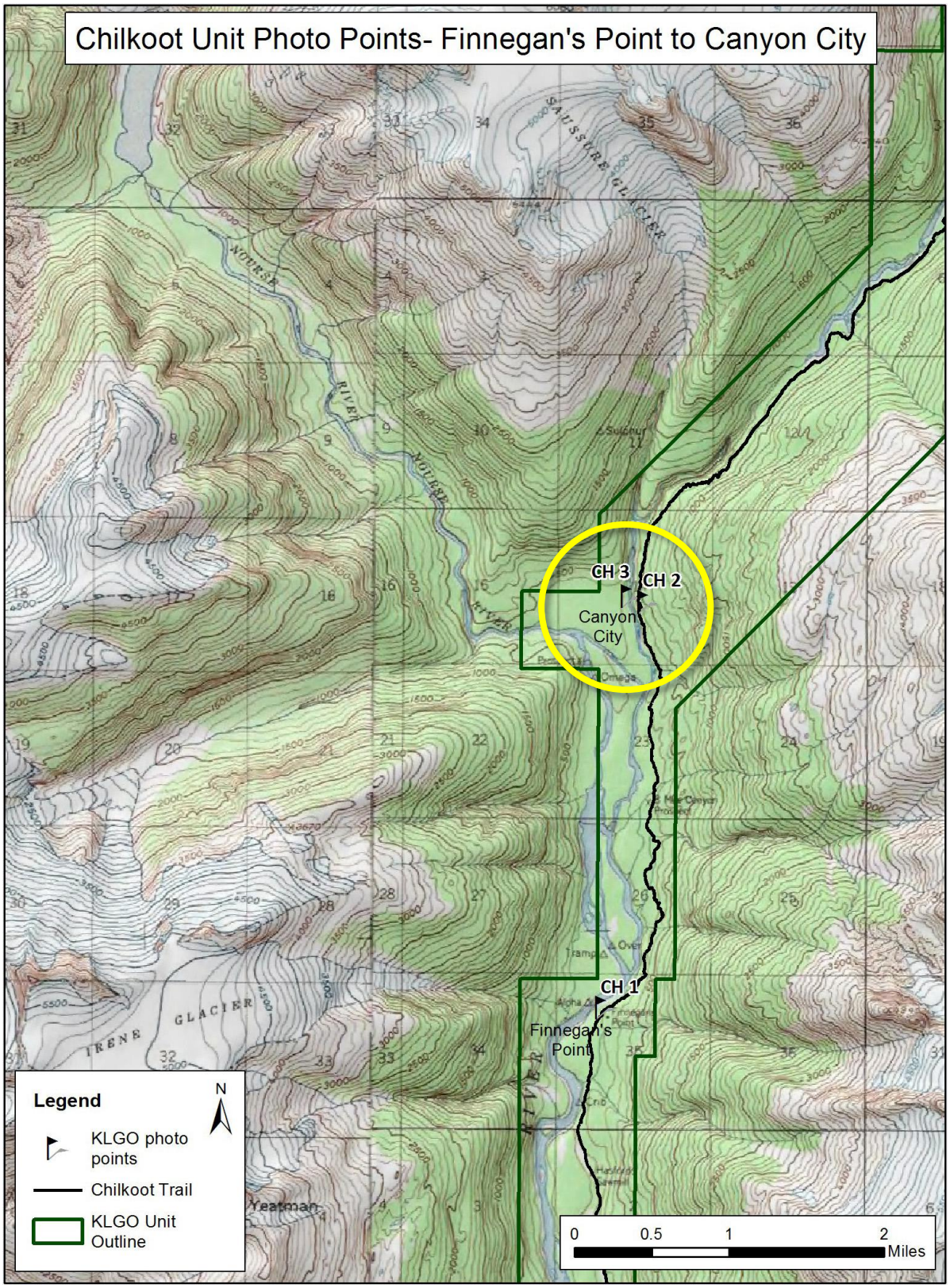

Figure 18. Detail map showing the location of photo station CH-02.

Figure 19. Photo Station CH-02 Canyon City. Reference photo looking north showing an overview of the site. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west bank of the Taiya River near Canyon City on the Chilkoot Trail, KLGO, Alaska. The site was accessed on foot by hiking the Chilkoot Trail and crossing the bridge to the Canyon City town site area.

Table 5. Photo Station CH-02 Metadata.

Photo Station CH-02	**Historic Photo**	**Repeat Photo**
Date	August 30, 1897	August 18, 2013
Time	unknown	4:02:38 PM AKDT
Photographer	F. La Roche	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130818-00669
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, UW28136	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/7.1, 1/50 second
Direction	north	
Latitude	59.61441° N	
Longitude	-135.33002° W	
Elevation	335 feet	
Notable Changes	Visible changes include regrowth of the forest at Canyon City, retreat of Saussure Glacier, and establishment of vegetation on the deglaciated area and moraine.	

Figure 20. Photo Station CH-02: Canyon City, August 30, 1897 by F. La Roche. View to the north up the Taiya River in Canyon City, Alaska. Saussure Glacier is visible in the background. Credit: University of Washington Libraries, Special Collections, UW28136.

Figure 21. Photo Station CH-02: Canyon City, August 18, 2013 by R.D. Karpilo Jr. View to the north of the Taiya River near Canyon City, Alaska. The vegetated lateral moraine of Saussure Glacier is visible in the background.

Figure 22. Photo Station CH-02: Canyon City. Full uncropped repeat photo. Box represents the field of view of the historic photo.

Figure 23. Photo Station CH-02 Canyon City. August 30, 1897 image by La Roche overlaid on the full uncropped version of the August 18, 2013 repeat image by Karpilo.

KLGO Photo Pair 03 – Canyon City (Photo Station CH-03)

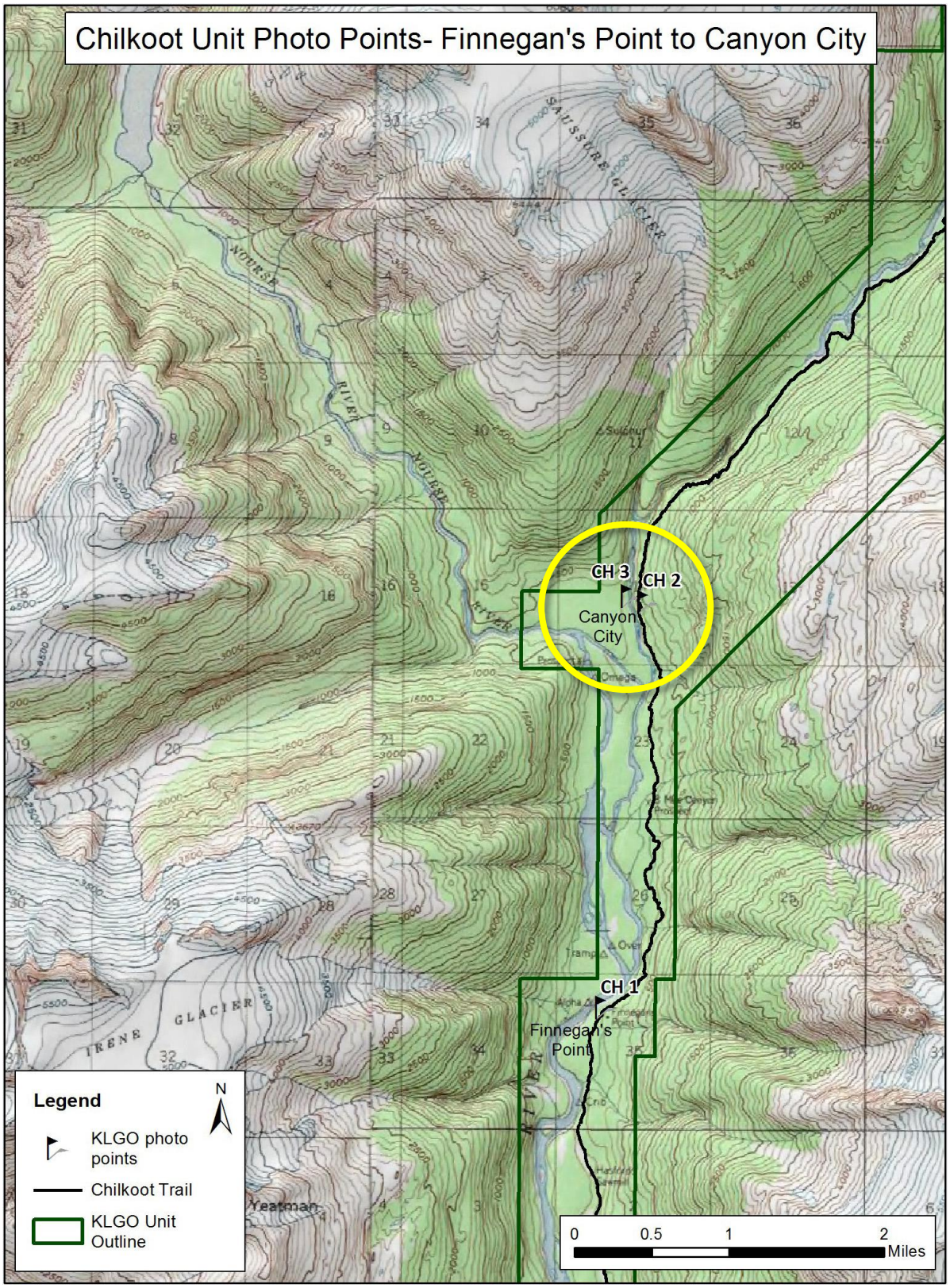

Figure 24. Detail map showing the location of photo station CH-03.

Figure 25. Photo Station CH-03 Canyon City. Reference photo looking west showing the photo site. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the center of the Canyon City trail crew cabin helipad near the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 6. Photo Station CH-03 Metadata.

Photo Station CH-03	**Historic Photo**	**Repeat Photo**
Date	1897	August 18, 2013
Time	unknown	12:54:01 PM AKDT
Photographer	F. La Roche	R.D. Karpilo Jr.
Photo Number	La Roche #2024	Karpilo #20130818-00355
Photo Credit	Suggested Credit: Klondike Gold Rush National Historical Park, La Roche Album	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	tripod @ 5.21 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 50mm
Camera Settings	unknown	ISO: 100, f/11, 1/100 second
Direction	south	
Latitude	59.613892° N	
Longitude	-135.326973° W	
Elevation	520 feet	
Notable Changes	Cottonwoods and other trees have substantially re-vegetated the Taiya River bed, which was likely scoured by a glacial outburst flood in the late 1800s.	

Figure 26. Photo Station CH-03: Canyon City, 1897 by F. La Roche. View south toward Dyea of sparse trees and shrubs in the Taiya River valley from near Canyon City, Alaska. Credit: Klondike Gold Rush National Historical Park, La Roche Album.

Figure 27. Photo Station CH-03: Canyon City, August 18, 2013 by R.D. Karpilo Jr. View south toward Dyea of thick trees and shrubs along the Taiya River channel and valley bottom from the NPS trail crew cabin helipad near Canyon City, Alaska.

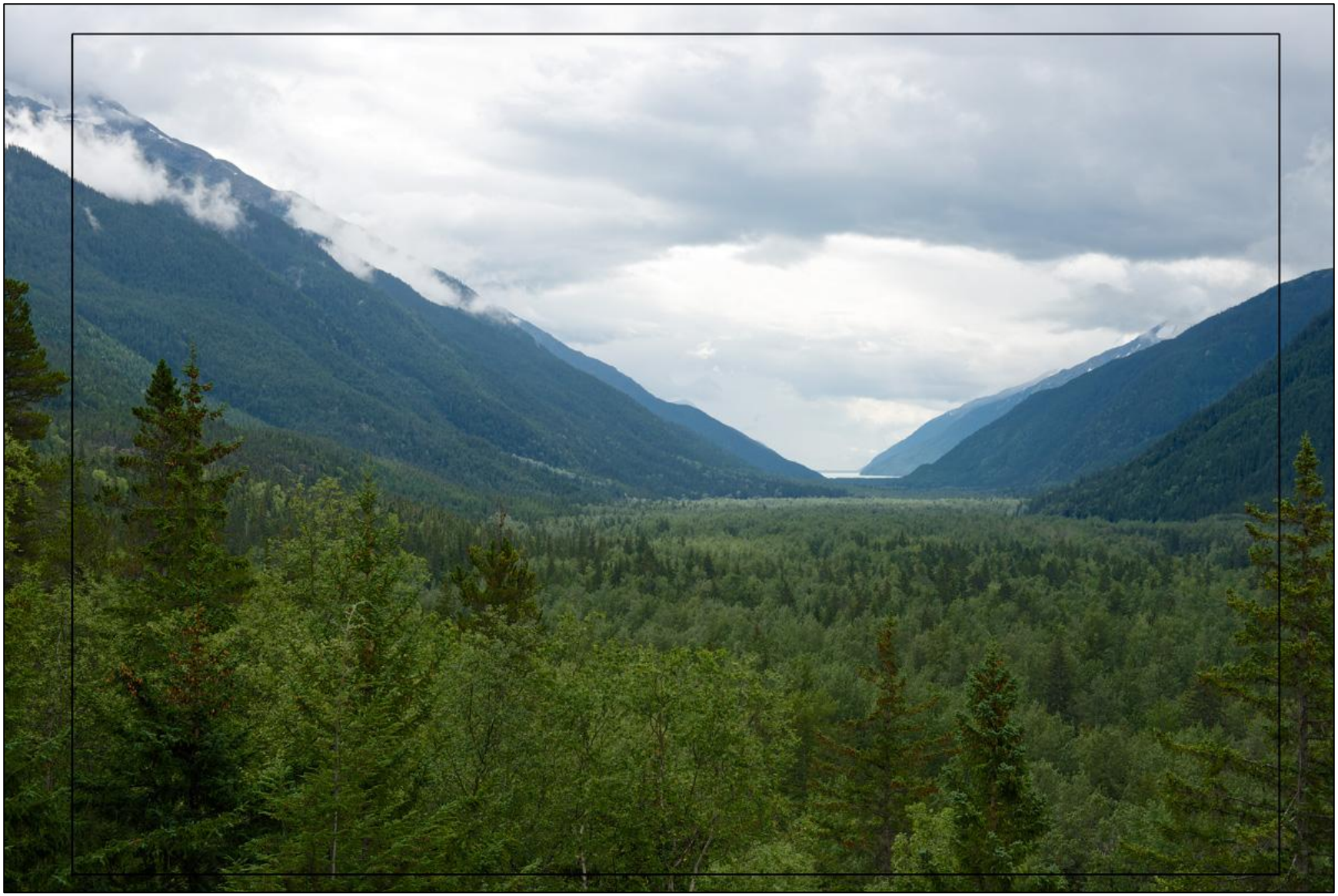

Figure 28. Photo Station CH-03: Canyon City. Full uncropped repeat photo. Box represents the field of view of the historic photo.

Figure 29. Photo Station CH-03 Canyon City. 1897 image by La Roche overlaid on the full uncropped version of the August 18, 2013 repeat image by Karpilo.

KLGO Photo Pair 04 – Sheep Camp (Photo Station CH-04)

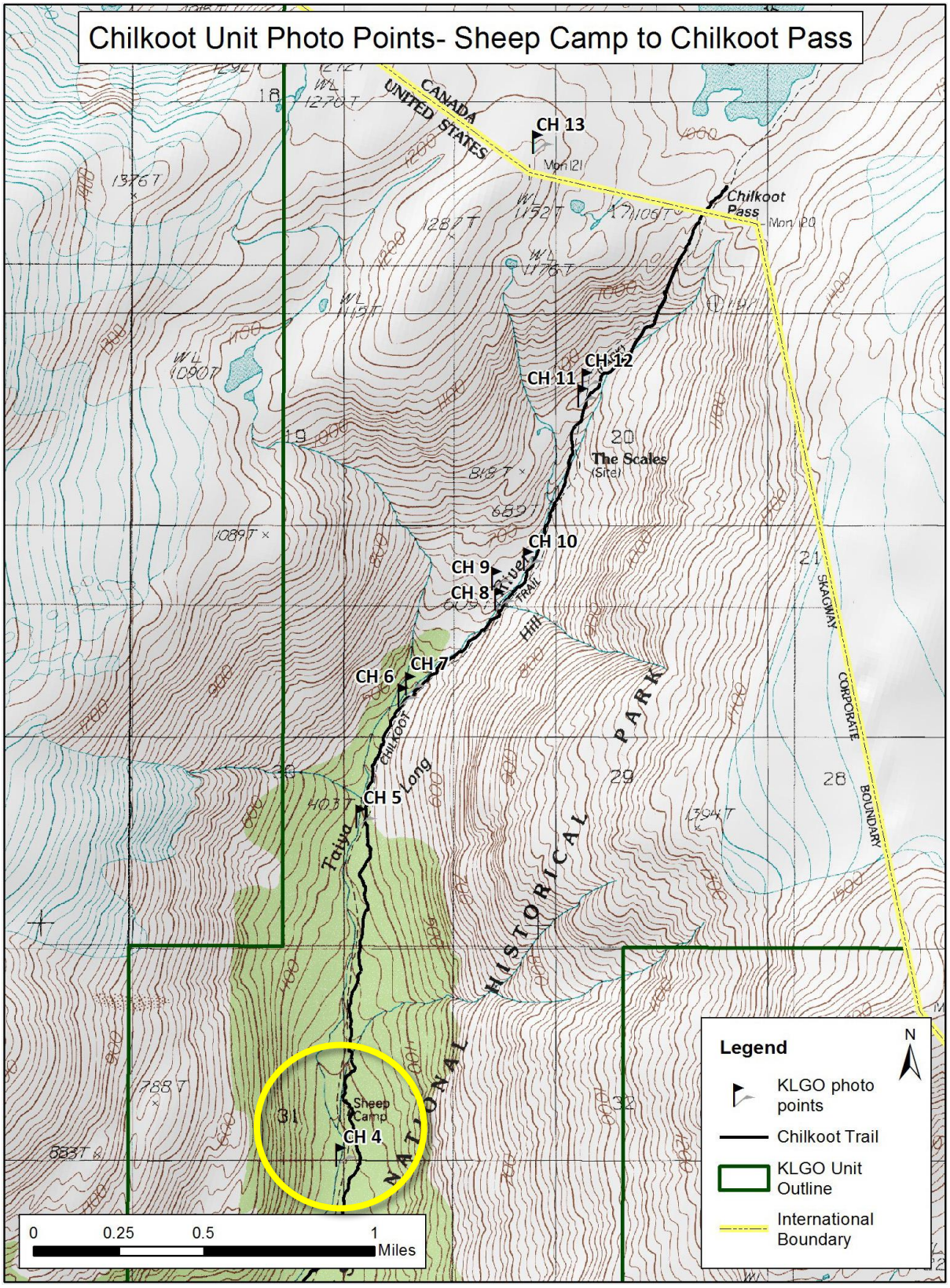

Figure 30. Detail map showing the location of photo station CH-04.

Figure 31. Photo Station CH-04: Sheep Camp. Reference photo looking north showing the location of Photo Station CH-04. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the center of the Sheep Camp helipad near the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 7. Photo Station CH-04 Metadata.

Photo Station CH-04	Historic Photo	Repeat Photo
Date	September 4, 1897	August 19, 2013
Time	unknown	1:54:28 PM AKDT
Photographer	H.M. Sarvant	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130819-00259
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, UW22053	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/9, 1/50 second
Direction	north	
Latitude	59.65659° N	
Longitude	-135.26781° W	
Elevation	949 feet	
Notable Changes	The hanging glacier retreated out of view and the deglaciated area and moraine became vegetated. There is a substantial increase in the density of trees and shrubs along the Taiya River and a shift from a coniferous forest to a predominantly deciduous ecosystem. Tree line has advanced upslope several hundred feet.	

Figure 32. Photo Station CH-04: Sheep Camp, September 4, 1897 by H.M. Sarvant. View north of Sheep Camp with the Taiya River and gravel bar in the foreground and a hanging glacier in the background. Credit: University of Washington Libraries, Special Collections, UW22053.

Figure 33. Photo Station CH-04: Sheep Camp, August 19, 2013 by R.D. Karpilo Jr. View north of the Taiya River from the NPS helipad at Sheep Camp, KLGO, Alaska. NPS Sheep Camp weather station is visible in lower right corner of image.

Figure 34. Photo Station CH-04: Full uncropped version of the August 19, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 35. Photo Station CH-04: September 4, 1897 image by Sarvant overlaid on the full uncropped version of the August 19, 2013 repeat image by Karpilo.

KLGO Photo Pair 05 – Long Hill (Photo Station CH-05)

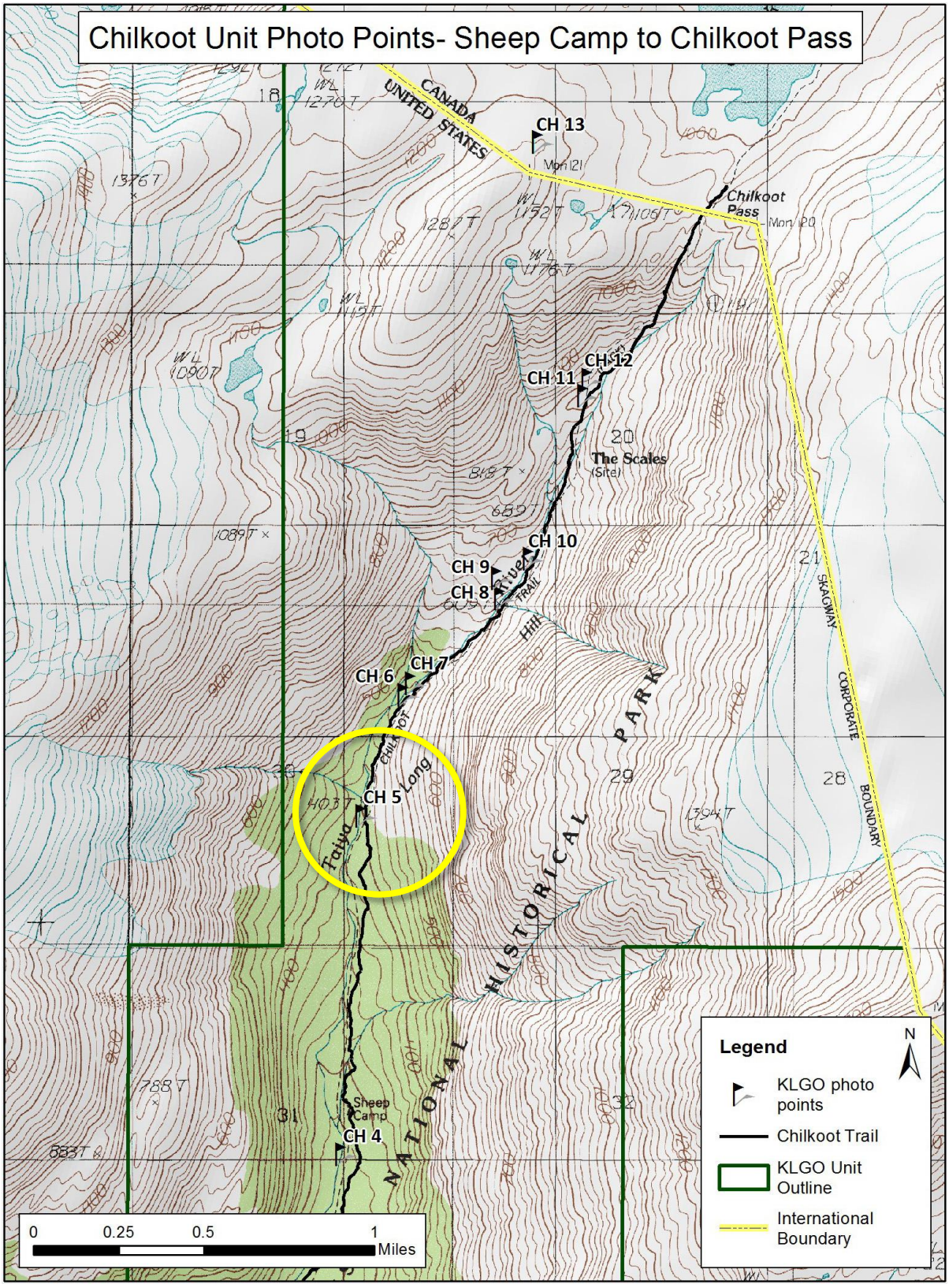

Figure 36. Detail map showing the location of photo station CH-05.

Figure 37. Reference photo looking northeast showing the location of Photo Station CH-05. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located one mile north of Sheep Camp on the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 8. Photo Station CH-05 Metadata.

Photo Station CH-05	**Historic Photo**	**Repeat Photo**
Date	1897	August 5, 2014
Time	unknown	11:39:39 AM AKDT
Photographer	F. La Roche	R.D. Karpilo Jr.
Photo Number	La Roche 2035	Karpilo #20140805-00078
Photo Credit	Required Credit: Library and Archives Canada, C-28645	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 4 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 320, f/11, 1/80 second
Direction	north	
Latitude	59.67094° N	
Longitude	-135.266256° W	
Elevation	1,366 feet	
Notable Changes	Visible changes include growth of thicker shrubs and larger trees along the trail and the establishment and growth of moss and lichens on the boulders. Cultural changes include erosion-reducing improvements to the Chilkoot Trail by the NPS Trail Crew.	

Figure 38. Photo Station CH-05: Long Hill, 1897 by F. La Roche. View north of prospectors and packers on the Chilkoot Trail north of Sheep Camp, Alaska. Credit: Library and Archives Canada, C-28645.

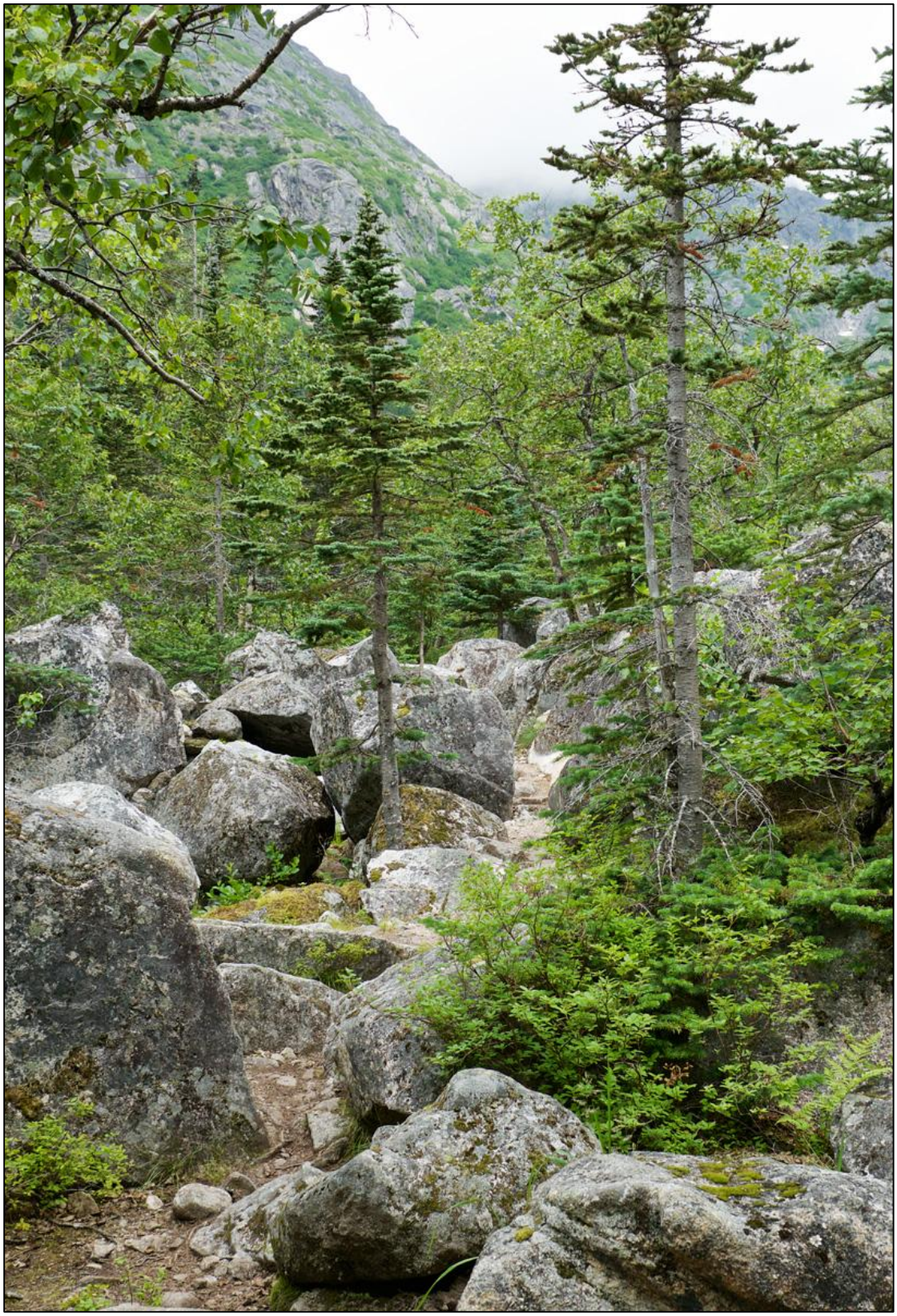

Figure 39. Photo Station CH-05: Long Hill, August 5, 2014 by R.D. Karpilo Jr. View north of the Chilkoot Trail one mile north of Sheep Camp, Alaska.

Figure 40. Full uncropped version of the August 5, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 41. 1897 image by La Roche overlaid on the full uncropped version of the August 5, 2014 repeat image by Karpilo.

KLGO Photo Pair 06 – Long Hill (Photo Station CH-06)

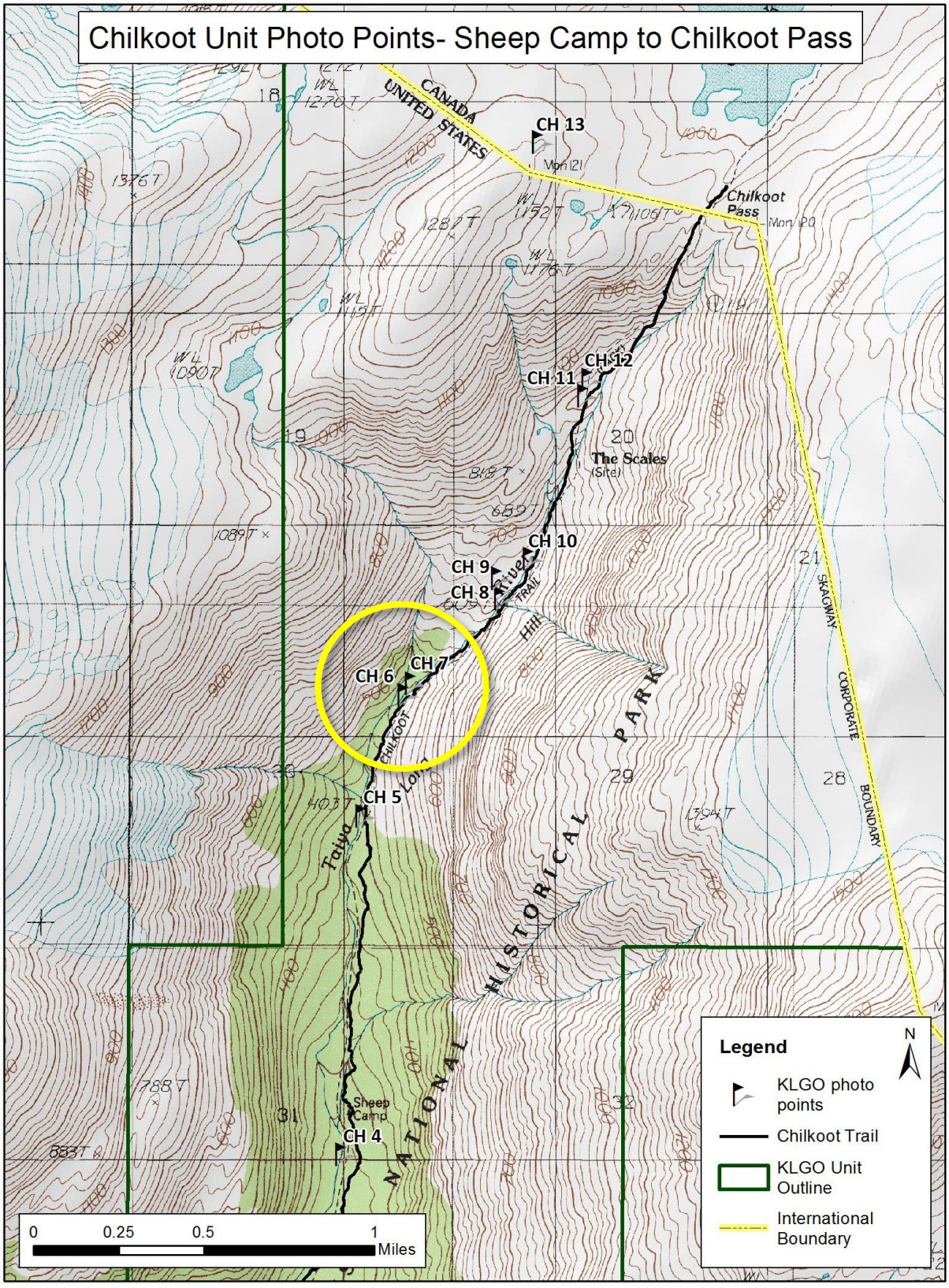

Figure 42. Detail map showing the location of photo station CH-06.

Figure 43. Reference photo looking southwest showing the location of Photo Station CH-06. This photo station is located in the Long Hill area of the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 9. Photo Station CH-06 Metadata.

Photo Station CH-06	**Historic Photo**	**Repeat Photo**
Date	c. 1898	August 20, 2013
Time	unknown	11:44:50 AM AKDT
Photographer	A. Curtis	R.D. Karpilo Jr.
Photo Number	Curtis #CUR1815	Karpilo #20130820-00217
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Klondike 235	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 320, f/10, 1/60 second
Direction	south	
Latitude	59.67609° N	
Longitude	-135.26275° W	
Elevation	1,620 feet	
Notable Changes	Visible changes include establishment and growth of trees and shrubs along the stream and on the talus slopes in the foreground and across the valley. Tree line has advanced several hundred feet upslope.	

Figure 44. Photo Station CH-06: Long Hill, c. 1898 by A. Curtis. View down valley of a pack train hauling cable for construction of the tram on Long Hill, Chilkoot Trail, Alaska. Credit: University of Washington Libraries, Special Collections, Klondike 235.

Figure 45. Photo Station CH-06: Long Hill, August 20, 2013 by R.D. Karpilo Jr. View to the south down valley toward Sheep Camp on Long Hill, Chilkoot Trail, Alaska.

Figure 46. Full uncropped version of the August 20, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 47. c. 1898 image by Curtis overlaid on the full uncropped version of the August 20, 2013 repeat image by Karpilo.

KLGO Photo Pair 07 – Long Hill (Photo Station CH-07)

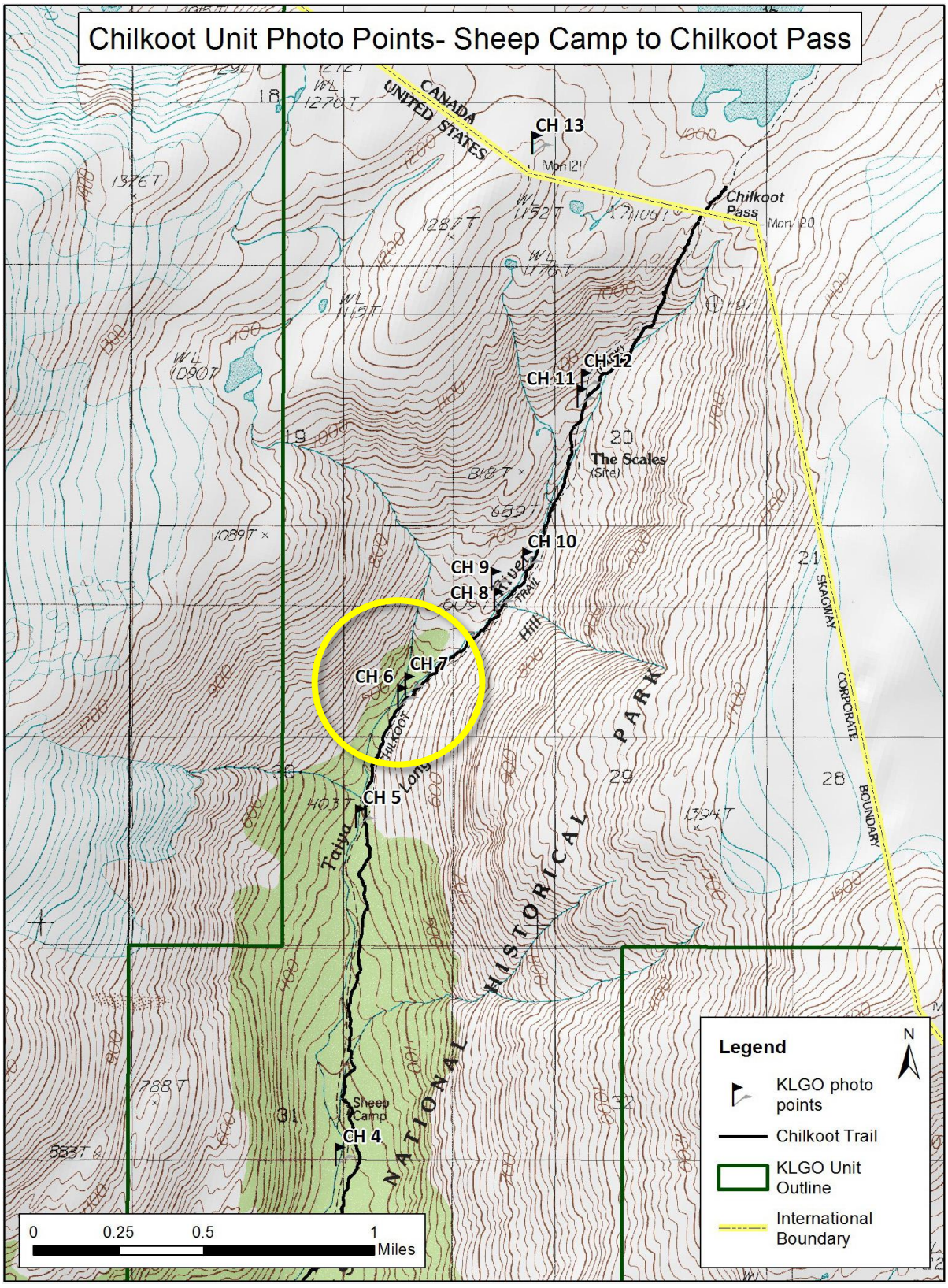

Figure 48. Detail map showing the location of photo station CH-07.

Figure 49. Reference photo looking southwest showing the location of Photo Station CH-07. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the Chilkoot Trail near Stone House, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 10. Photo Station CH-07 Metadata.

Photo Station CH-07	**Historic Photo**	**Repeat Photo**
Date	September 4, 1897	August 20, 2013
Time	unknown	11:15:04 AM AKDT
Photographer	H.M. Sarvant	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130820-00124
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, UW22056	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 36mm
Camera Settings	unknown	ISO: 100, f/6.3, 1/50 second
Direction	northwest	
Latitude	59.67657° N	
Longitude	-135.26216° W	
Elevation	1,648 feet	
Notable Changes	Visible changes include establishment and increase in density of trees and shrubs (including alder, willow, and spruce) along the stream and on the slope behind Stone House.	

Figure 50. Photo Station CH-07: Long Hill, September 4, 1897 by H.M. Sarvant. Tents belonging to prospectors at Stone House on Long Hill, Chilkoot Trail, Alaska. Credit: University of Washington Libraries, Special Collections, UW22056.

Figure 51. Photo Station CH-07: Long Hill, August 20, 2013 by R.D. Karpilo Jr. View from the Chilkoot Trail across the valley of Stone House, on Long Hill, Chilkoot Trail, KLGO, Alaska.

Figure 52. Full uncropped version of the August 20, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 53. September 4, 1897 image by Sarvant overlaid on the full uncropped version of the August 20, 2013 repeat image by Karpilo.

KLGO Photo Pair 08 – Long Hill (Photo Station CH-08)

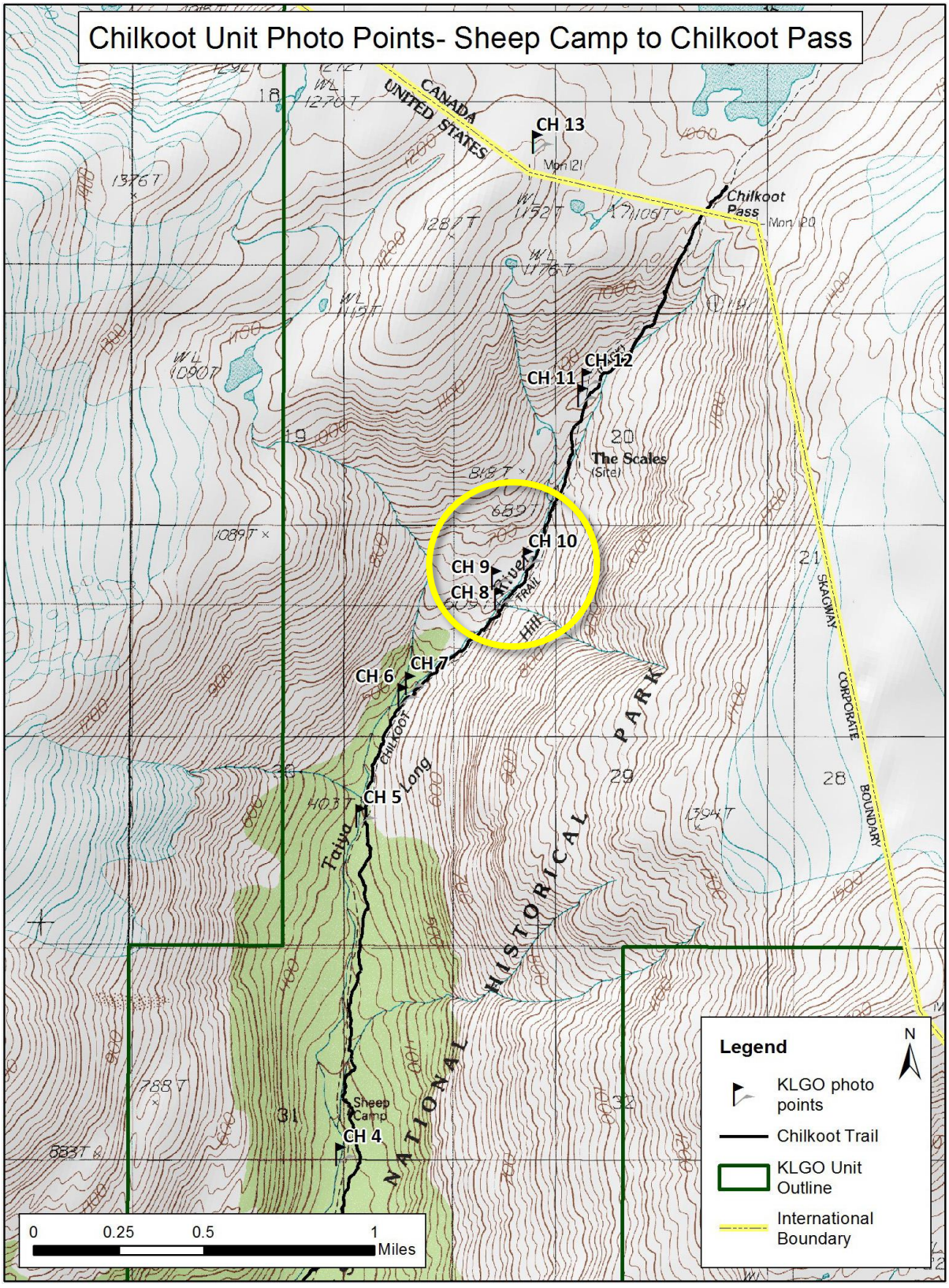

Figure 54. Detail map showing the location of photo station CH-08.

Figure 55. Reference photo looking north showing the location of Photo Station CH-08. This photo station is located on the Chilkoot Trail on Long Hill, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 11. Photo Station CH-08 Metadata.

Photo Station CH-08	Historic Photo	Repeat Photo
Date	1898	August 20, 2013
Time	unknown	12:55:41 PM AKDT
Photographer	A. Vogee	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130820-00242
Photo Credit	Required Credit: Yukon Archives, Anton Vogee Collection, #311	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/9, 1/60 second
Direction	south	
Latitude	59.68019° N	
Longitude	-135.25468° W	
Elevation	2,092 feet	
Notable Changes	Hoffman Glacier has retreated significantly and vegetation has colonized the deglaciated area. Vegetation has advanced up-slope on the talus slopes on both sides of the valley.	

Figure 56. Photo Station CH-08: Long Hill, 1898 by A. Vogee. View down valley of Hoffman Glacier from Long Hill, Chilkoot Trail, Alaska. Credit: Yukon Archives, Anton Vogee Collection, #311.

Figure 57. Photo Station CH-08: Long Hill, August 20, 2013 by R.D. Karpilo Jr. View down valley from Long Hill, Chilkoot Trail, KLGO, Alaska.

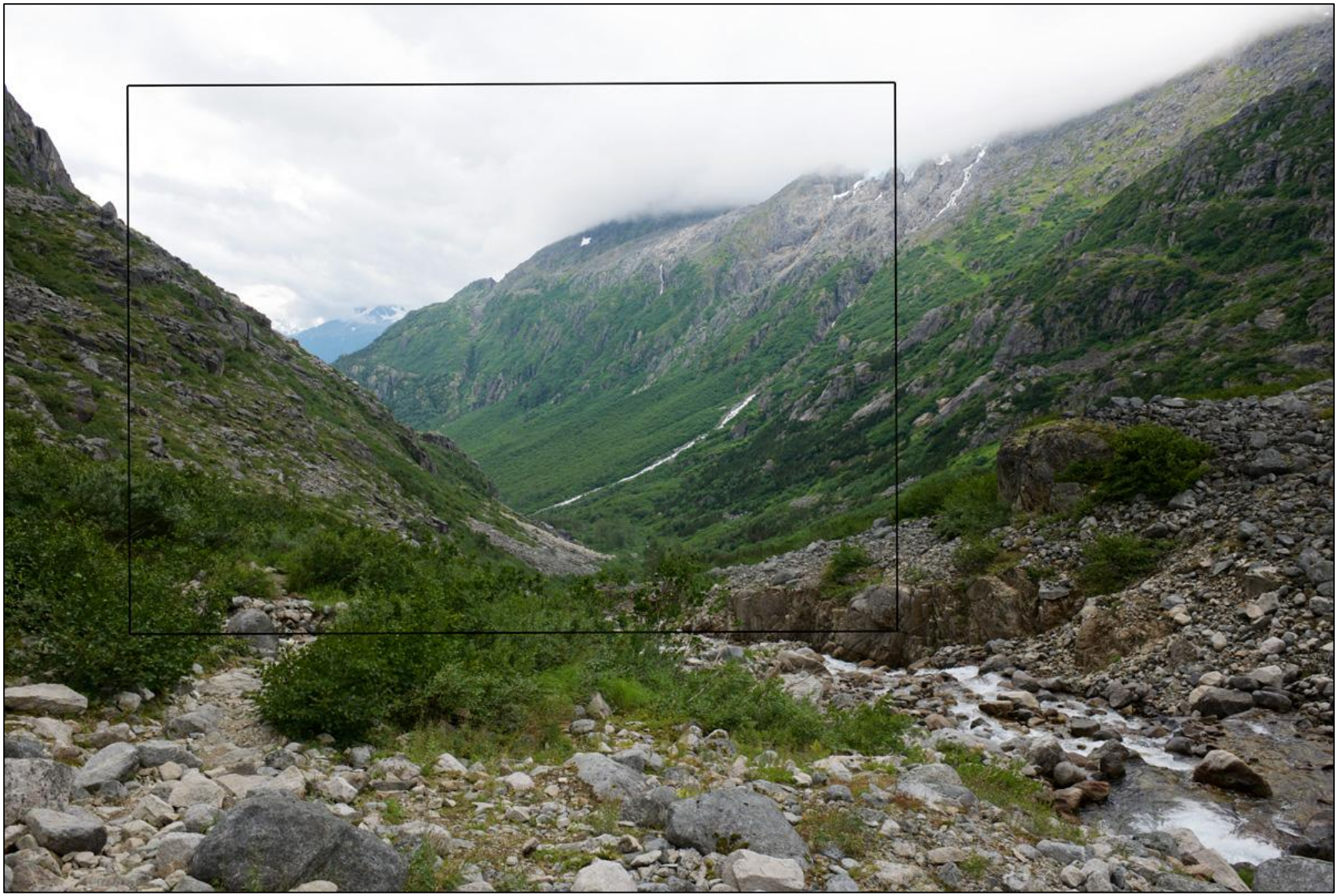

Figure 58. Full uncropped version of the August 20, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 59. 1898 image by Vogee overlaid on the full uncropped version of the August 20, 2013 repeat image by Karpilo.

KLGO Photo Pair 09 – Long Hill (Photo Station CH-09)

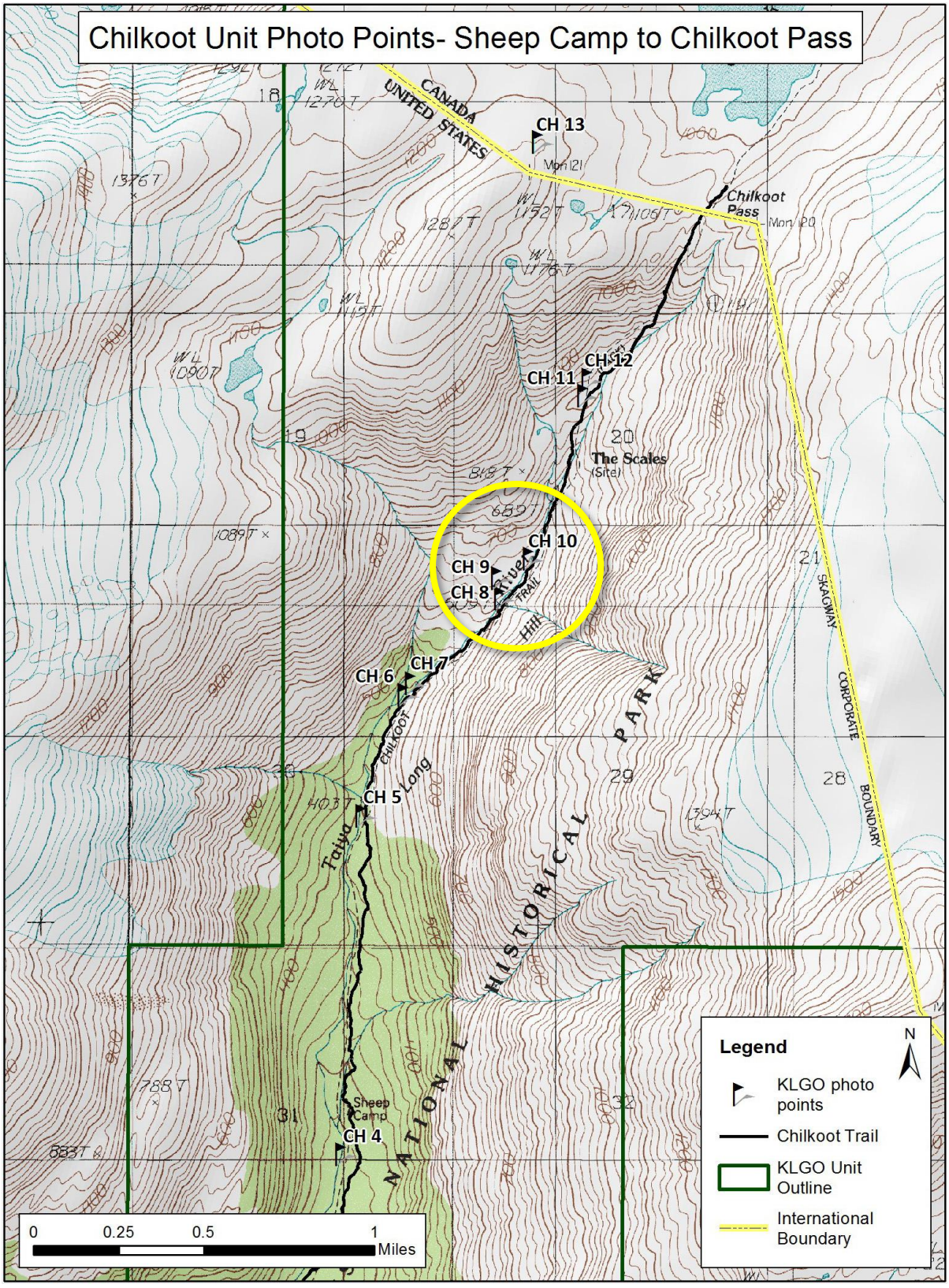

Figure 60. Detail map showing the location of photo station CH-09.

Figure 61. Reference photo looking northeast showing the location of Photo Station CH-09. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located west of the Chilkoot Trail in the Long Hill area, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 12. Photo Station CH-09 Metadata.

Photo Station CH-09	Historic Photo	Repeat Photo
Date	c. 1898	August 20, 2013
Time	unknown	1:51:46 PM AKDT
Photographer	E.A. Hegg	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130820-00333
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Hegg335	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/10, 1/80 second
Direction	southwest	
Latitude	59.68105° N	
Longitude	-135.25494° W	
Elevation	2,140 feet	
Notable Changes	Hoffman Glacier has retreated to the edge of the photo and vegetation has colonized the deglaciated area and bare talus in the foreground. Cultural changes include removal or deterioration of the aerial tram cable and tower.	

Figure 62. Photo Station CH-09: Long Hill, c. 1898 by E.A. Hegg. View southwest of the aerial tram with Hoffman Glacier in the background from Long Hill, Alaska. Credit: University of Washington Libraries, Special Collections, Hegg335.

Figure 63. Photo Station CH-09: Long Hill, August 20, 2013 by R.D. Karpilo Jr. View southwest down valley with Hoffman Glacier in the background from Long Hill, KLGO, Alaska.

Figure 64. Full uncropped version of the August 20, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 65. c. 1898 image by Hegg overlaid on the full uncropped version of the August 20, 2013 repeat image by Karpilo.

KLGO Photo Pair 10 – Long Hill (Photo Station CH-10)

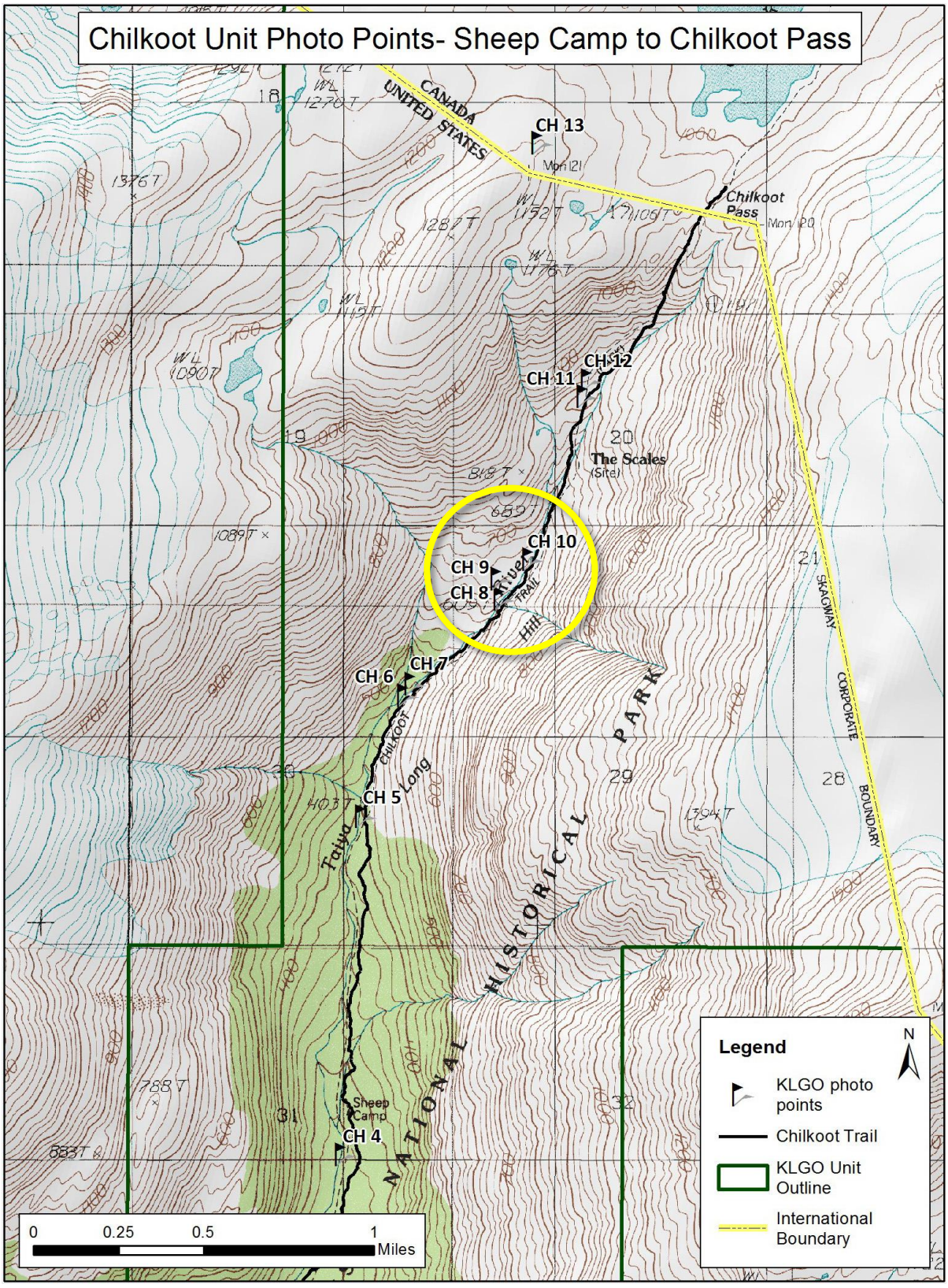

Figure 66. Detail map showing the location of photo station CH-10.

Figure 67. Reference photo looking north showing the location of Photo Station CH-10. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on Long Hill on the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 13. Photo Station CH-10 Metadata.

Photo Station CH-10	Historic Photo	Repeat Photo
Date	summer 1897	August 20, 2013
Time	unknown	2:47:44 PM AKDT
Photographer	F. La Roche	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130820-00418
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, La Roche 2038	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/11, 1/60 second
Direction	north	
Latitude	59.68187° N	
Longitude	-135.25229° W	
Elevation	2,137 feet	
Notable Changes	Visible changes include expansion of the alder stand and establishment of grass in the talus.	

Figure 68. Photo Station CH-10: Long Hill, summer 1897 by F. La Roche. View north of prospectors and packers resting on boulders below the Scales, Chilkoot Trail, Alaska. Credit: University of Washington Libraries, Special Collections, La Roche 2038.

Figure 69. Photo Station CH-10: Long Hill, August 20, 2013 by R.D. Karpilo Jr. View north below the Scales, Chilkoot Trail, KLGO, Alaska. The Chilkoot Trail visible in the foreground.

Figure 70. Full uncropped version of the August 20, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 71. Summer 1897 image by La Roche overlaid on the full uncropped version of the August 20, 2013 repeat image by Karpilo.

KLGO Photo Pair 11 – Scales (Photo Station CH-11)

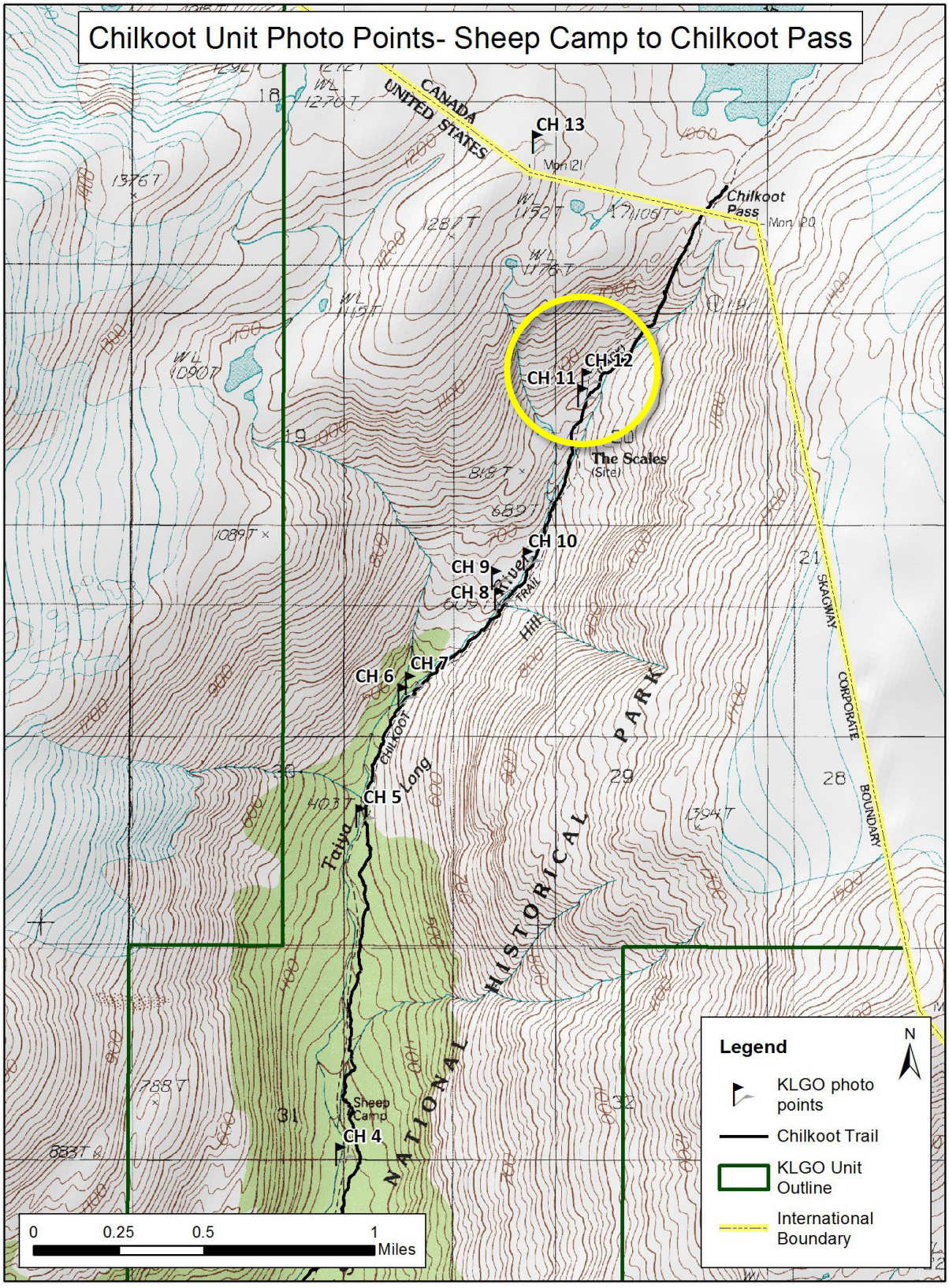

Figure 72. Detail map showing the location of photo station CH-11.

Figure 73. Reference photo looking north showing the location of Photo Station CH-11. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located near the Scales area of the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 14. Photo Station CH-11 Metadata.

Photo Station CH-11	Historic Photo	Repeat Photo
Date	summer 1906	August 20, 2013
Time	unknown	4:34:02 PM AKDT
Photographer	O.M. Leland	R.D. Karpilo Jr.
Photo Number	Leland #A7	Karpilo #20130820-00546
Photo Credit	Suggested Credit: National Archives 76-AL-7-A7-8486	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 32mm
Camera Settings	unknown	ISO: 400, f/8, 1/80 second
Direction	northeast	
Latitude	59.68881° N	
Longitude	-135.24779° W	
Elevation	2,678 feet	
Notable Changes	The patches of vegetation on the slopes above the Scales have expanded in area. No standing structures remain. NPS interpretive sign is visible in the repeat photo.	

Figure 74. Photo Station CH-11: Scales, summer 1906 by O.M. Leland. View northeast of the Golden Stairs from the Scales area below Chilkoot Pass, Alaska. A tram tower is visible near Chilkoot Pass. Credit: National Archives 76-AL-7-A7-8486.

Figure 75. Photo Station CH-11: Scales, August 20, 2013 by R.D. Karpilo Jr. View to the northeast of the Golden Stairs from the Scales area below Chilkoot Pass, KLGO, Alaska.

Figure 76. Full uncropped version of the August 20, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 77. Summer 1906 image by Leland overlaid on the full uncropped version of the August 20, 2013 repeat image by Karpilo.

KLGO Photo Pair 12 – Scales (Photo Station CH-12)

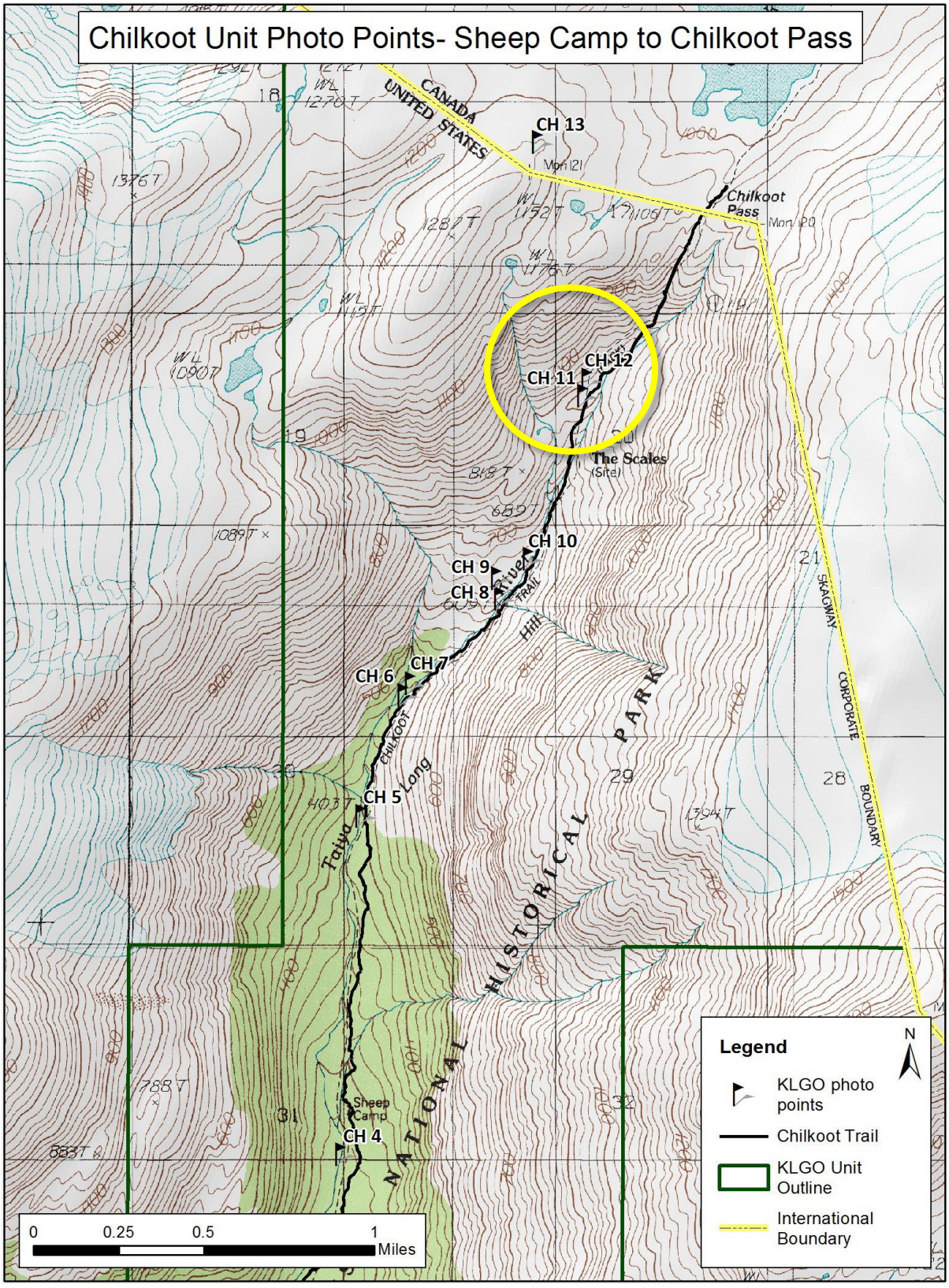

Figure 78. Detail map showing the location of photo station CH-12.

Figure 79. Reference photo looking north showing the location of Photo Station CH-12. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located near the Scales area of the Chilkoot Trail, KLGO, Alaska. The site was accessed by hiking the Chilkoot Trail.

Table 15. Photo Station CH-12 Metadata.

Photo Station CH-12	Historic Photo	Repeat Photo
Date	c. 1900	August 5, 2014
Time	unknown	2:23:28 PM AKDT
Photographer	W.H. Case and H.H. Draper	S.C. Venator
Photo Number	Case and Draper #806	Venator #20130805-00014
Photo Credit	Suggested Credit: Courtesy of Sidney West	Suggested Credit: S.C. Venator and R.D. Karpilo Jr./NPS
Camera Support	unknown	handheld @ 5 feet
Camera	unknown	Nikon Coolpix S9700
Lens	unknown	Nikon Coolpix S9700 4.5-135mm Zoom @ 4.5mm (35 mm equivalent: 25mm)
Camera Settings	unknown	ISO: 125, f/3.7, 1/800 second
Direction	northeast	
Latitude	59.68949° N	
Longitude	-135.247455° W	
Elevation	2,384 feet	
Notable Changes	The patches of vegetation on the slopes above the Scales have expanded in area. No standing structures remain.	

Figure 80. Photo Station CH-12: Scales, c. 1900 by W.H. Case and H.H. Draper. View northeast of the Golden Stairs from the Scales area below Chilkoot Pass, Alaska. Standing tram towers, remnants of a boiler, and a wooden structure are visible. Credit: Courtesy of Sidney West.

Figure 81. Photo Station CH-12: Scales, August 5, 2014 by S.C. Venator. View to the northeast of the Golden Stairs from the Scales area below Chilkoot Pass, KLGO, Alaska.

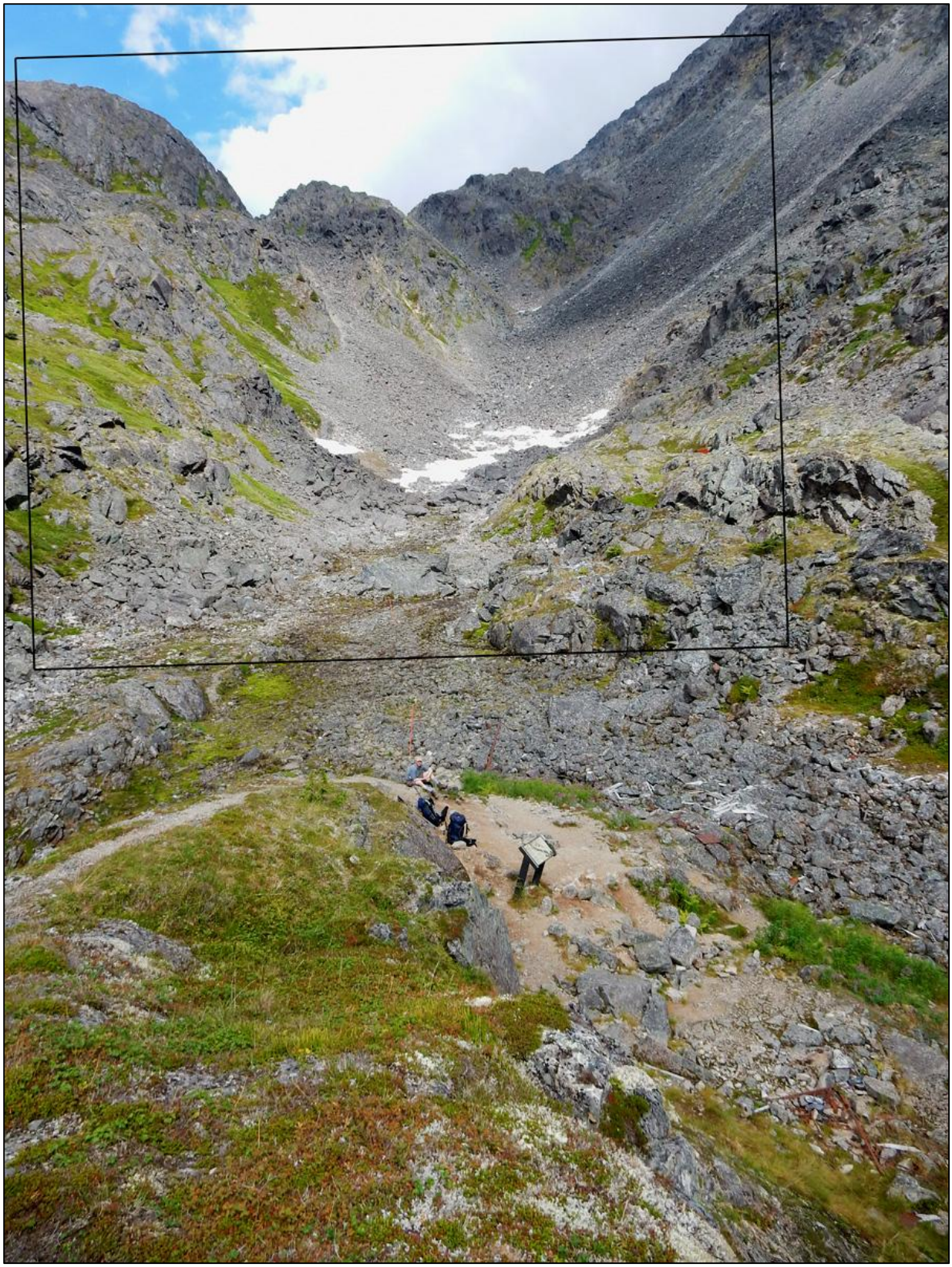

Figure 82. Full uncropped version of the August 5, 2014 repeat image. Box represents the field of view of the historic photo.

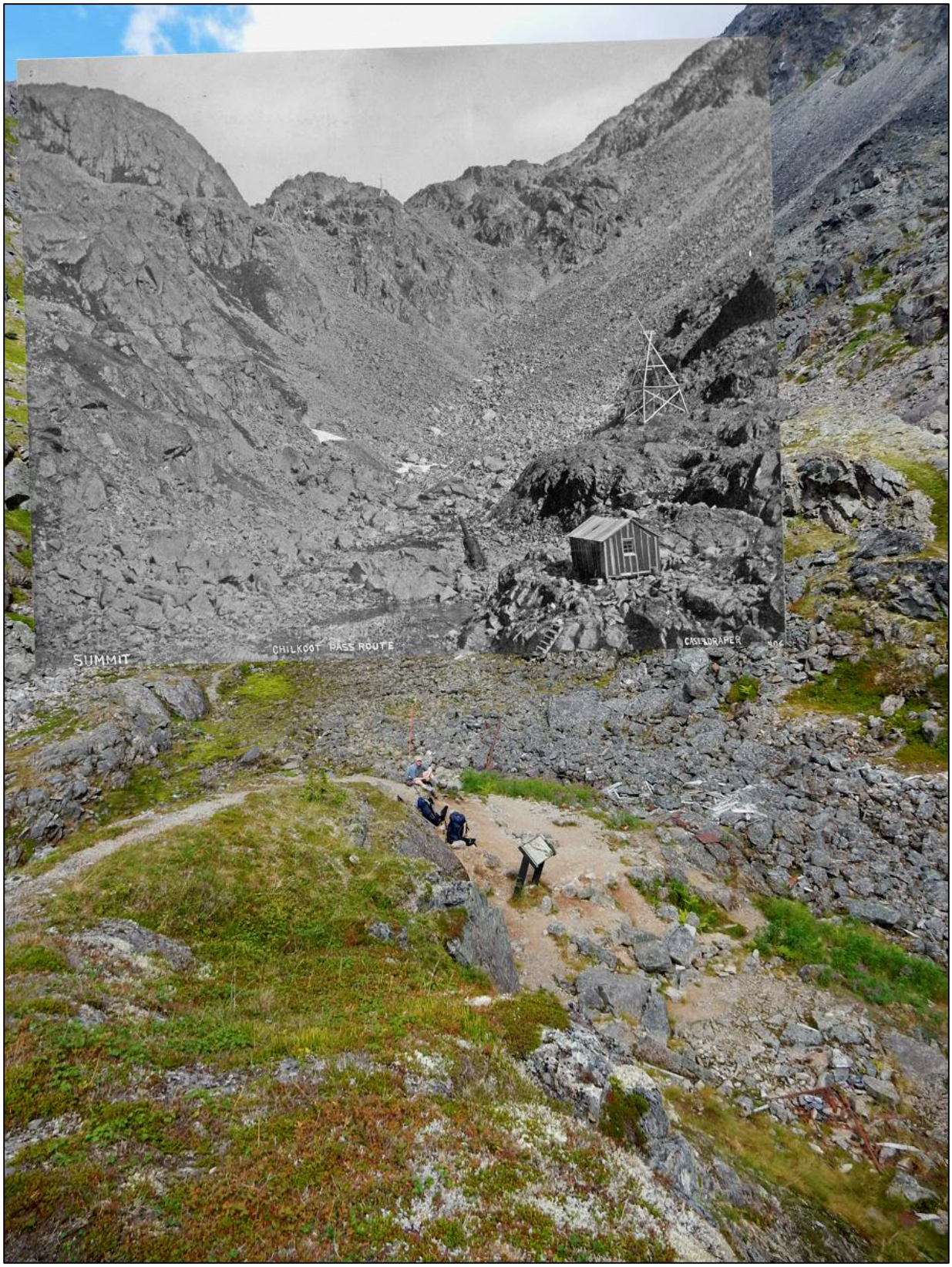

Figure 83. c. 1900 image by Case and Draper overlaid on the full uncropped version of the August 5, 2013 repeat image by Venator.

KLGO Photo Pair 13 – Chilkoot Pass (Photo Station CH-13)

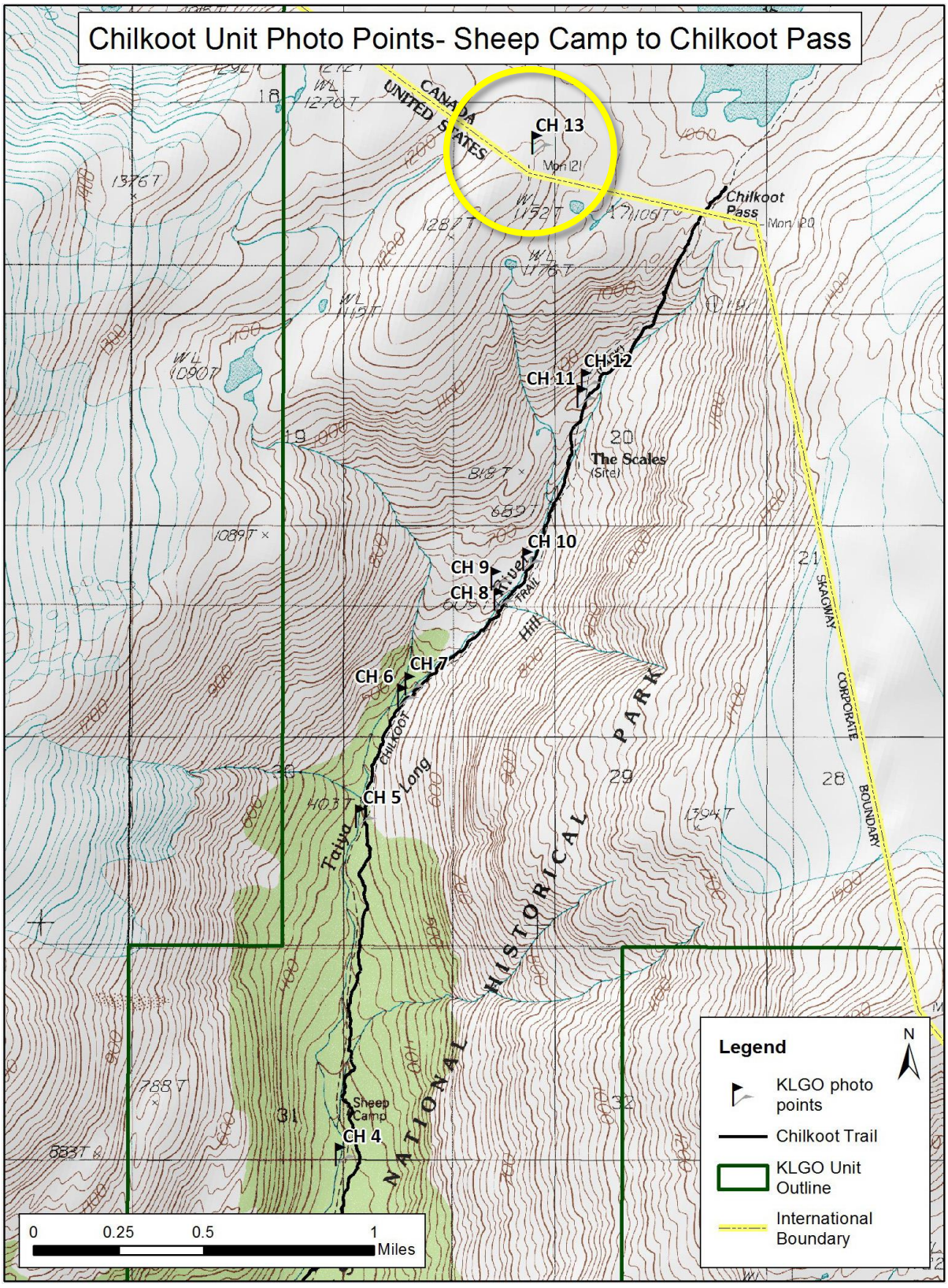

Figure 84. Detail map showing the location of photo station CH-13.

Figure 85. Photo Station CH-13 Chilkoot Pass. Reference photo looking north showing an overview of the site. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located a half mile west of Chilkoot Pass and 500 feet north of United States and Canada border Bench Mark 121 in the Chilkoot Trail National Historic Site of Canada. Site was accessed by hiking the Chilkoot Trail to the Chilkoot Pass and then hiking off trail to the photo station.

Table 16. Photo Station CH-13 Metadata.

Photo Station CH-13	**Historic Photo**	**Repeat Photo**
Date	late summer 1906	August 5, 2014
Time	unknown	7:36:39 PM AKDT
Photographer	G. White-Fraser	R.D. Karpilo Jr.
Photo Number	White-Fraser #3.1, 3.2, 3.3, 3.8, and 3.9	Karpilo #20140805-00710-00732
Photo Credit	Required Credit: Library and Archives Canada, PA-162894, 162895, 162901, 162902, and 162903	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	tripod @ 3.5 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 27mm
Camera Settings	unknown	ISO: 200, f/13, 1/80 second
Direction	east (center of panorama)	
Latitude	59.69957° N	
Longitude	-135.25168° W	
Elevation	4,077 feet	
Notable Changes	Visible changes include significant retreat of glaciers on both sides of Chilkoot Pass, slight change in lake level, and deterioration of historic structures at the pass.	

Figure 86. Photo Station CH-13 Chilkoot Pass: late summer 1906 by G. White-Fraser, International Boundary Commission. Panorama of Chilkoot Pass from north of Boundary Monument 121. Views of Crater Lake and glaciers on both sides of the United States-Canada boundary. The Chilkoot Trail and structures on the pass are also visible. Five original images were digitally stitched together to form the panorama. Credit: Library and Archives Canada, PA-162894, 162895, 162901, 162902, and 162903.

Figure 87. Photo Station CH-13 Chilkoot Pass: August 5, 2014 by R.D. Karpilo Jr. Panorama of Chilkoot Pass from north of Boundary Monument 121. View of Crater Lake and glaciers on both sides of the United States-Canada boundary. Cultural resources including the Chilkoot Trail and structures on the pass are visible**.** The repeat panorama is constructed of 22 images digitally stitched together.

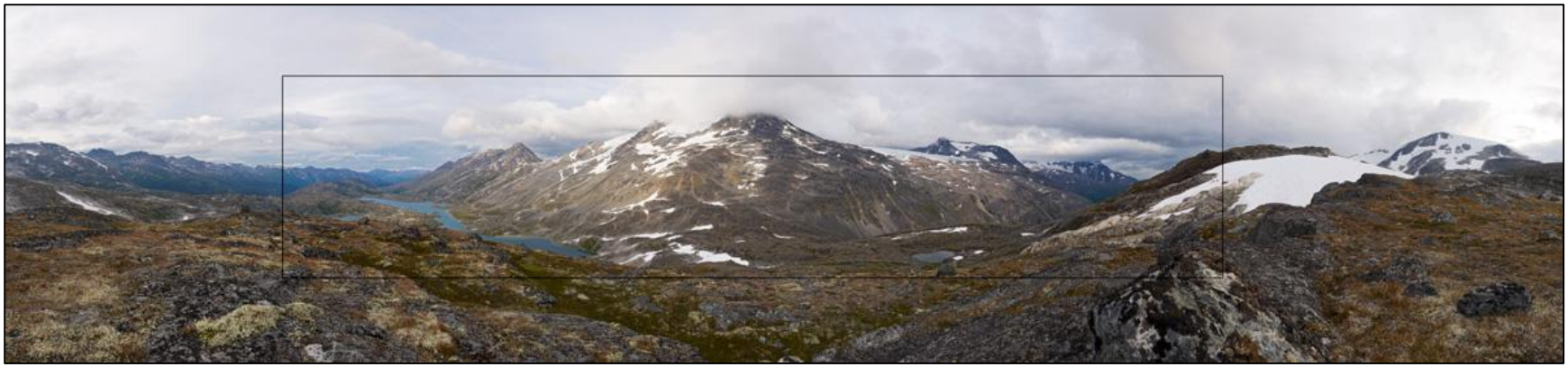

Figure 88. Full uncropped version of the August 5, 2014 repeat image. Box represents the field of view of the historic photo.

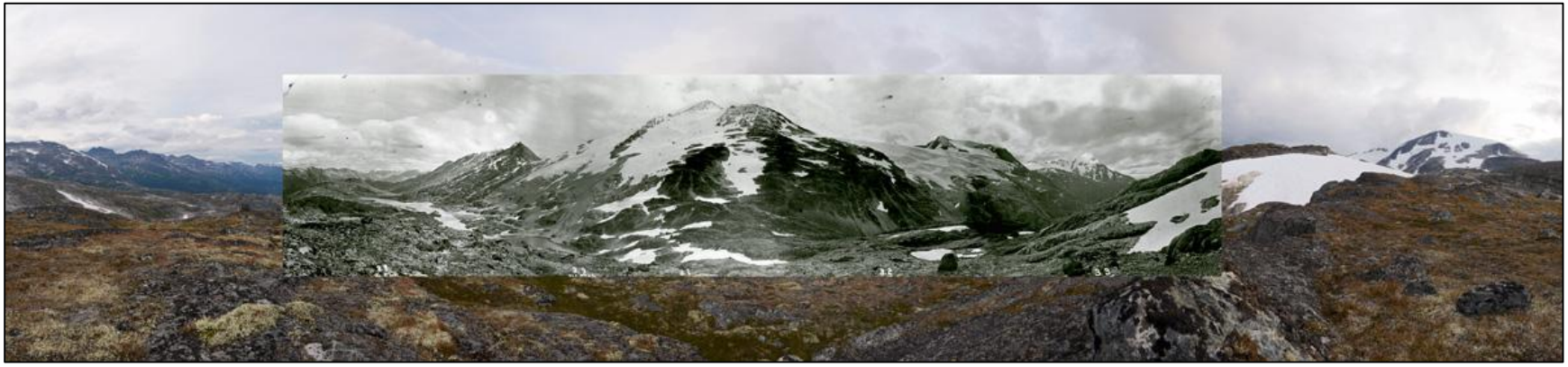

Figure 89. Summer 1906 image by White-Fraser overlaid on the full uncropped version of the August 5, 2014 repeat image by Karpilo.

KLGO Photo Pair 14 – AB Mountain (Photo Station CH-14)

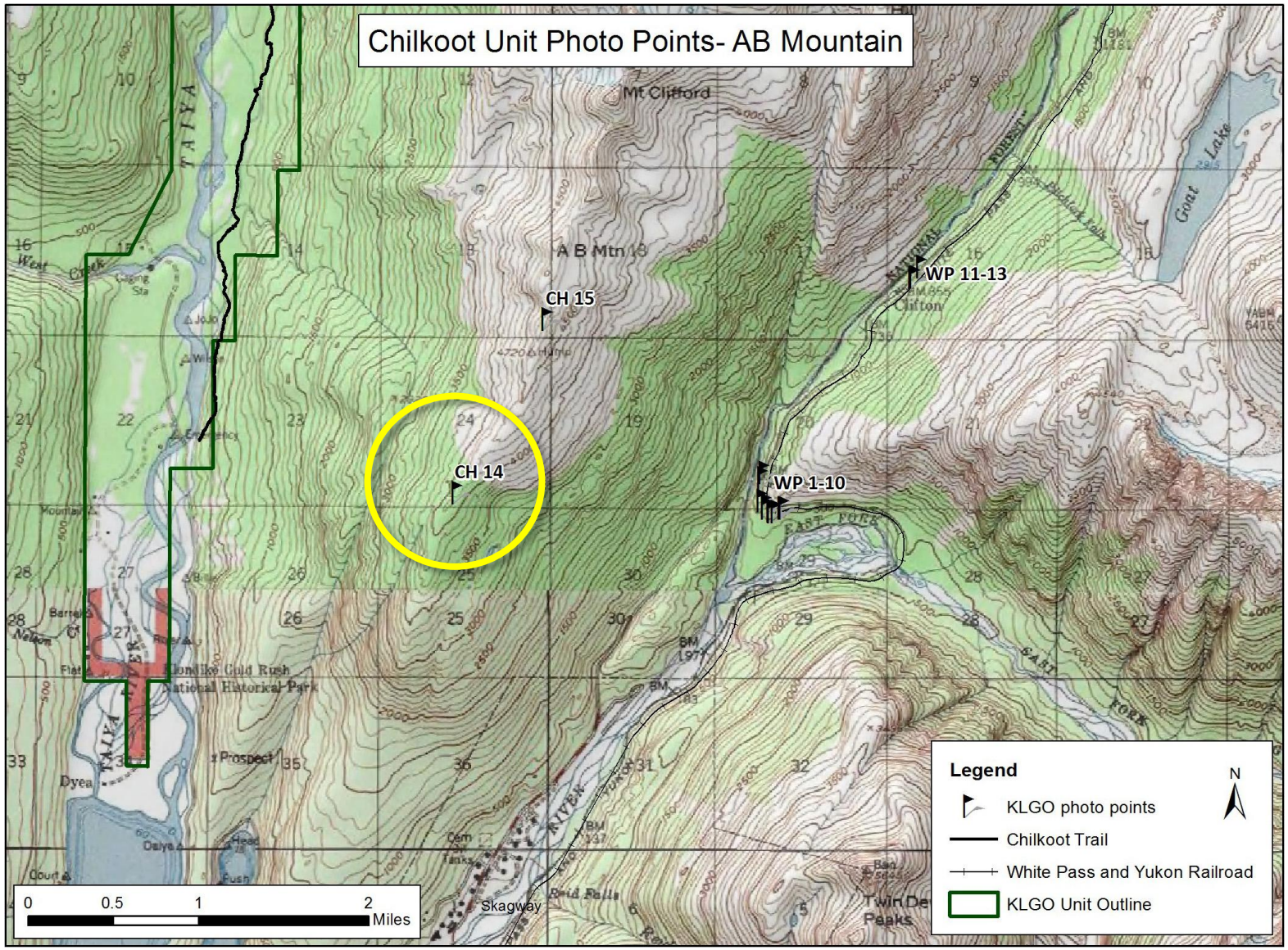

Figure 90. Detail map showing the location of photo station CH-14 on AB Mountain.

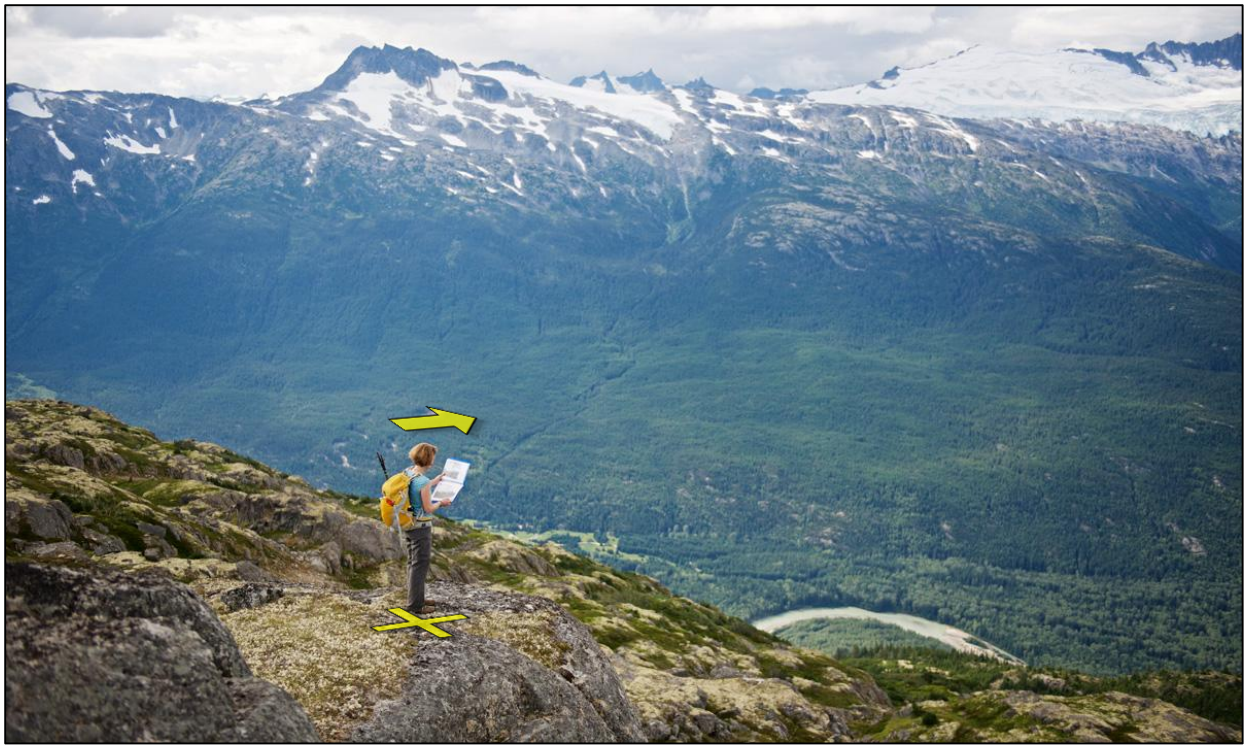

Figure 91. Reference photo looking southwest showing the location of Photo Station CH-14. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located near the top of AB Mountain, Alaska. Site was accessed by hiking the AB Mountain Trail.

Table 17. Photo Station CH-14 Metadata.

Photo Station CH-14	Historic Photo	Repeat Photo
Date	late summer 1894	August 27, 2013
Time	unknown	1:54:41 PM AKDT
Photographer	J.J. McArthur	R.D. Karpilo Jr.
Photo Number	McArthur #99 and 100	Karpilo #20130827-00214-00217
Photo Credit	Required Credit: Library and Archives Canada, PA-162918 and 162919	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/11, 1/250 second
Direction	northwest	
Latitude	59.50817° N	
Longitude	-135.3013° W	
Elevation	4,120 feet	
Notable Changes	Visible changes include retreat and thinning of Irene Glacier, Saussure Glacier, and several unnamed glaciers. Additional changes include channelization of the Taiya River and regrowth and thickening of the forest in the valley bottom which was likely scoured by glacial outburst flooding in the late 1800s.	

Figure 92. Photo Station CH-14 AB Mountain: late summer 1894 by J.J. McArthur, International Boundary Commission. Panorama from near the summit of AB Mountain looking northwest towards West Creek and the Taiya River. The valley bottom was likely scoured in approximately the decade before the image was made by a glacial outburst flood in the Nourse drainage. Two original images were digitally stitched together to form the panorama. Credit: Library and Archives Canada, PA-162918 and 162919.

Figure 93. Photo Station CH-14 AB Mountain: August 27, 2013 by R.D. Karpilo Jr. The panorama was taken from near the summit of AB Mountain looking northwest towards West Creek and the Taiya River. The repeat panorama is constructed of four images digitally stitched together.

Figure 94. Full uncropped version of the August 27, 2013 repeat image. Box represents the field of view of the historic photo.

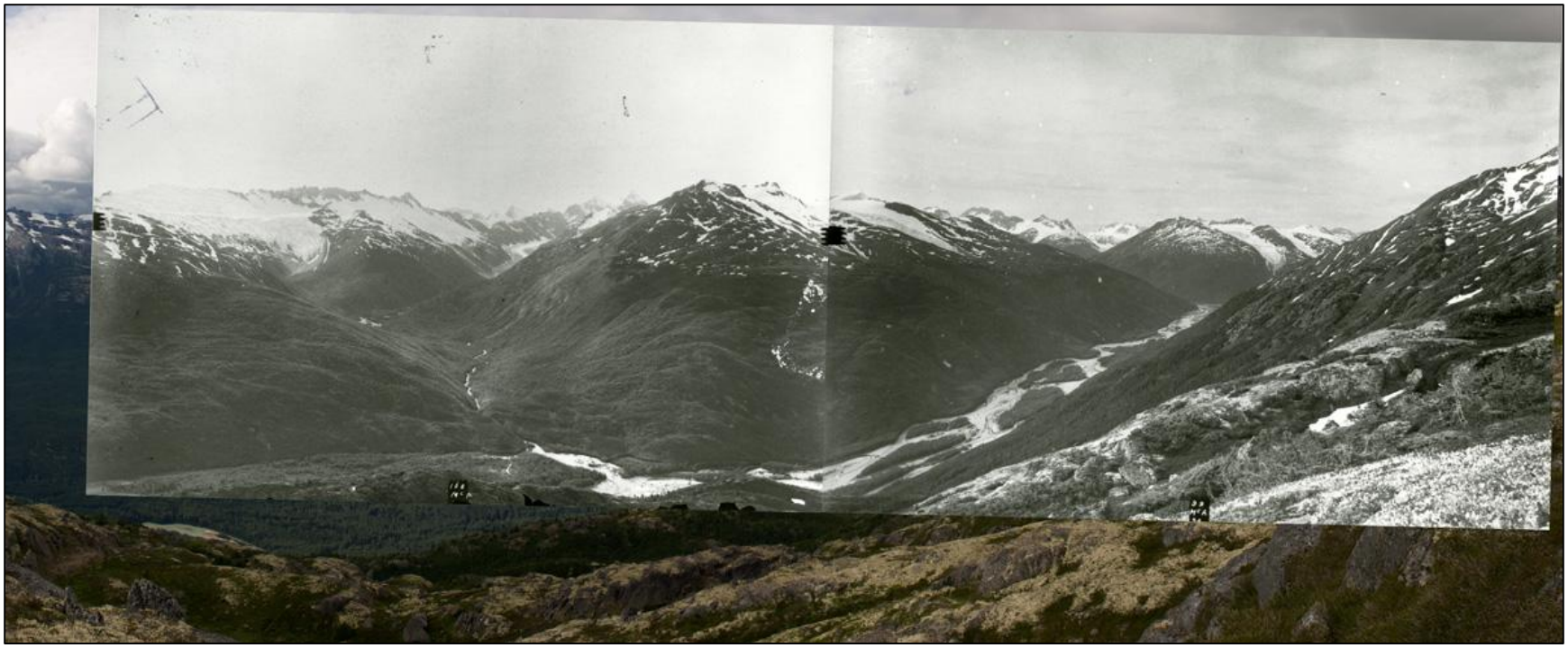

Figure 95. Summer 1894 image by McArthur overlaid on the full uncropped version of the August 27, 2013 repeat image by Karpilo.

KLGO Photo Pairs 15a and 15b – AB Mountain (Photo Station CH-15)

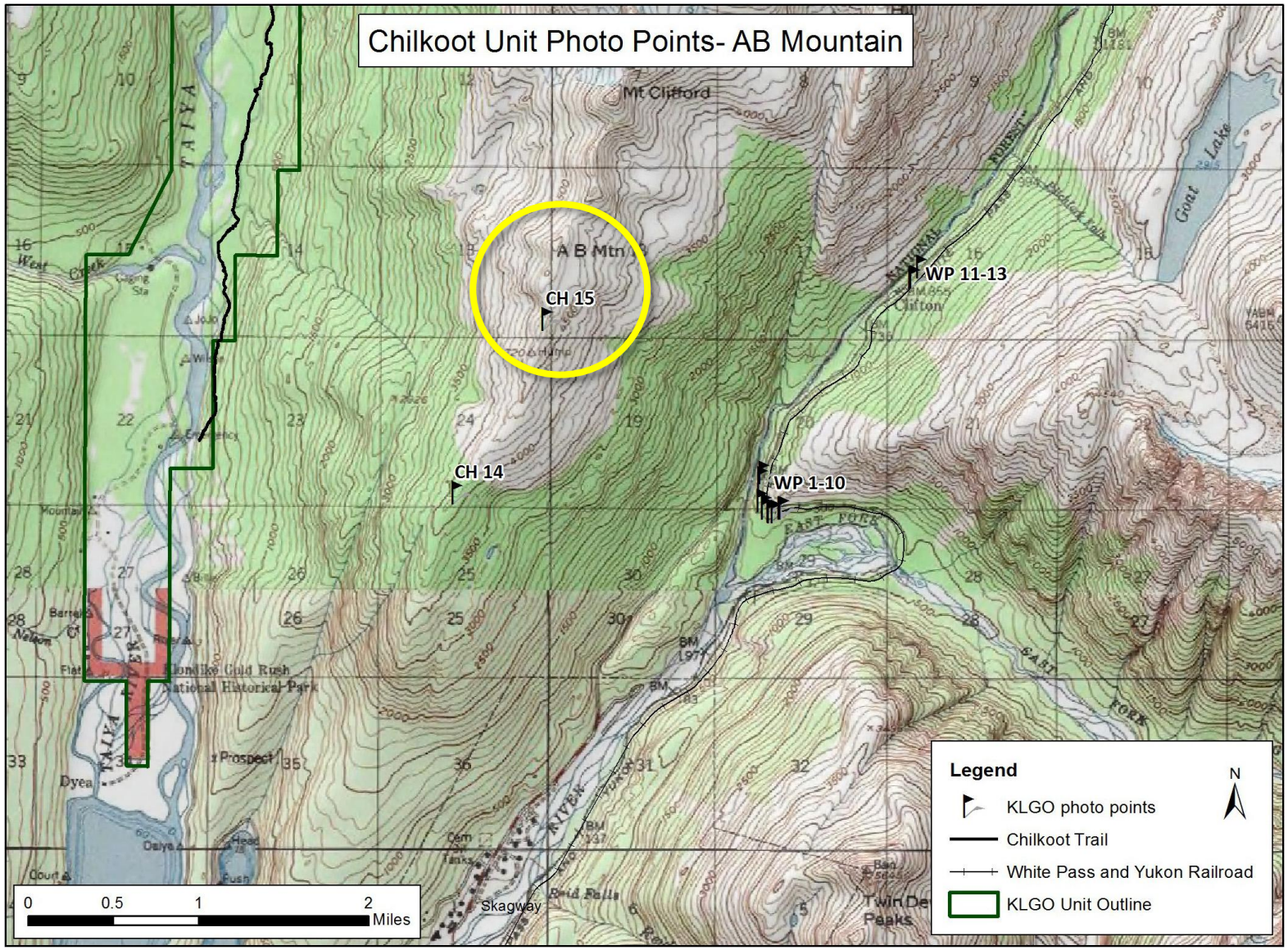

Figure 96. Detail map showing the location of photo station CH-15 on AB Mountain.

Figure 97. Reference photo looking southwest showing the location of Photo Station CH-15. The yellow X marks the photo station location and the yellow arrows indicate the approximate direction of the center of the repeat panoramas. This photo station is located near the top of AB Mountain, Alaska. Site was accessed by hiking the AB Mountain Trail.

Table 18. Photo Station CH-15 Metadata.

Photo Station CH-15	Historic Photo	Repeat Photo
Date	late summer 1894	August 27, 2013
Time	unknown	3:49:04 PM AKDT
Photographer	J.J. McArthur	R.D. Karpilo Jr.
Photo Number	McArthur #93, 94, 95, 96, 97, and 98	Karpilo #20130827-00430-00447
Photo Credit	Required Credit: Library and Archives Canada, PA-162916, 162917, 162920, 162921, 162922, and 162923	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/11, 1/100 second
Direction	south (center of 360° panorama)	
Latitude	59.52289° N	
Longitude	-135.28641° W	
Elevation	4,795 feet	
Notable Changes	Visible changes include retreat and thinning of Irene Glacier, Saussure Glacier, and several unnamed glaciers. Additional changes include regrowth of the forest fire burn scars on the opposite west valley wall in the Taiya River Valley and revegetation of the Taiya River channel after possible scouring by glacial outburst flooding.	

Figure 98. Photo Station CH-15a AB Mountain: late summer 1894 by J.J. McArthur, International Boundary Commission. The panorama was taken from near the summit of AB Mountain looking west towards West Creek and the Taiya River. The valley bottom was likely scoured in approximately the decade before the image was made by a glacial outburst flood in the Nourse drainage. Three original images were digitally stitched together to form the panorama. Credit: Library and Archives Canada, PA-162920, 162921, and 162922.

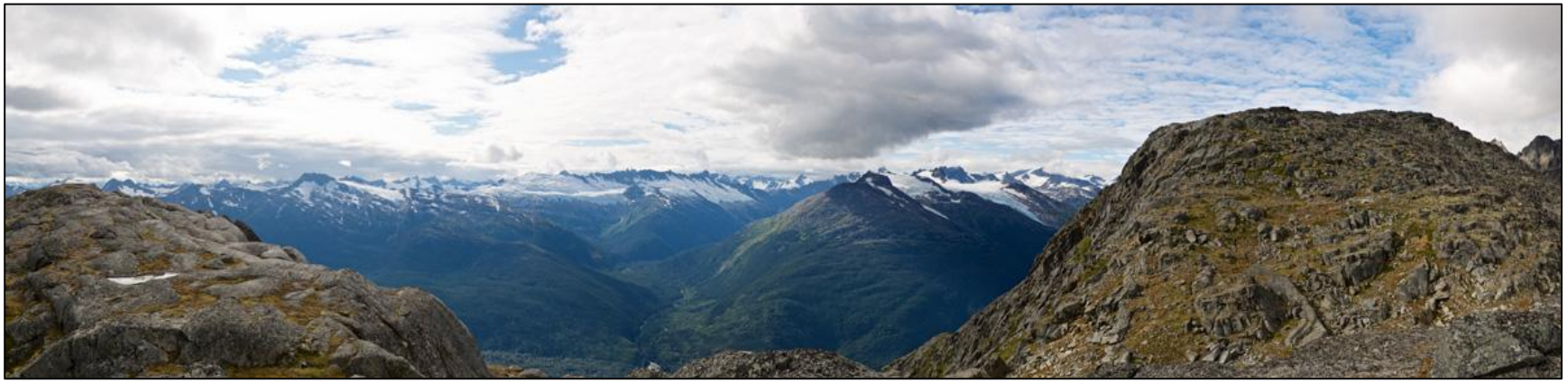

Figure 99. Photo Station CH-15a AB Mountain: August 27, 2013 by R.D. Karpilo Jr. Panorama from near the summit of AB Mountain looking west towards West Creek and the Taiya River. The repeat panorama is constructed of 11 images digitally stitched together.

Figure 100. Photo Station CH-15b AB Mountain: late summer 1894 by J.J. McArthur, International Boundary Commission. The panorama was taken from near the summit of AB Mountain looking east towards the East Fork Skagway River Valley, Dewey Mountains, and Taiya Inlet. Three original images were digitally stitched together to form the panorama. Credit: Library and Archives Canada, PA-162916, 162917, and 162923.

Figure 101. Photo Station CH-15b AB Mountain: August 27, 2013 by R.D. Karpilo Jr. Panorama from near the summit of AB Mountain looking east towards the East Fork Skagway River Valley, Dewey Mountains, and Taiya Inlet. The repeat panorama is constructed of eight images digitally stitched together.

Figure 102. Full uncropped version of the August 27, 2013 repeat images. Boxes represent the field of view of the historic photos.

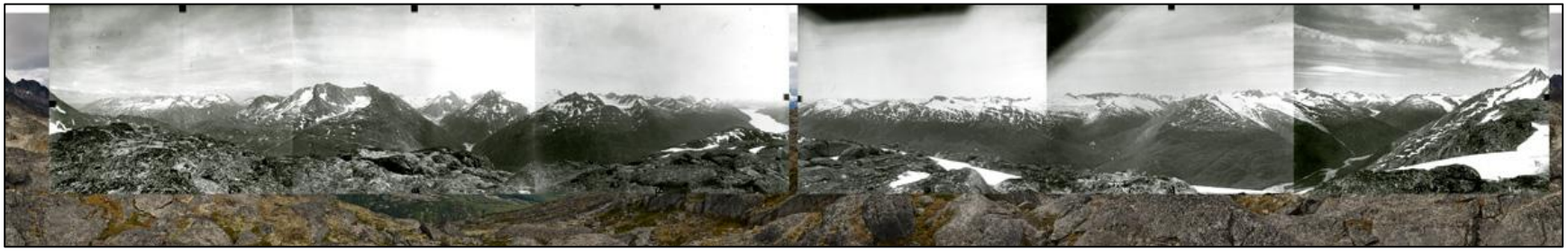

Figure 103. Summer 1894 images by McArthur overlaid on the full uncropped version of the August 27, 2013 repeat panorama by Karpilo

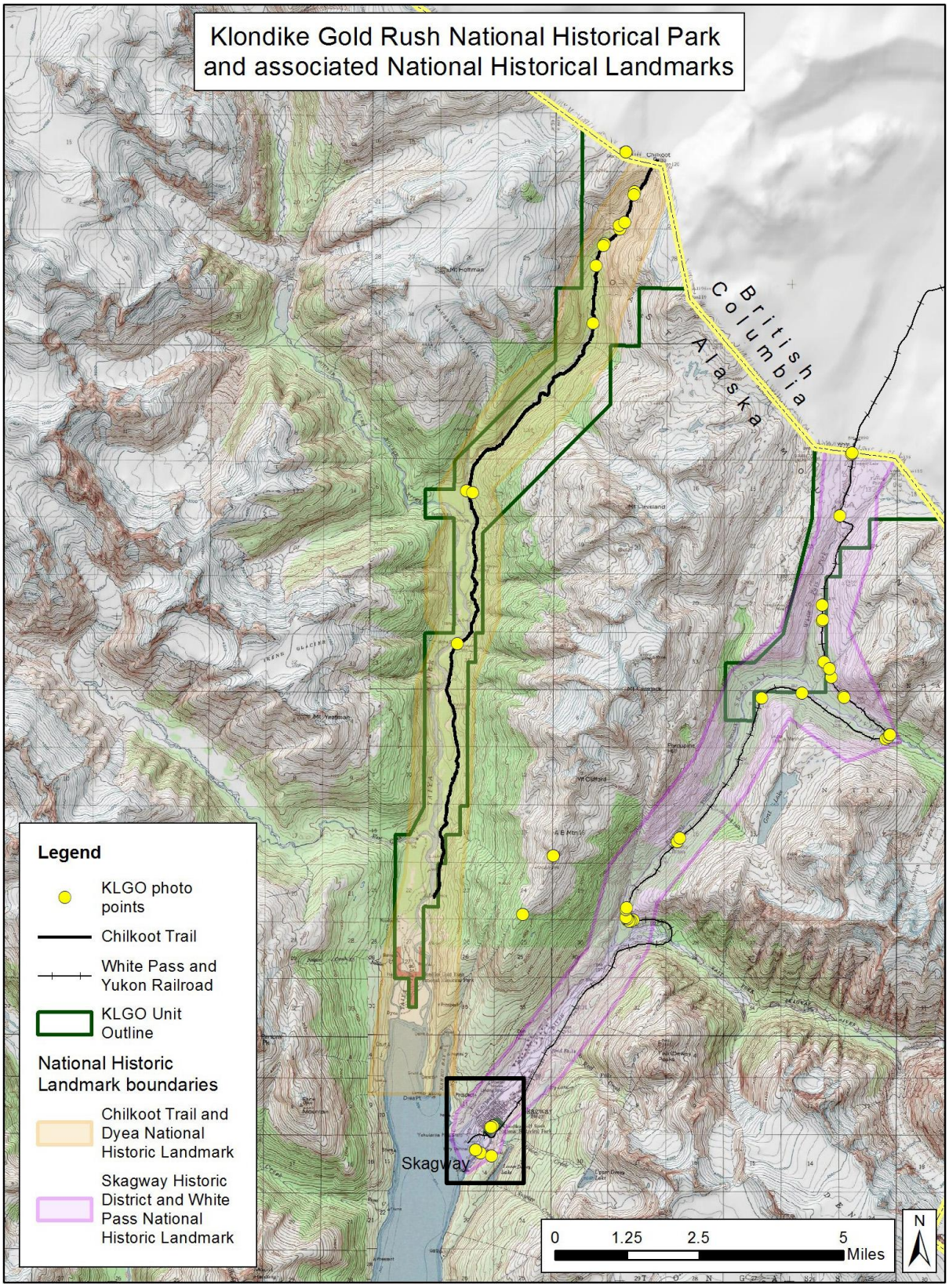

Figure 104. Overview map of the project area with locations of photo stations, KLGO, Alaska.

KLGO Photo Pair 16 – Skagway (Photo Station SK-01)

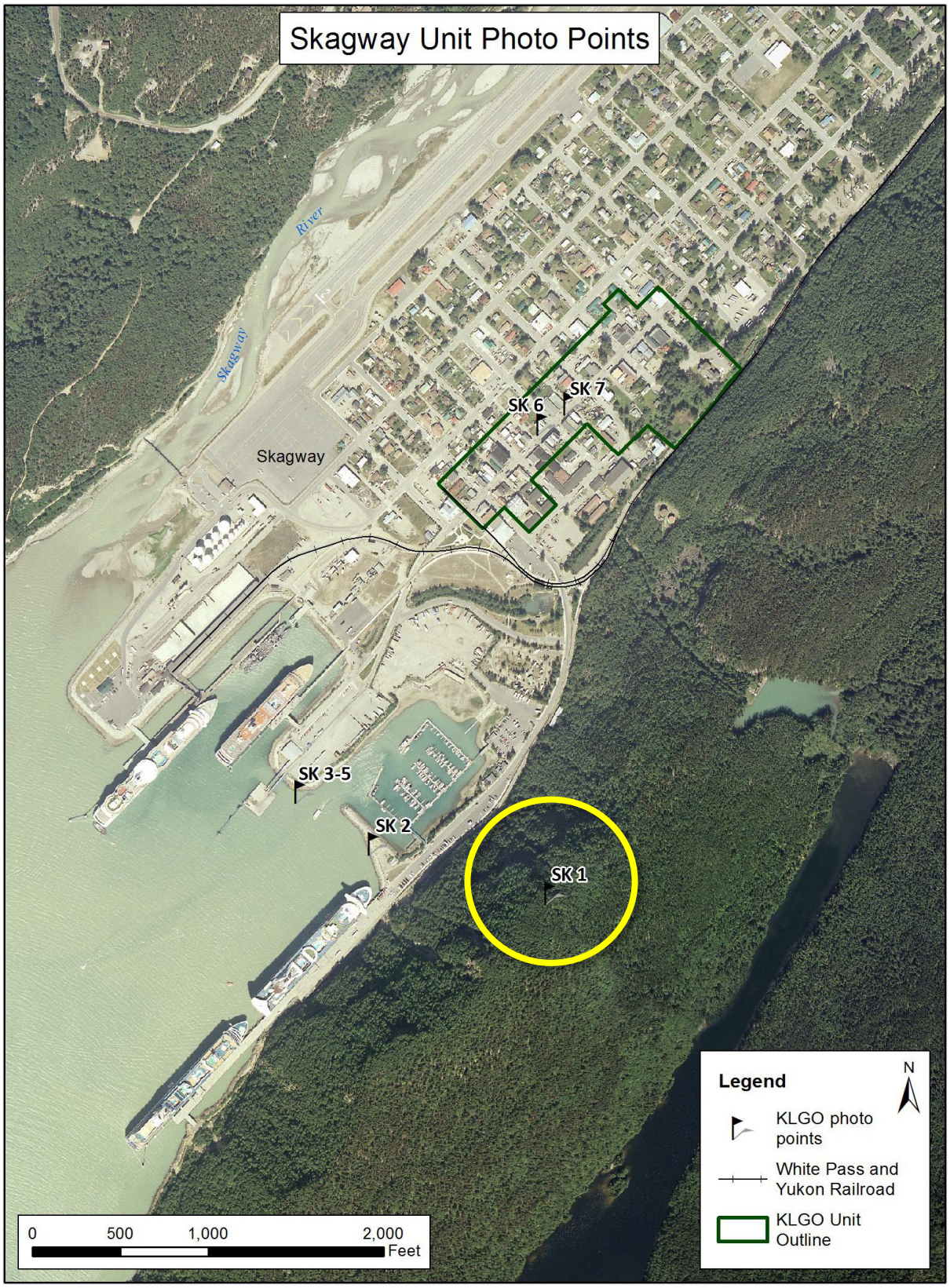

Figure 105. Detail map showing the location of photo station SK-01.

Figure 106. Reference photo looking northwest showing the location of Photo Station SK-01. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located along the Dewey Lake Trail system in Skagway, Alaska. The site was accessed by hiking the Dewey Lake Trails.

Table 19. Photo Station SK-01 Metadata.

Photo Station SK-01	Historic Photo	Repeat Photo
Date	June 6, 1903	August 15, 2013
Time	unknown	6:07:24 PM AKDT
Photographer	S. Paige	R.D. Karpilo Jr.
Photo Number	Paige #20	Karpilo #20130815-00161
Photo Credit	Suggested Credit: Sidney Paige, U.S. Geological Survey	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/8, 1/200 second
Direction	north	
Latitude	59.44753° N	
Longitude	-135.31622° W	
Elevation	718 feet	
Notable Changes	Visible changes include regrowth of vegetation on AB Mountain and the hillside east of Skagway in the forest fire burn area. Cultural changes in Skagway include residential and commercial development and infrastructure improvements.	

Figure 107. Photo Station SK-01: Skagway, June 6, 1903 by S. Paige. View north from Dewey Lakes trail system of AB Mountain and Skagway, Alaska. Fire damage is visible on the hillside and the lower portion of AB Mountain. Credit: Sidney Paige, U.S. Geological Survey.

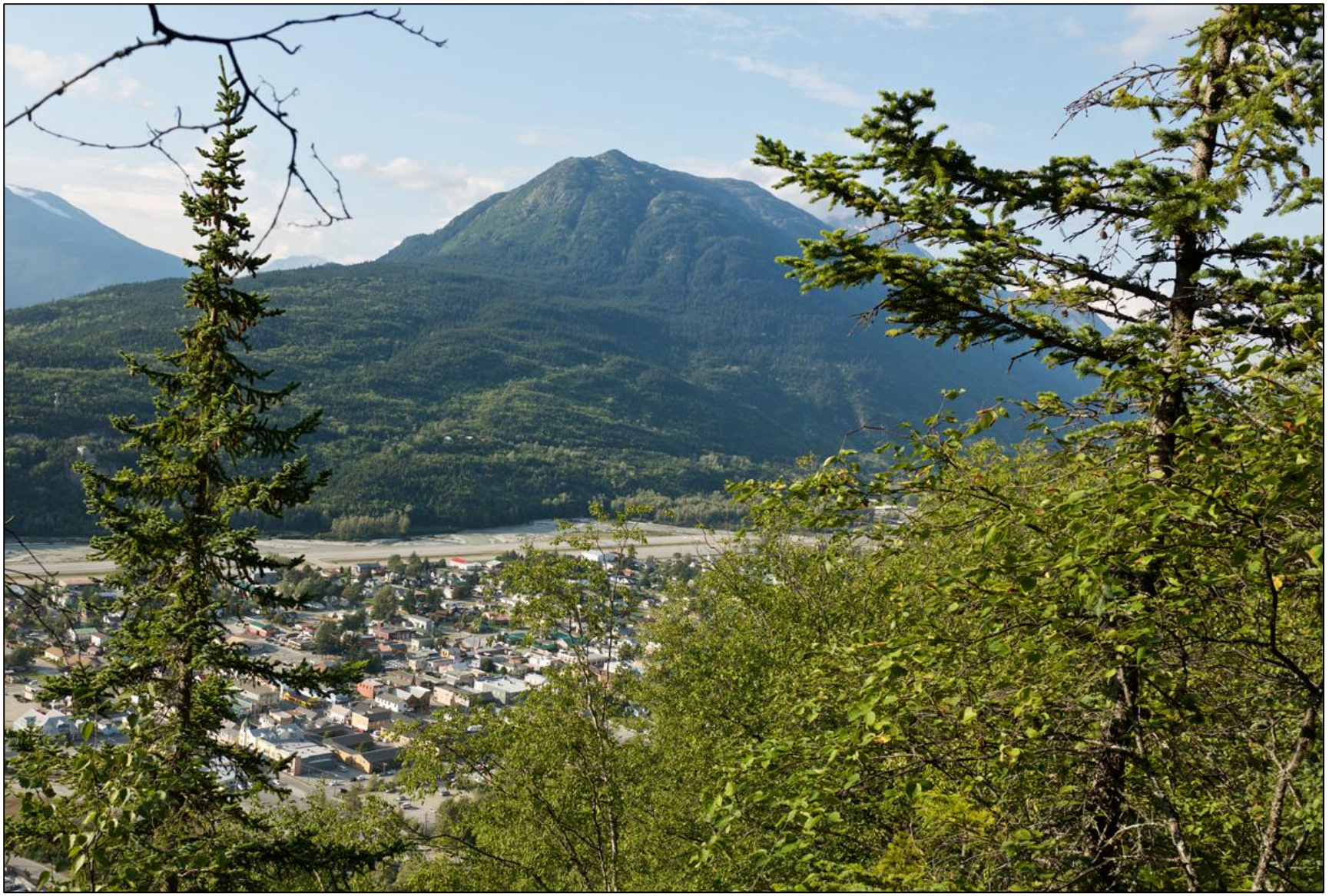

Figure 108. Photo Station SK-01: Skagway, August 15, 2013 by R.D. Karpilo Jr. View north from Dewey Lakes trail system of AB Mountain and Skagway, Alaska.

Figure 109. Full uncropped version of the August 15, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 110. June 6, 1903 image by Paige overlaid on the full uncropped version of the August 15, 2013 repeat image by Karpilo.

KLGO Photo Pair 17 – Skagway (Photo Station SK-02)

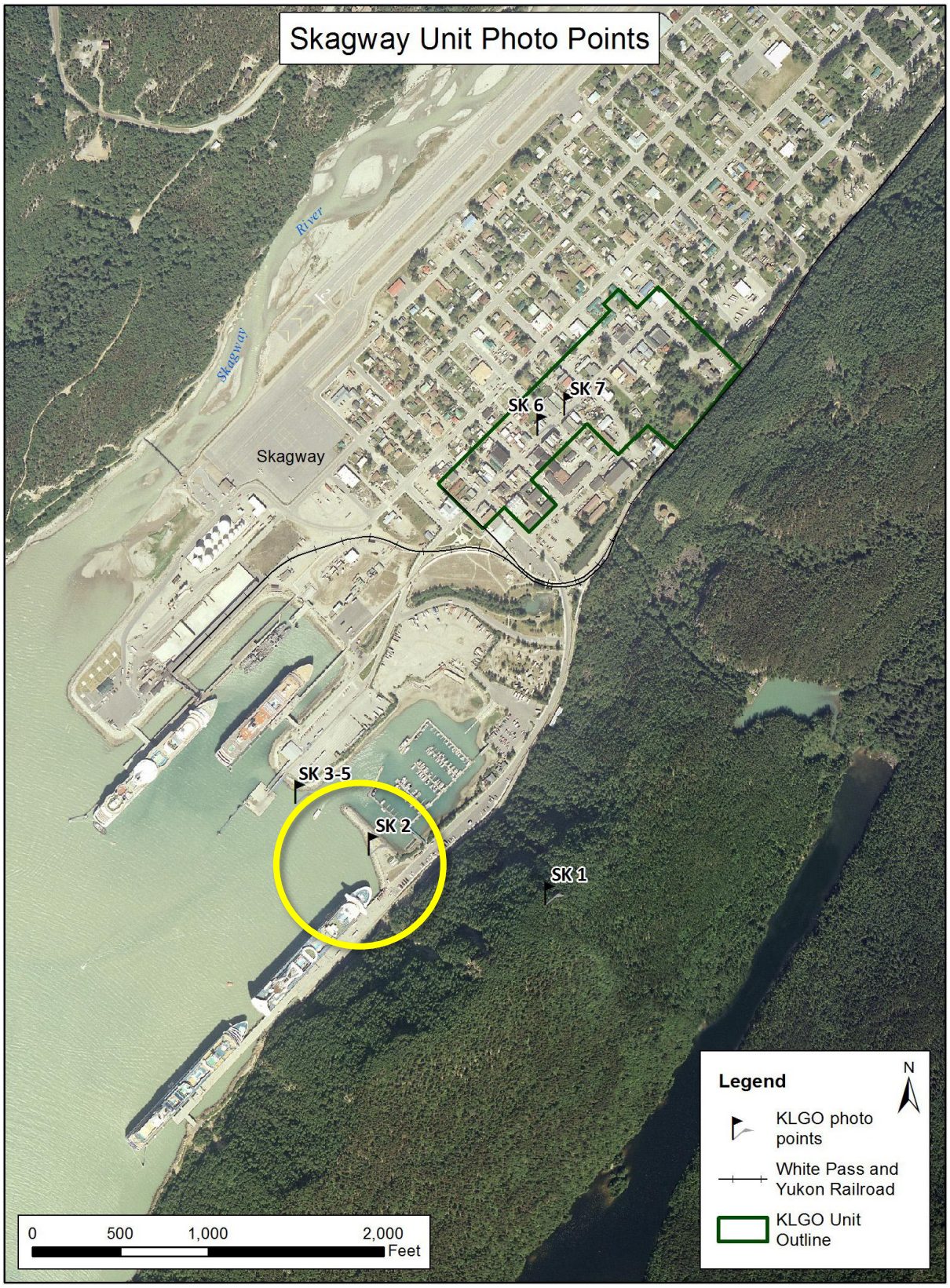

Figure 111. Detail map showing the location of photo station SK-02.

Figure 112. Reference photo looking east showing the location of Photo Station SK-02. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the north side of the jetty at the Skagway Small Boat Harbor, Alaska. The site was accessed on foot from Congress Way in Skagway.

Table 20. Photo Station SK-02 Metadata.

Photo Station SK-02	Historic Photo	Repeat Photo
Date	July 26, 1897	August 15, 2013
Time	unknown	4:28:25 PM AKDT
Photographer	F. La Roche	R.D. Karpilo Jr.
Photo Number	La Roche #368	Karpilo #20130815-00062
Photo Credit	Required Credit: Library of Congress, LC-USZ62-122304	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 42mm
Camera Settings	unknown	ISO: 100, f/10, 1/250 second
Direction	north	
Latitude	59.448283° N	
Longitude	-135.321631° W	
Elevation	41 feet	
Notable Changes	Visible changes include thickening of vegetation on the slopes around the town and alteration of the shoreline and tidal area by dredge and fill operations. Additional changes include residential and commercial development and infrastructure improvements such as construction of the Skagway Small Boat Harbor.	

Figure 113. Photo Station SK-02: Skagway, July 26, 1897 by F. La Roche. View north from the water of the undeveloped waterfront area of Skagway, Alaska. Credit: Library of Congress, LC-USZ62-122304.

Figure 114. Photo Station SK-02: Skagway, August 15, 2013 by R.D. Karpilo Jr. View north of the Skagway Small Boat Harbor in Skagway, Alaska.

Figure 115. Full uncropped version of the August 15, 2013 repeat image. Box represents the field of view of the historic photo.

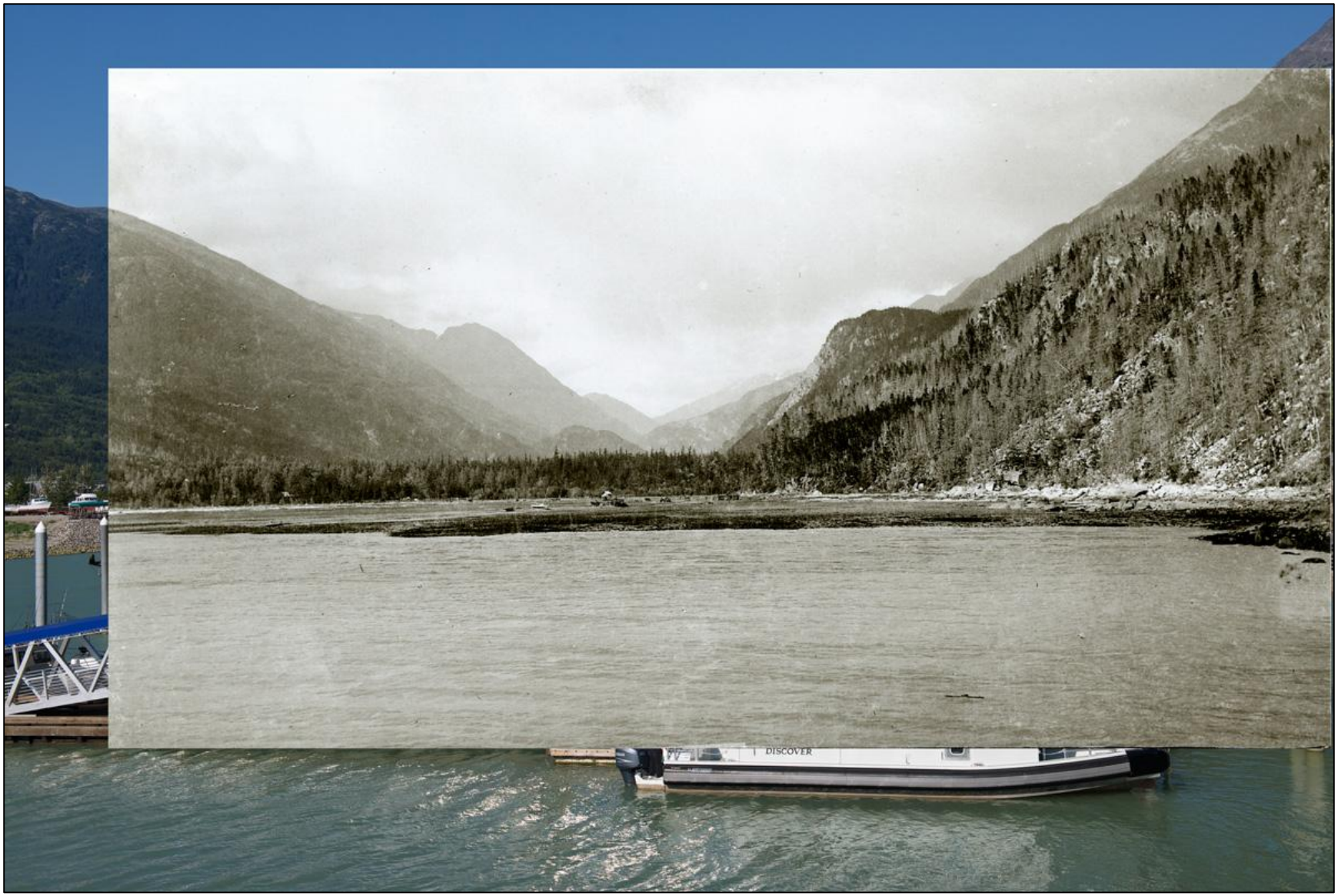

Figure 116. July 26, 1897 image by La Roche overlaid on the full uncropped version of the August 15, 2013 repeat image by Karpilo.

KLGO Photo Pair 18 – Skagway (Photo Station SK-03)

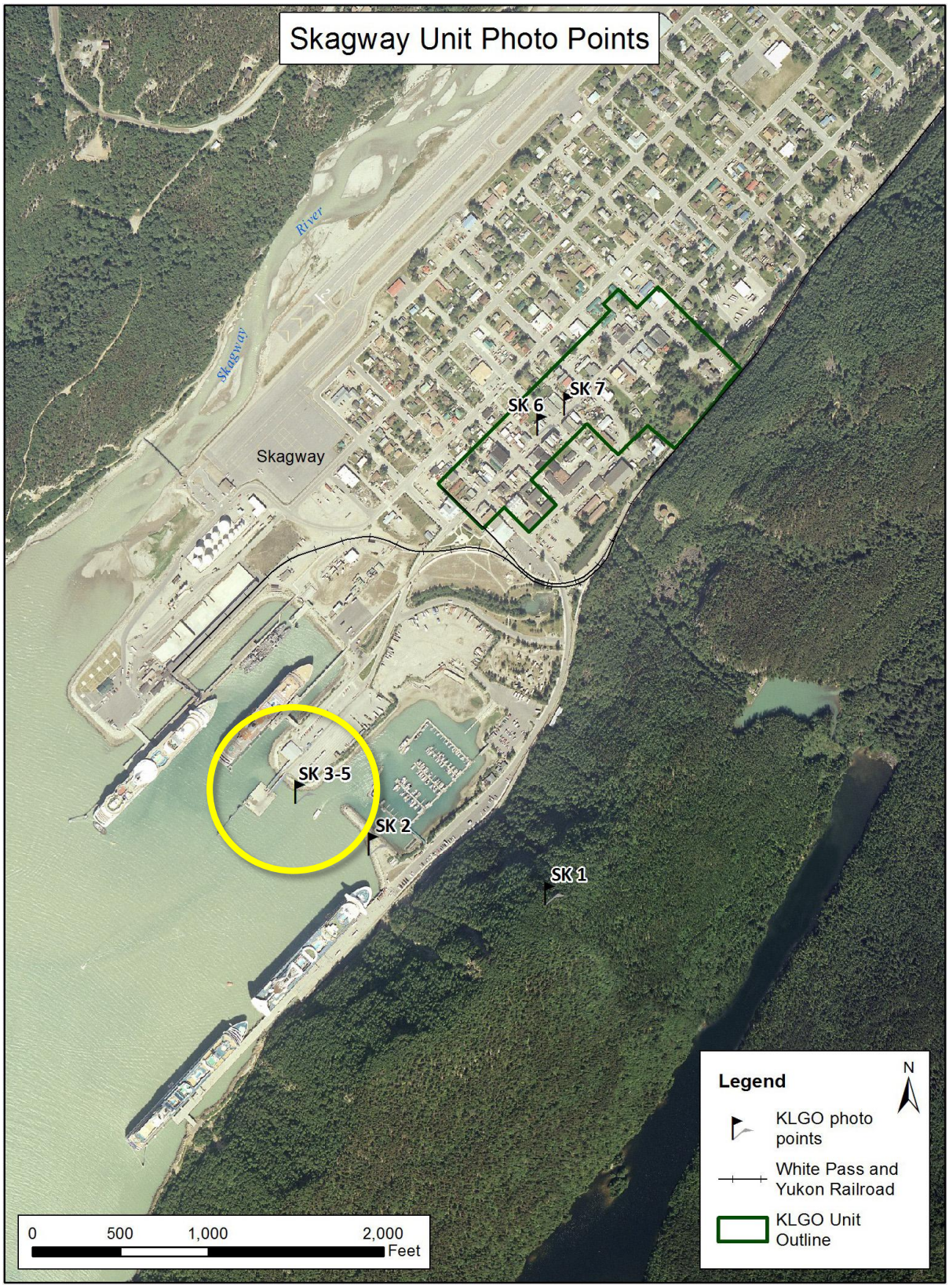

Figure 117. Detail map showing the location of photo station SK-03.

Figure 118. Reference photo looking to the south showing the location of Photo Station SK-03. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the walkway adjacent to the ferry waiting lot in Skagway, Alaska. The site was accessed on foot from the ferry waiting lot.

Table 21. Photo Station SK-03 Metadata.

Photo Station SK-03	Historic Photo	Repeat Photo
Date	c. August 1897	August 14, 2013
Time	unknown	8:06:46 PM AKDT
Photographer	L.V. Winter and E.P. Pond	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130814-00297
Photo Credit	Suggested Credit: Klondike Gold Rush National Historical Park, archive #55742b	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 45mm
Camera Settings	unknown	ISO: 320, f/9, 1/80 second
Direction	north	
Latitude	59.44909° N	
Longitude	-135.32388° W	
Elevation	26 feet	
Notable Changes	Visible changes include thickening of vegetation and advance of tree line upslope on AB Mountain and alteration of the shoreline and tidal area by dredge and fill operations. Additional changes include residential and commercial development and infrastructure improvements in Skagway such as construction of the ferry parking lot.	

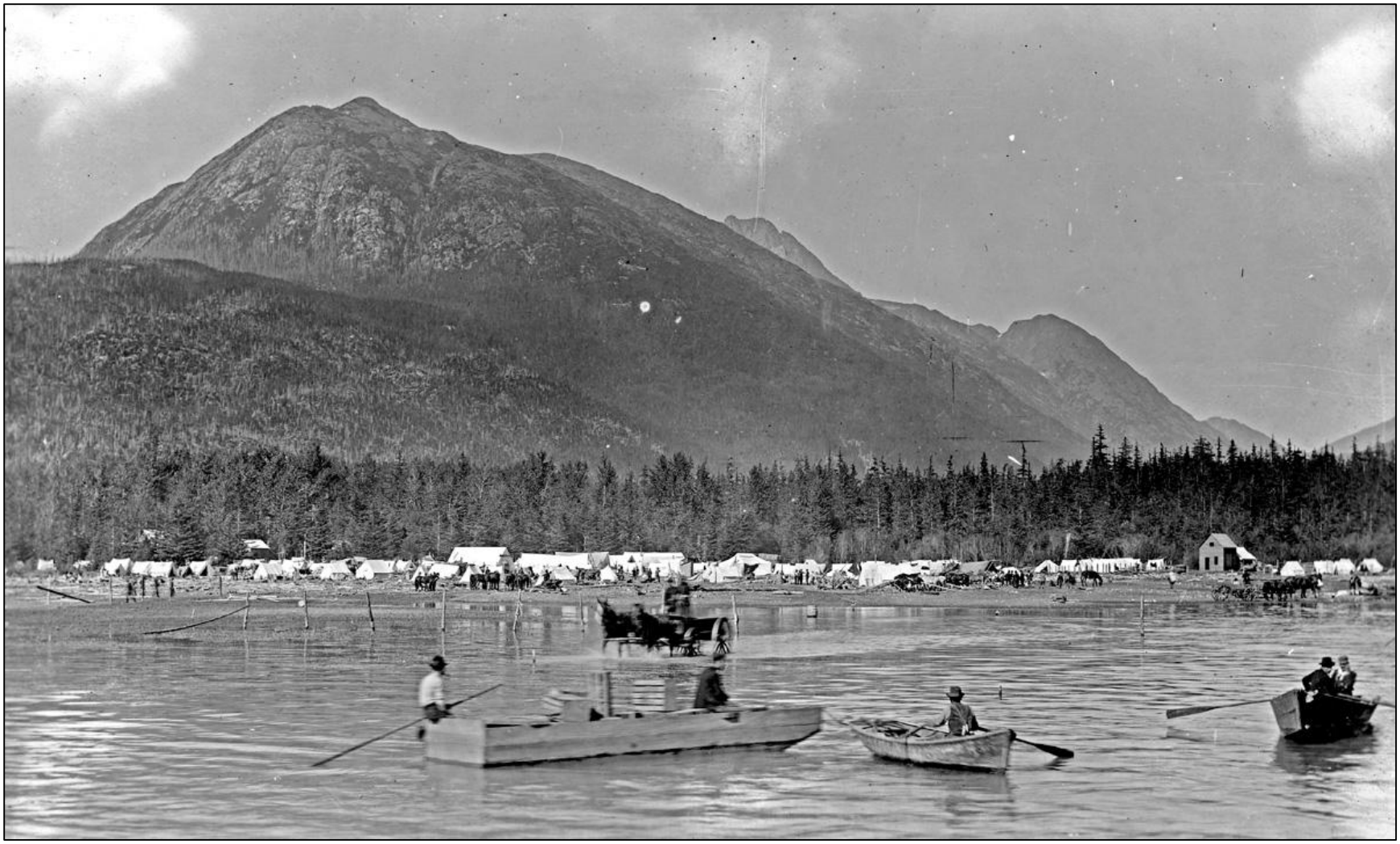

Figure 119. Photo Station SK-03: Skagway, c. August 1897 by L.V. Winter and E.P. Pond. View north from the water of the gold rush tent city on the beach at the waterfront area of Skagway, Alaska. Credit: KLGO, archive #55742b.

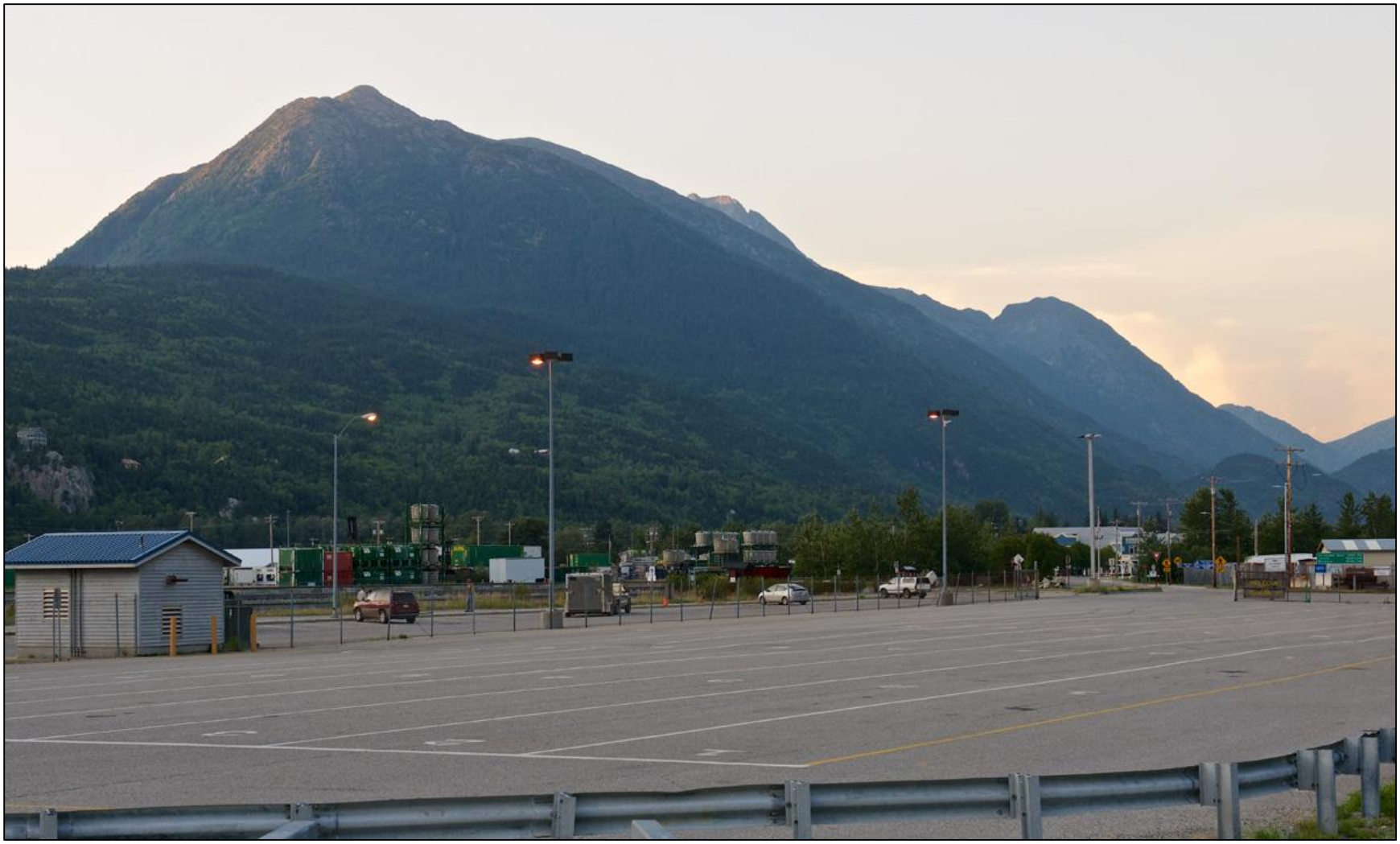

Figure 120. Photo Station SK-03: Skagway, August 14, 2013 by R.D. Karpilo Jr. View north of the ferry waiting lot and AB Mountain in Skagway, Alaska.

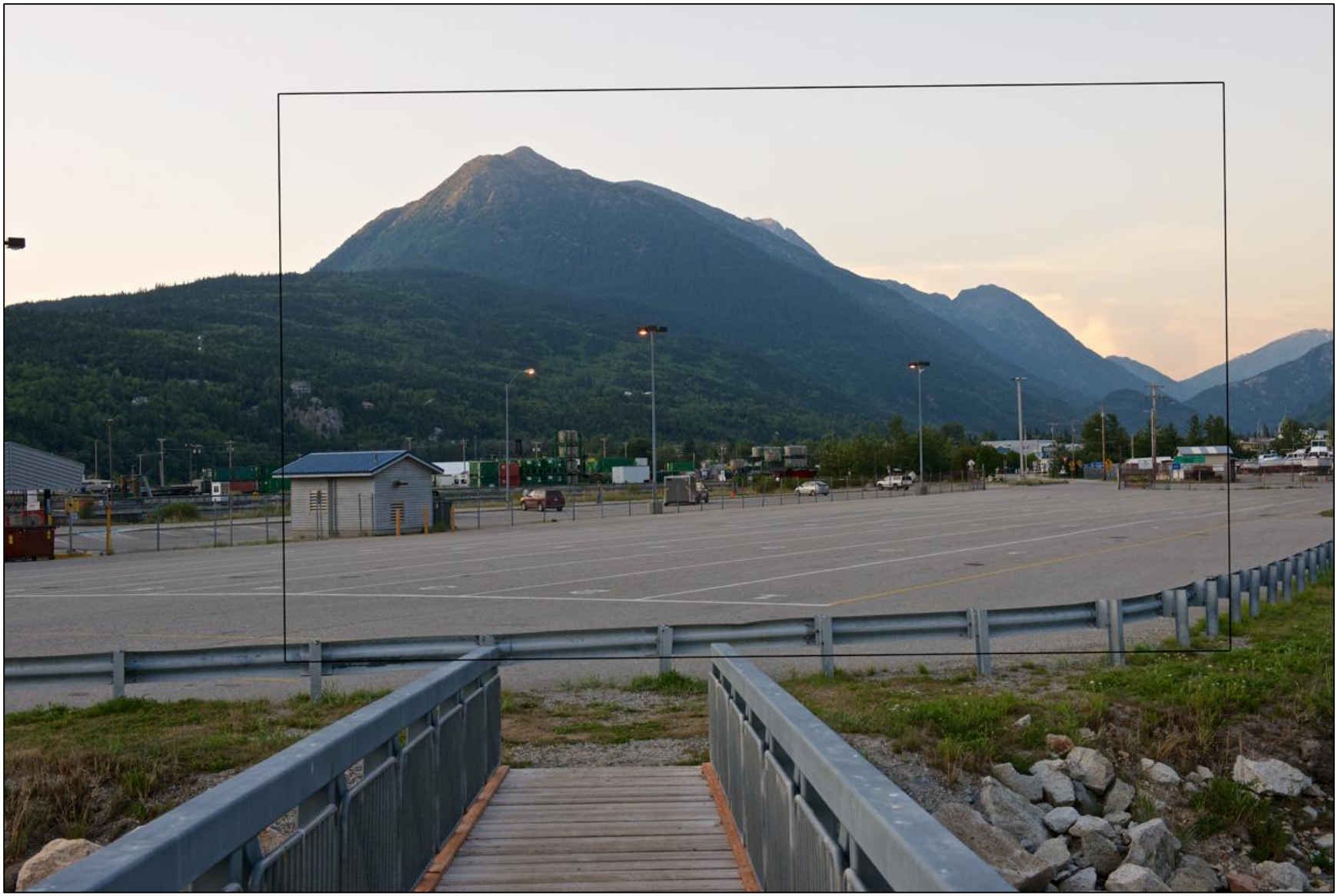

Figure 121. Full uncropped version of the August 14, 2013 repeat image. Box represents the field of view of the historic photo.

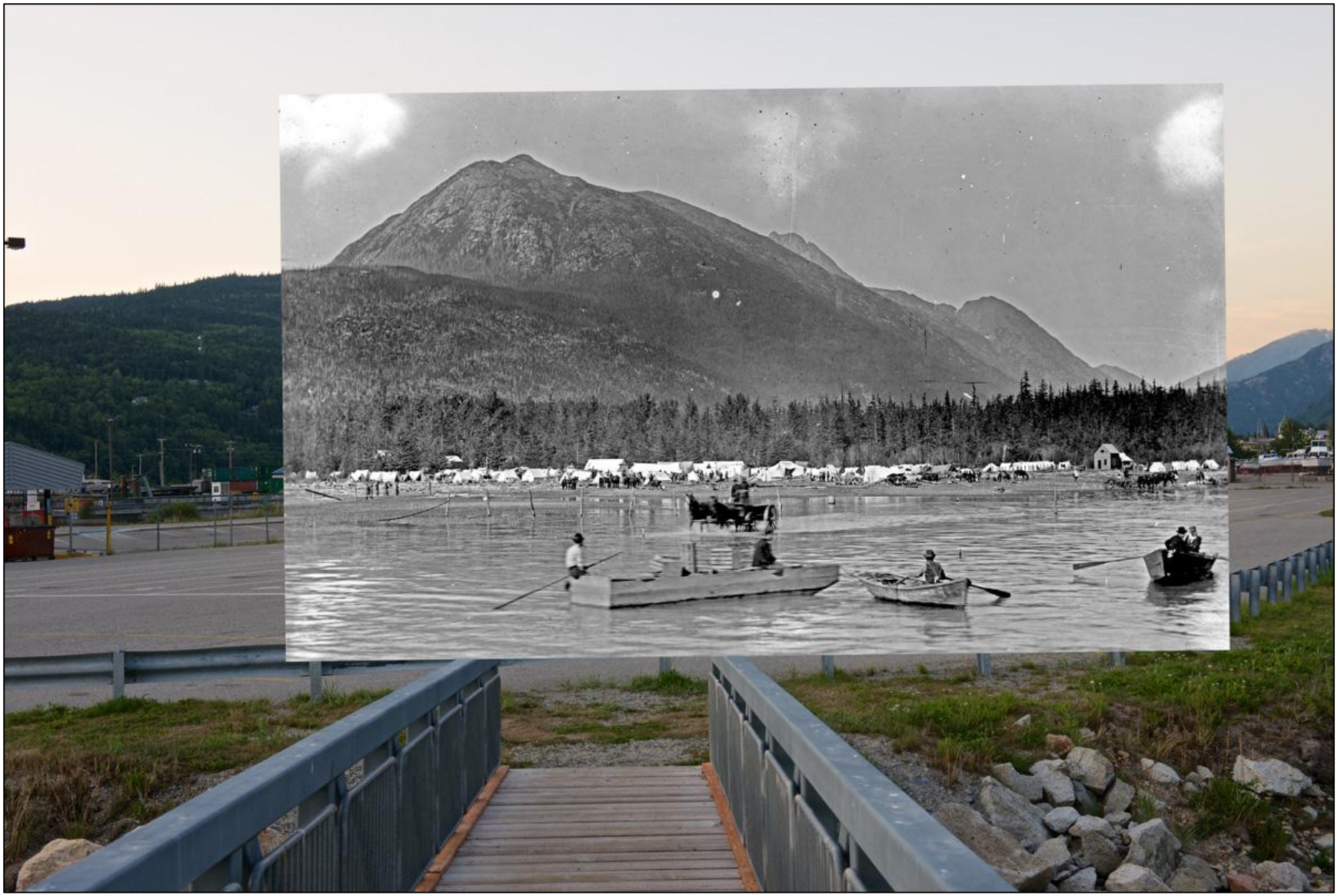

Figure 122. c. 1897 image by Winter and Pond overlaid on the full uncropped version of the August 14, 2013 repeat image by Karpilo.

KLGO Photo Pair 19 – Skagway (Photo Station SK-04)

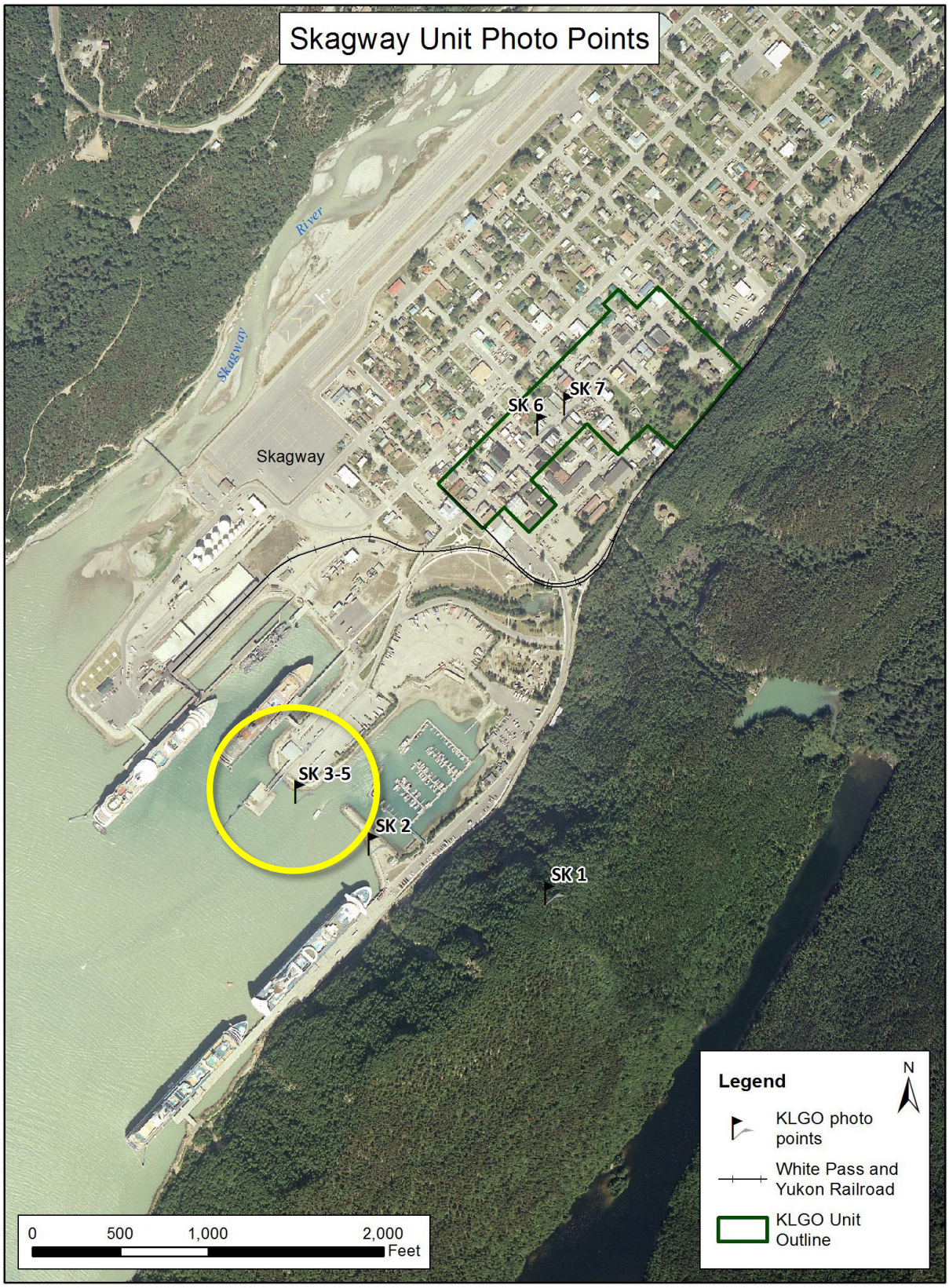

Figure 123. Detail map showing the location of photo station SK-04.

Figure 124. Reference photo looking to the south showing the location of Photo Station SK-04. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the walkway adjacent to the ferry waiting lot in Skagway, Alaska. The site was accessed on foot from the ferry waiting lot.

Table 22. Photo Station SK-04 Metadata.

Photo Station SK-04	Historic Photo	Repeat Photo
Date	c. August 1897	August 14, 2013
Time	unknown	8:07:57 PM AKDT
Photographer	L.V. Winter and E.P. Pond	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130814-00302
Photo Credit	Suggested Credit: Klondike Gold Rush National Historical Park, archive #55745a	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 320, f/9, 1/160 second
Direction	northwest	
Latitude	59.44909° N	
Longitude	-135.32388° W	
Elevation	26 feet	
Notable Changes	Visible changes include thickening of vegetation on the lower flanks of AB Mountain and alteration of the shoreline and tidal area by dredge and fill operations. Additional changes include residential and commercial development and infrastructure improvements in Skagway such as construction of the ferry parking lot and building.	

Figure 125. Photo Station SK-04: Skagway, c. August 1897 by L.V. Winter and E.P. Pond. View northwest from the water of the lower flanks of AB Mountain and gold rush stampeders unloading supplies on the beach in Skagway, Alaska. Credit: KLGO, archive #55745a.

Figure 126. Photo Station SK-04: Skagway, August 14, 2013 by R.D. Karpilo Jr. View northwest of the ferry waiting lot and building with the lower flanks of AB Mountain in the background in Skagway, Alaska.

Figure 127. Full uncropped version of the August 14, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 128. c. 1897 image by Winter and Pond overlaid on the full uncropped version of the August 14, 2013 repeat image by Karpilo.

KLGO Photo Pair 20 – Skagway (Photo Station SK-05)

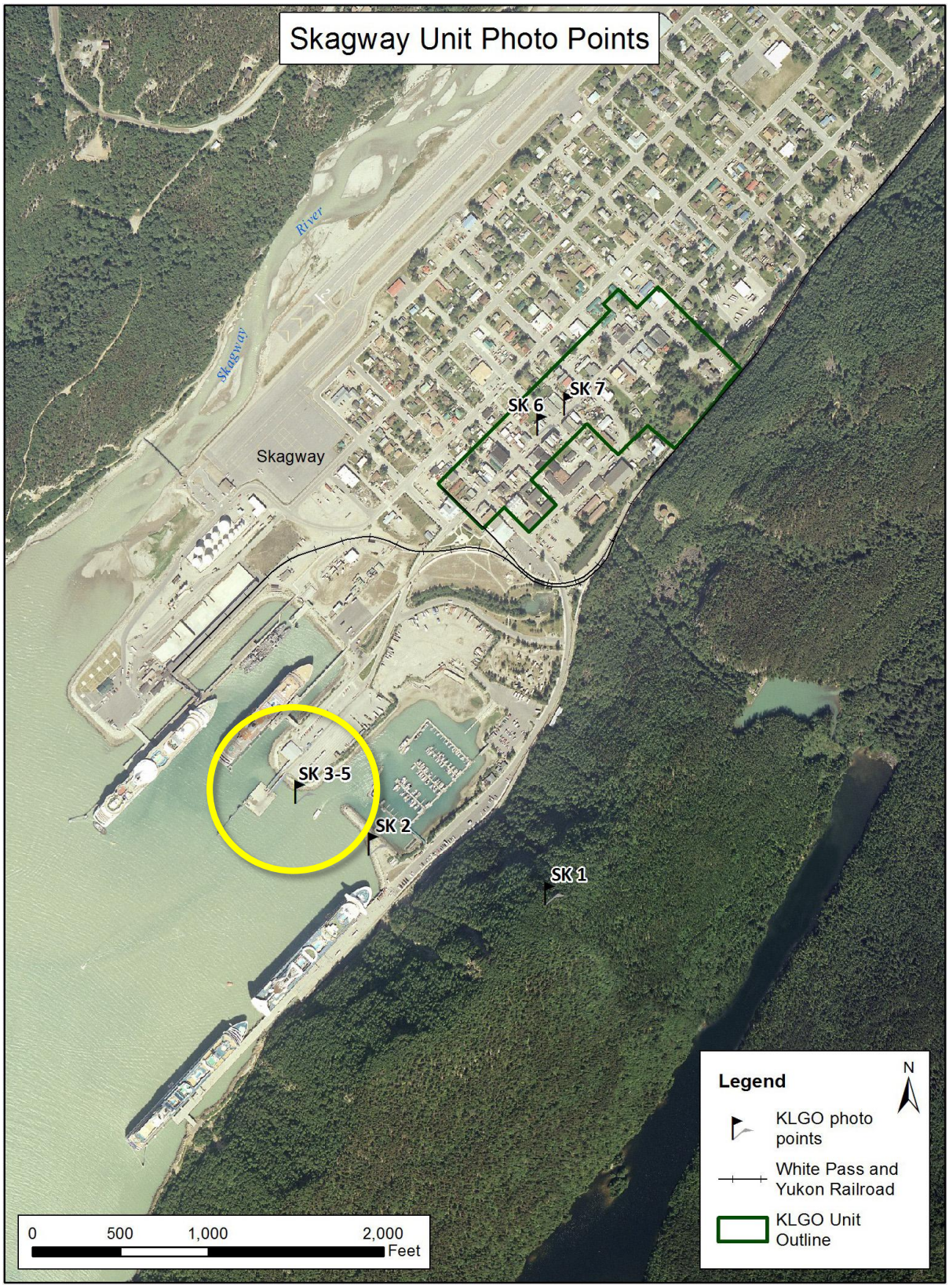

Figure 129. Detail map showing the location of photo station SK-05.

Figure 130. Reference photo looking to the south showing the location of Photo Station SK-05. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the walkway adjacent to the ferry waiting lot in Skagway, Alaska. The site was accessed on foot from the ferry waiting lot.

Table 23. Photo Station SK-05 Metadata.

Photo Station SK-05	Historic Photo	Repeat Photo
Date	c. August 1897	August 14, 2013
Time	unknown	8:00:48 PM AKDT
Photographer	L.V. Winter and E.P. Pond	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130814-00250
Photo Credit	Suggested Credit: Klondike Gold Rush National Historical Park, archive #55745b	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 48mm
Camera Settings	unknown	ISO: 100, f/9, 1/40 second
Direction	southwest	
Latitude	59.44909° N	
Longitude	-135.32388° W	
Elevation	26 feet	
Notable Changes	Visible changes include thickening and upslope advance of vegetation on Face Mountain and thinning and retreat of Harding Glacier. Additional changes include alteration of the tidal area by dredge and fill operations and construction of harbor infrastructure.	

Figure 131. Photo Station SK-05: Skagway c. 1897 by L.V. Winter and E.P. Pond. View southwest of gold rush stampeders unloading supplies on the beach at low tide in Skagway, Alaska. Face Mountain and Harding Glacier are visible in the background. Credit: KLGO, archive #55745b**.**

Figure 132. Photo Station SK-05: Skagway, August 14, 2013 by R.D. Karpilo Jr. View to the southwest of a cruise ship leaving port in Taiya Inlet, Skagway, Alaska. Face Mountain and Harding Glacier are visible in the background.

Figure 133. Full uncropped version of the August 14, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 134. c. 1897 image by Winter and Pond overlaid on the full uncropped version of the August 14, 2013 repeat image by Karpilo.

KLGO Photo Pair 21 – Skagway (Photo Station SK-06)

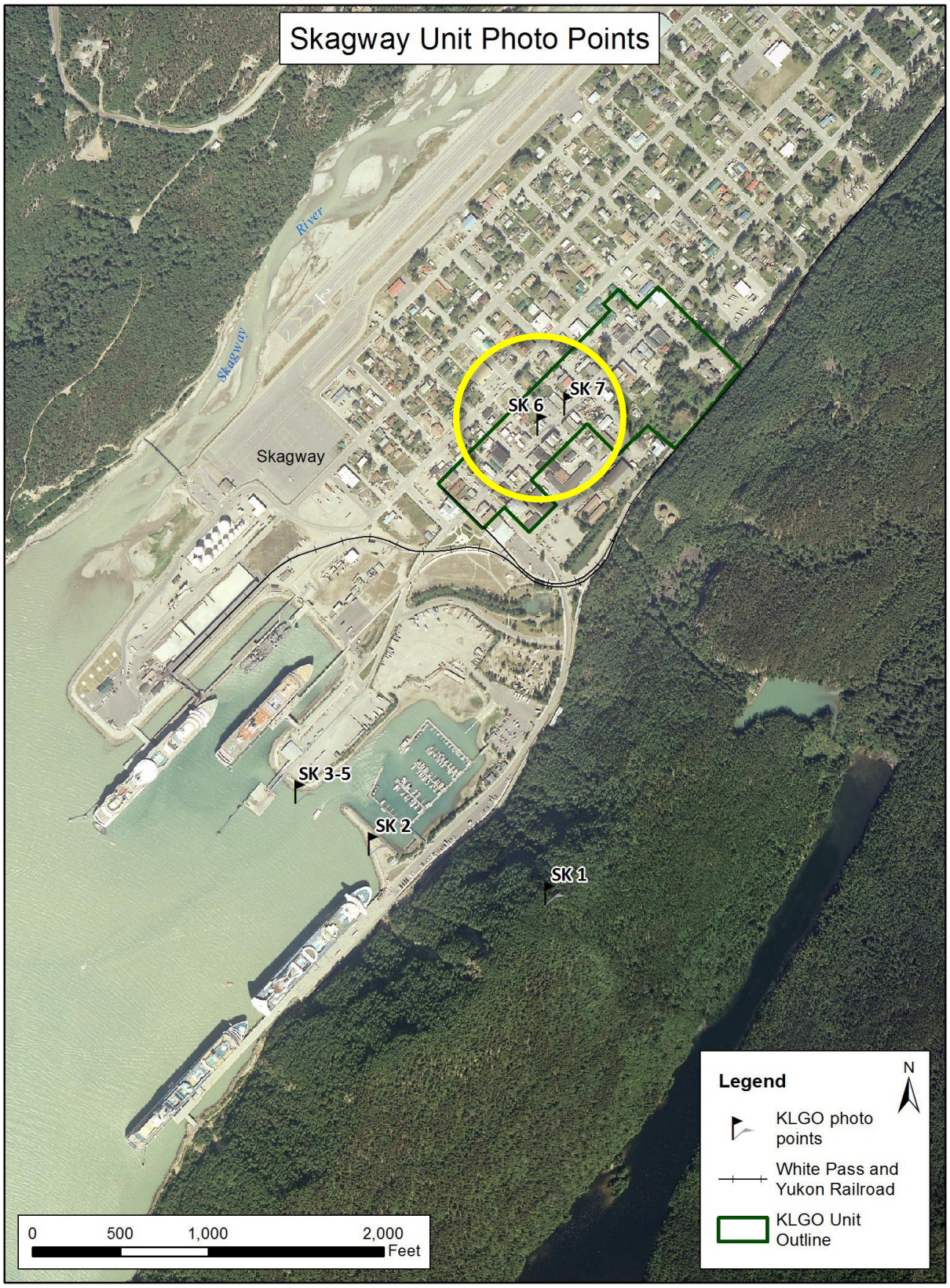

Figure 135. Detail map showing the location of photo station SK-06.

Figure 136. Reference photo looking south showing the location of Photo Station SK-06. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located at the intersection of Broadway and 4th Street in Skagway, Alaska.

Table 24. Photo Station SK-06 Metadata.

Photo Station SK-06	Historic Photo	Repeat Photo
Date	May 20, 1898	August 2, 2014
Time	unknown	6:42:53 PM AKDT
Photographer	E.A. Hegg	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140802-00128
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Hegg 20A	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 32mm
Camera Settings	unknown	ISO: 100, f/9, 1/160 second
Direction	northeast	
Latitude	59.45483° N	
Longitude	-135.316523° W	
Elevation	38 feet	
Notable Changes	Visible changes include forest fire recovery, upslope advance of tree line, and a general thickening of vegetation on the slopes around the town. Cultural changes in Skagway include residential and commercial development and restoration, and paving of Broadway.	

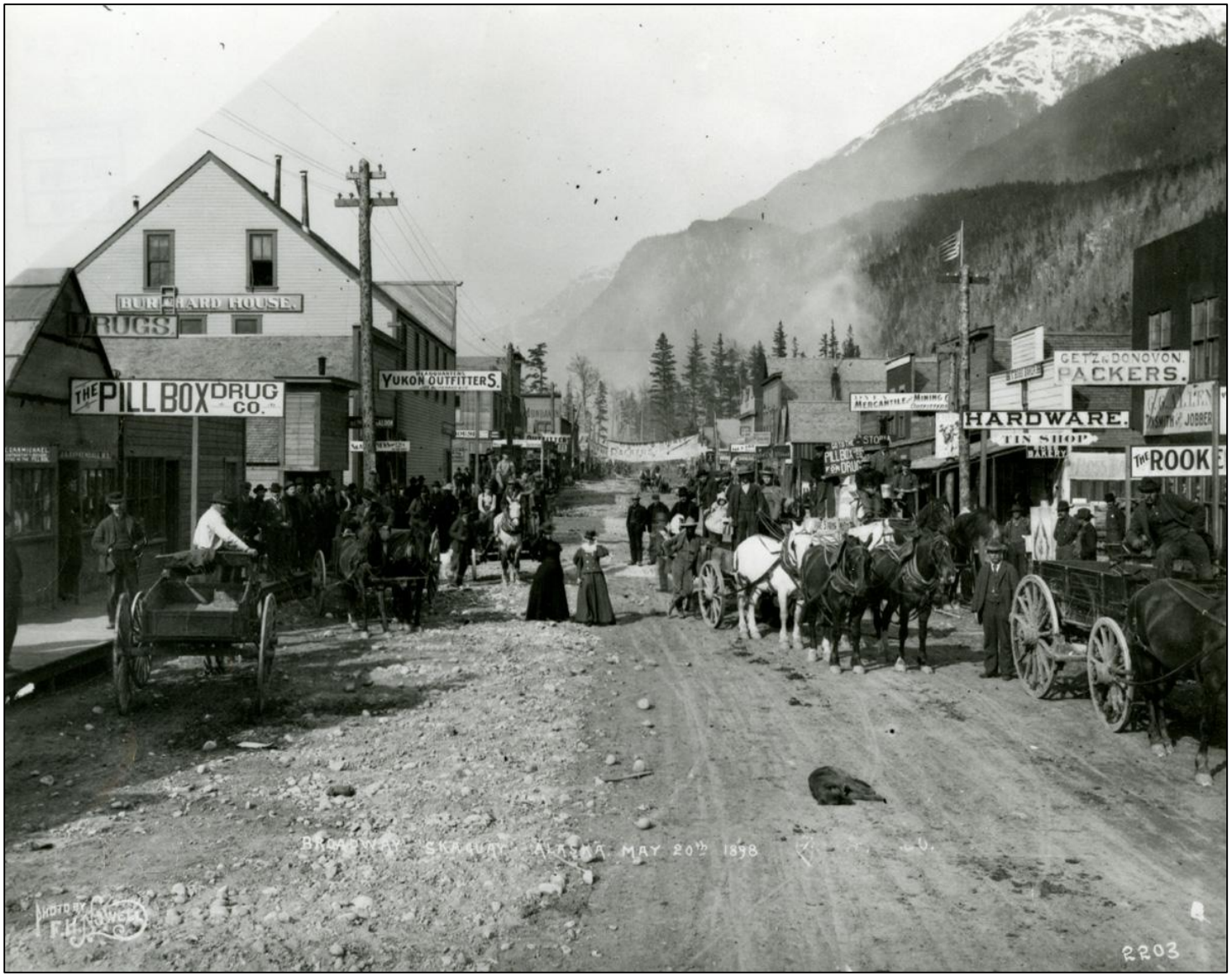

Figure 137. Photo Station SK-06: Skagway, May 20, 1898 by E.A. Hegg. View north on Broadway in Skagway, Alaska. Credit: University of Washington Libraries, Special Collections, Hegg 20A.

Figure 138. Photo Station SK-06: Skagway, August 2, 2014 by R.D. Karpilo Jr. View north on Broadway in Skagway, Alaska.

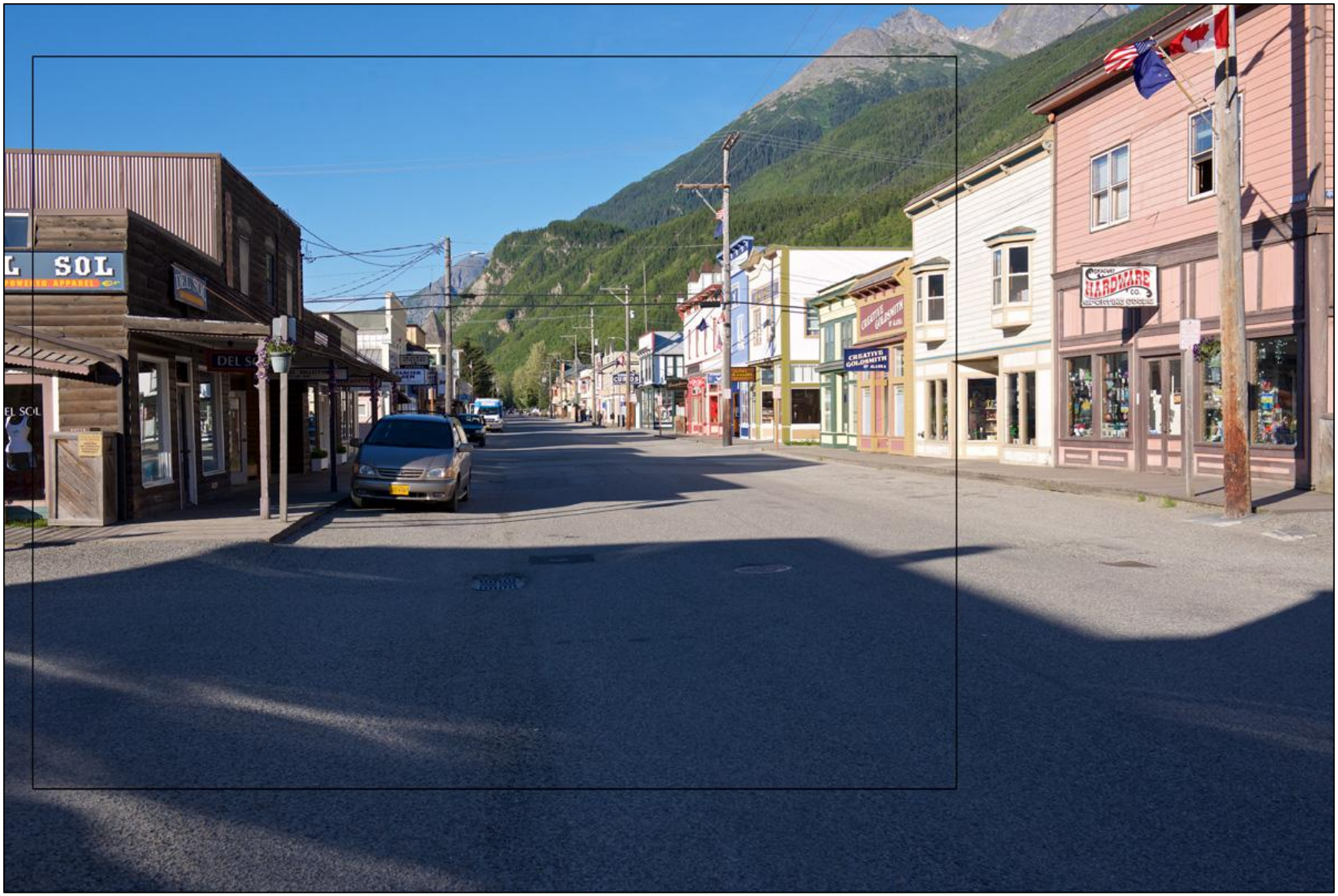

Figure 139. Full uncropped version of the August 2, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 140. May 20, 1898 image by Hegg overlaid on the full uncropped version of the August 2, 2014 repeat image by Karpilo.

KLGO Photo Pair 22 – Skagway (Photo Station SK-07)

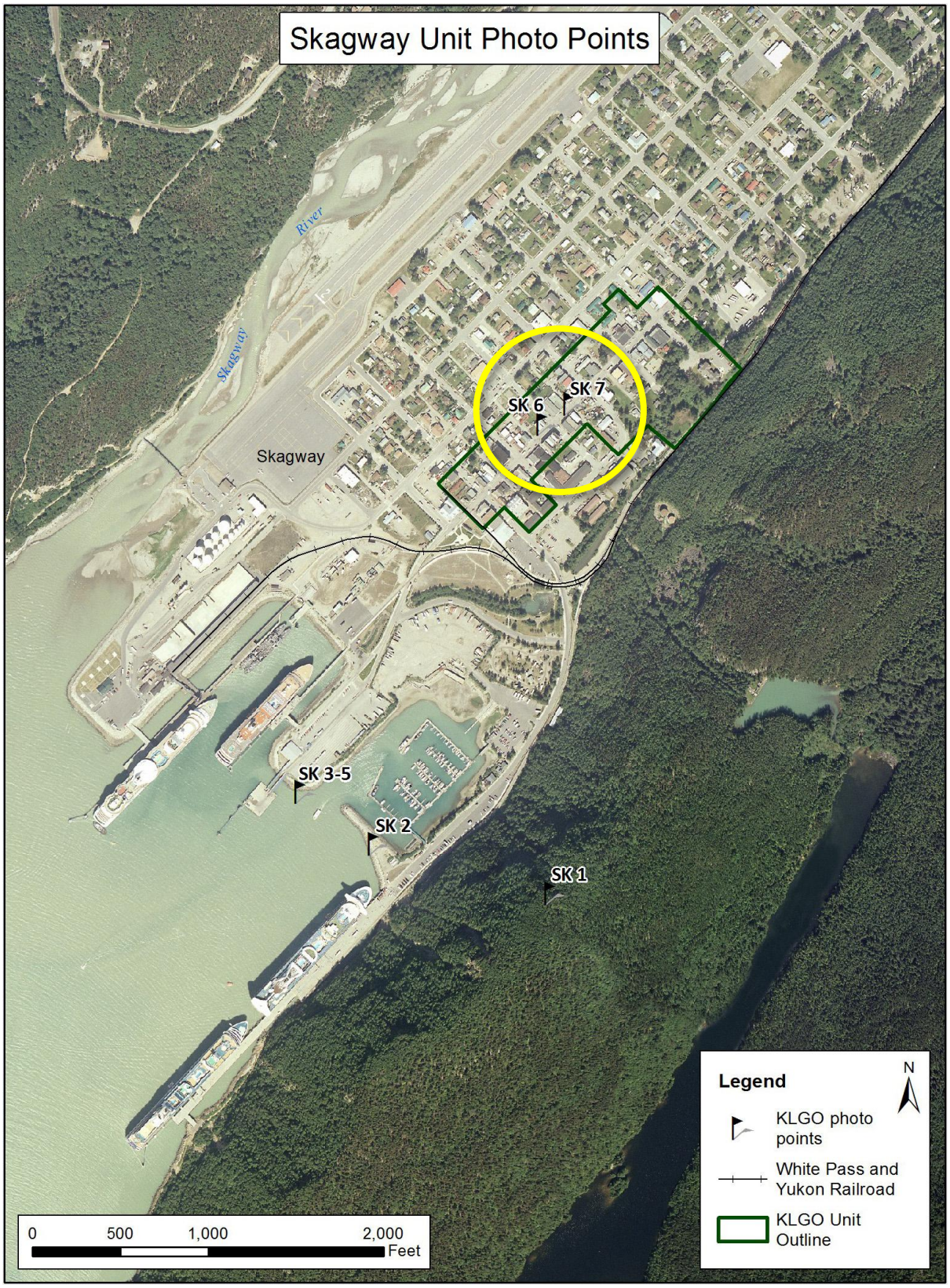

Figure 141. Detail map showing the location of photo station SK-07.

Figure 142. Reference photo looking east showing the location of Photo Station SK-07. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on Broadway between 4th and 5th Street in Skagway, Alaska.

Table 25. Photo Station SK-07 Metadata.

Photo Station SK-07	Historic Photo	Repeat Photo
Date	1916	August 14, 2013
Time	unknown	7:28:17 PM AKDT
Photographer	unknown	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20130814-00089
Photo Credit	Suggested Credit: Klondike Gold Rush National Historical Park, archive #25823	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/10, 1/200 second
Direction	southwest	
Latitude	59.45515° N	
Longitude	-135.3157° W	
Elevation	38 feet	
Notable Changes	Visible changes include retreat and thinning of Harding Glacier. Cultural changes in Skagway include residential and commercial development and restoration, removal of the train tracks, and paving of Broadway.	

Figure 143. Photo Station SK-07: Skagway, 1916 by unknown. View south on Broadway in downtown Skagway, Alaska. Harding Glacier is visible in the background. Credit: KLGO, archive #25823.

Figure 144. Photo Station SK-07: Skagway, August 14, 2013 by R.D. Karpilo Jr. View south on Broadway in downtown Skagway, Alaska. Harding Glacier is visible in the background.

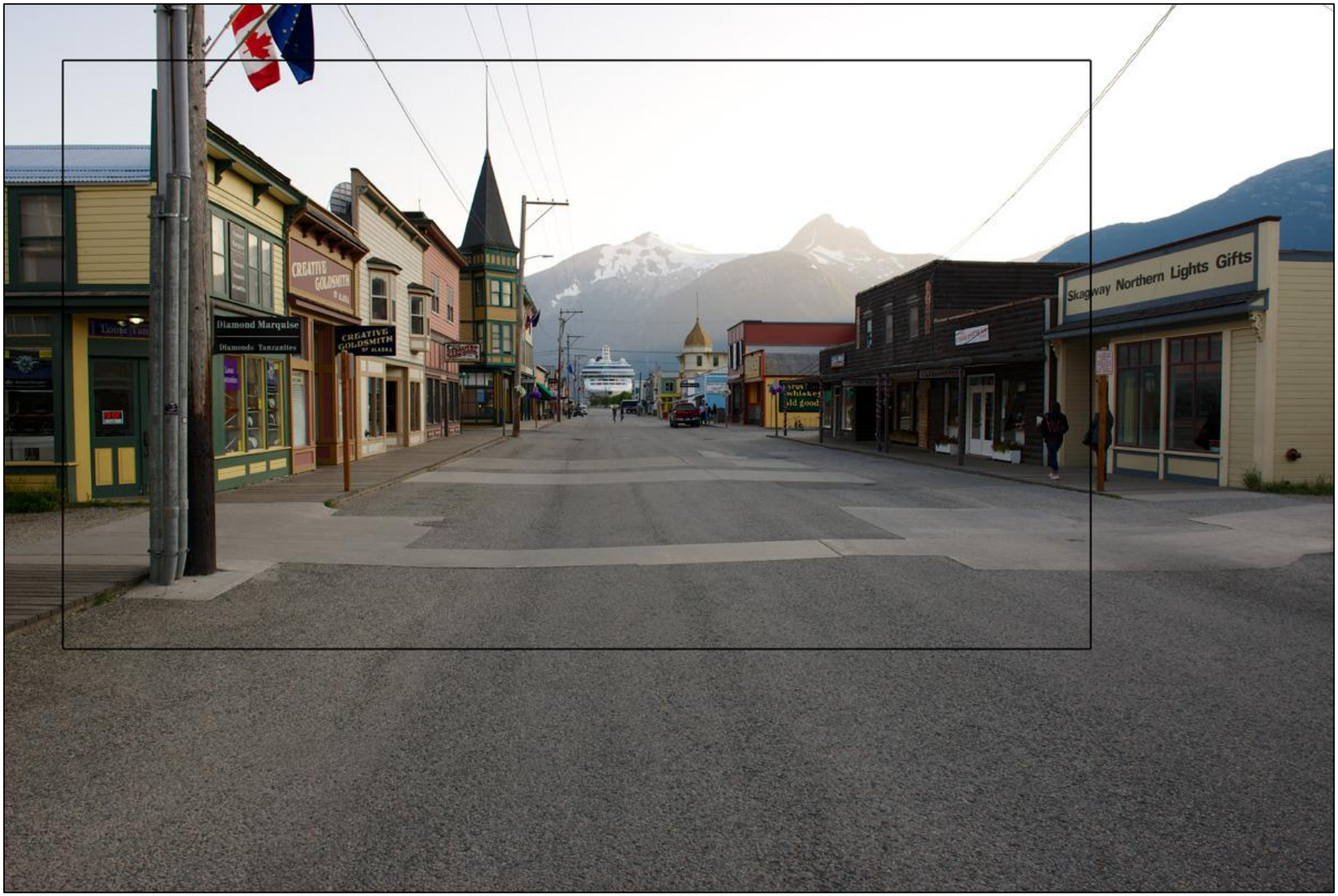

Figure 145. Full uncropped version of the August 14, 2013 repeat image. Box represents the field of view of the historic photo.

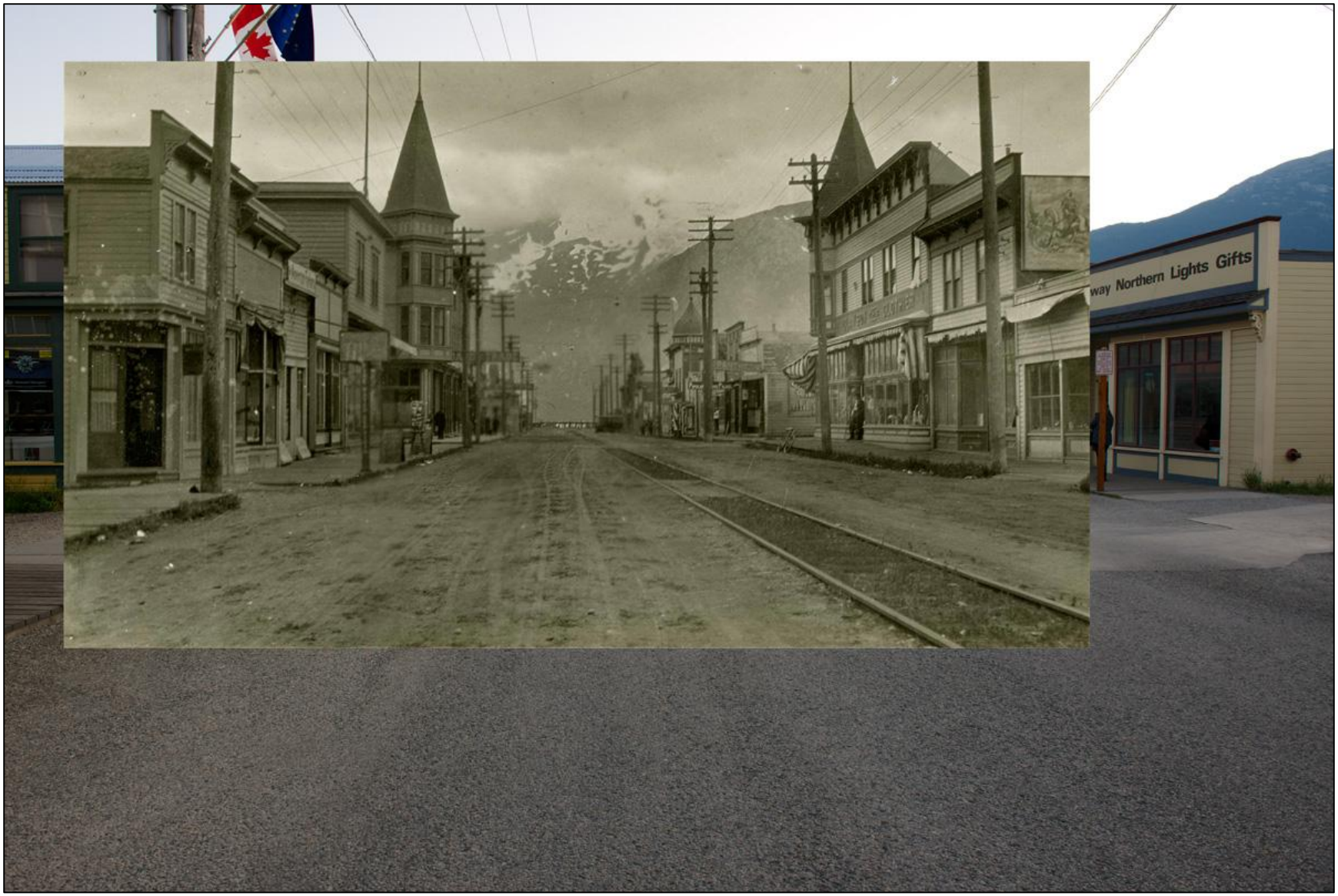

Figure 146. 1916 image overlaid on the full uncropped version of the August 14, 2013 repeat image by Karpilo.

KLGO Photo Pair 23 – Rocky Point (Photo Station WP-01)

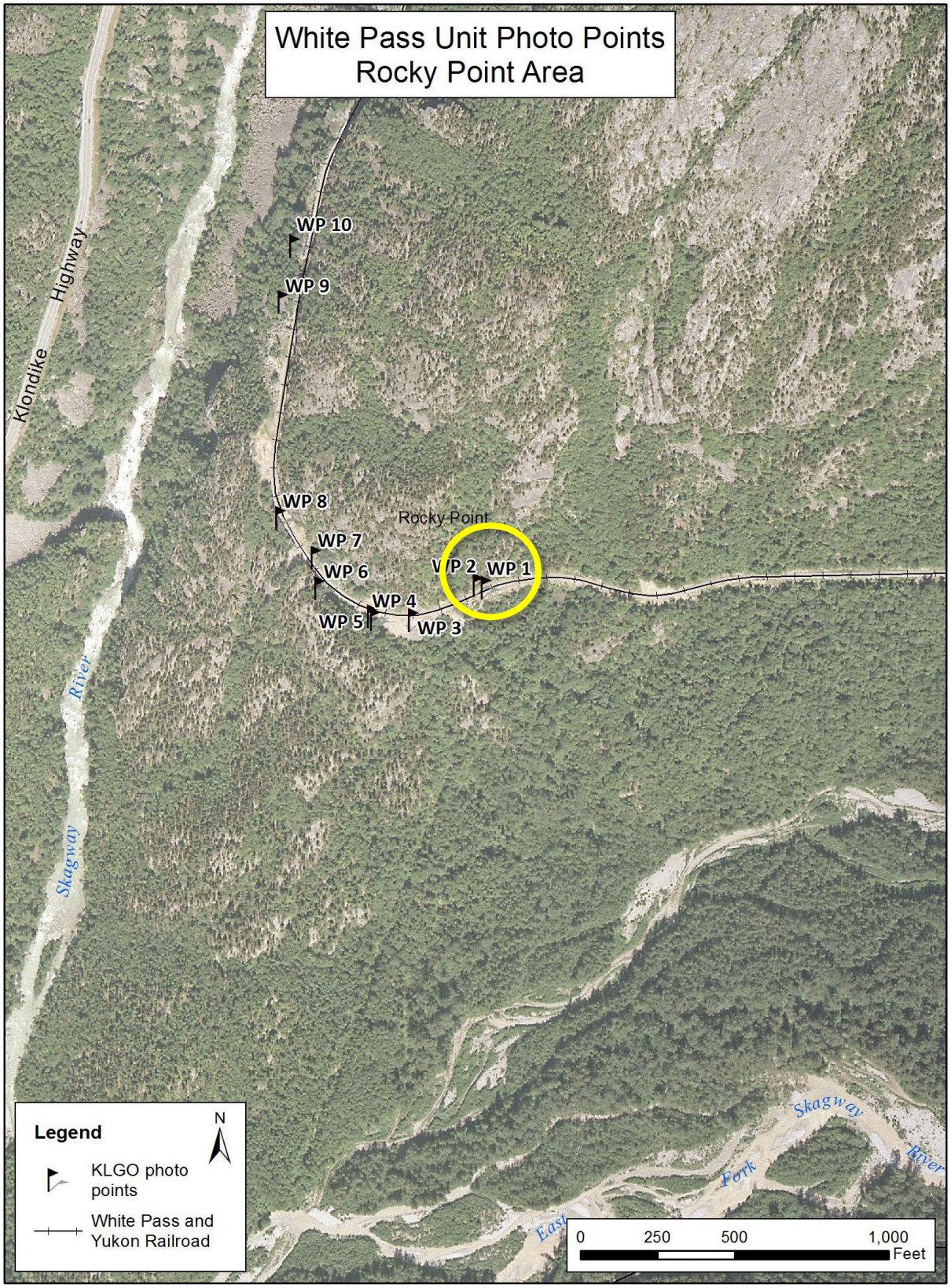

Figure 147. Detail map showing the location of photo station WP-01.

Figure 148. Reference photo looking southeast showing the location of Photo Station WP-01. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks, south of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 26. Photo Station WP-01 Metadata.

Photo Station WP-01	Historic Photo	Repeat Photo
Date	June 7, 1899	August 3, 2014
Time	unknown	2:45:16 PM AKDT
Photographer	G.K Gilbert	R.D. Karpilo Jr.
Photo Number	Gilbert #245	Karpilo #20140803-01952
Photo Credit	Suggested Credit: Grove K. Gilbert, U.S. Geological Survey	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/11, 1/160 second
Direction	southwest	
Latitude	59.50696° N	
Longitude	-135.24672° W	
Elevation	641 feet	
Notable Changes	Visible changes include a general thickening of vegetation and growth of deciduous trees in the forest fire burn area.	

Figure 149. Photo Station WP-01: Rocky Point, June 7, 1899 by G.K. Gilbert. View to the southwest towards Skagway and Harding Glacier from south of Rocky Point on the WP&YR Railway, Alaska. Credit: Grove K. Gilbert, U.S. Geological Survey.

Figure 150. Photo Station WP-01: Rocky Point, August 3, 2014 by R.D. Karpilo Jr. View to the southwest towards Skagway and Harding Glacier from south of Rocky Point on the WP&YR Railway, Alaska.

Figure 151. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 152. June 7, 1899 image by Gilbert overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 24 – Rocky Point (Photo Station WP-02)

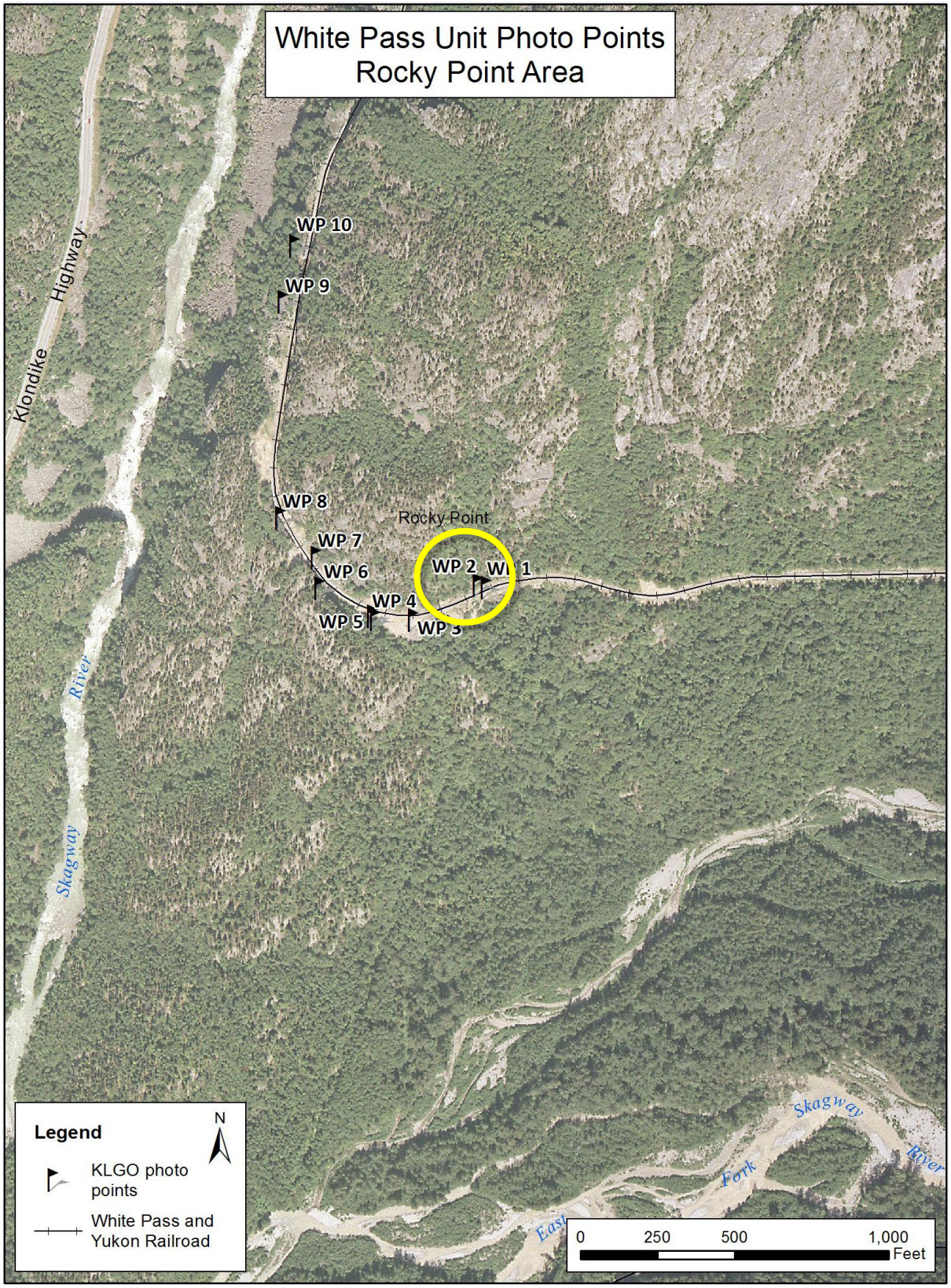

Figure 153. Detail map showing the location of photo station WP-02.

Figure 154. Reference photo looking north showing the location of Photo Station WP-02. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the north side of the train tracks, south of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 27. Photo Station WP-02 Metadata.

Photo Station WP-02	Historic Photo	Repeat Photo
Date	unknown date	August 3, 2014
Time	unknown	2:47:26 PM AKDT
Photographer	L.V. Winter and E.P. Pond	R.D. Karpilo Jr.
Photo Number	Winter and Pond #462	Karpilo #20140803-01971
Photo Credit	Charles E. Bunnell Collection, UAF-1958-1026-1695, Archives, University of Alaska Fairbanks	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/11, 1/125 second
Direction	southwest	
Latitude	59.50698° N	
Longitude	-135.24686° W	
Elevation	644 feet	
Notable Changes	Visible changes include reforestation in the burn area, regrowth of vegetation in the area disturbed by railroad construction, and blasting of the rock outcrop on the south side of the tracks.	

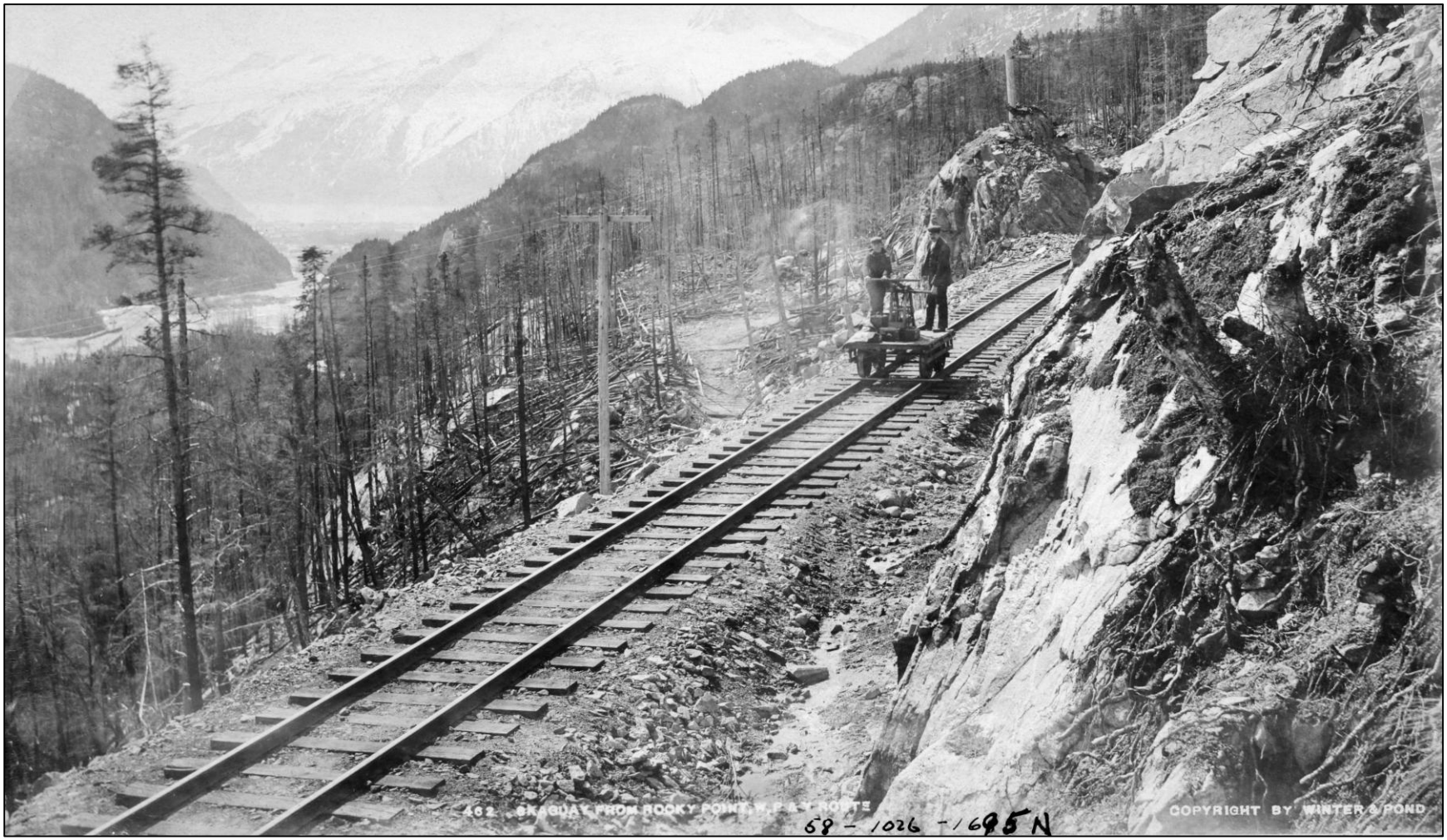

Figure 155. Photo Station WP-02: Rocky Point, unknown date by L.V. Winter and E.P. Pond. View to the southwest towards Skagway from south of Rocky Point on the WP&YR Railway, Alaska. Evidence of a forest fire is visible in the foreground. Credit: Charles E. Bunnell Collection, UAF-1958-1026-1695, Archives, University of Alaska Fairbanks.

Figure 156. Photo Station WP-02: Rocky Point, August 3, 2014 R.D. Karpilo Jr. View to the southwest towards Skagway from south of Rocky Point on the WP&YR Railway, Alaska.

Figure 157. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 158. Image by Winter and Pond overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 25 – Rocky Point (Photo Station WP-03)

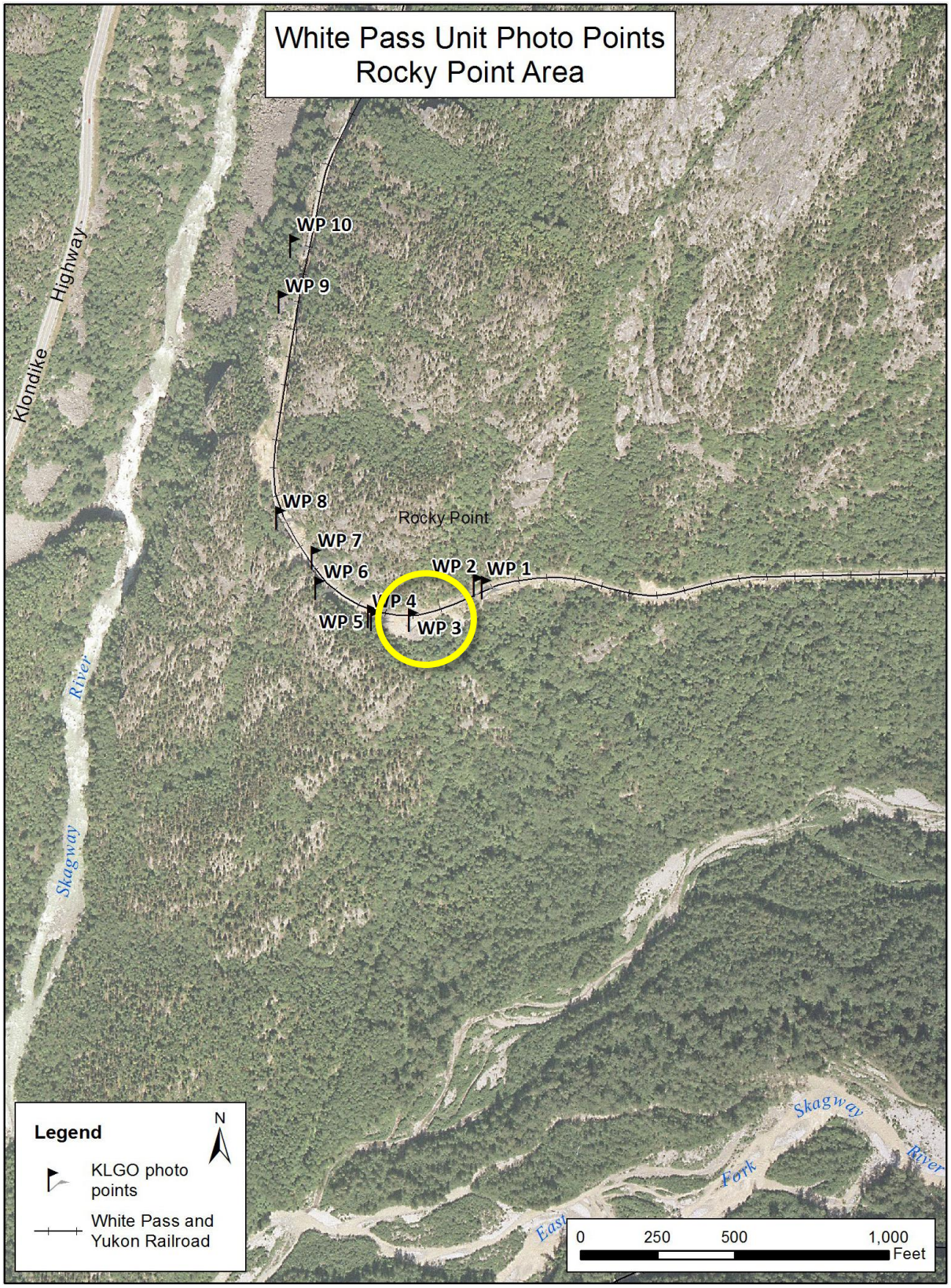

Figure 159. Detail map showing the location of photo station WP-03.

Figure 160. Reference photo looking southeast showing the location of Photo Station WP-03. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks at Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 28. Photo Station WP-03 Metadata.

Photo Station WP-03	Historic Photo	Repeat Photo
Date	September 18, 1898	August 10, 2014
Time	unknown	10:35:25 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #256	Karpilo #20140810-00297
Photo Credit	Suggested Credit: National Park Service, Klondike Gold Rush National Historical Park. Whiting Collection, Series I, Subseries 1, File #0001.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 35mm
Camera Settings	unknown	ISO: 200, f/9, 1/200 second
Direction	southeast	
Latitude	59.50667° N	
Longitude	-135.24799° W	
Elevation	672 feet	
Notable Changes	The East Fork Skagway River and floodplain changed from an open braided and sparsely vegetated riparian system to a more channelized and densely vegetated system.	

Figure 161. Photo Station WP-03: Rocky Point, September 18, 1898 by H.C. Barley. WP&YR employees at Rocky Point on the WP&YR Railway, Alaska. Credit: National Park Service, Klondike Gold Rush National Historical Park. Whiting Collection, Series I, Subseries 1, File #0001.

Figure 162. Photo Station WP-03: Rocky Point, August 10, 2014 by R.D. Karpilo Jr. View to the southeast of WP&YR employees at Rocky Point on the WP&YR Railway, Alaska.

Figure 163. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

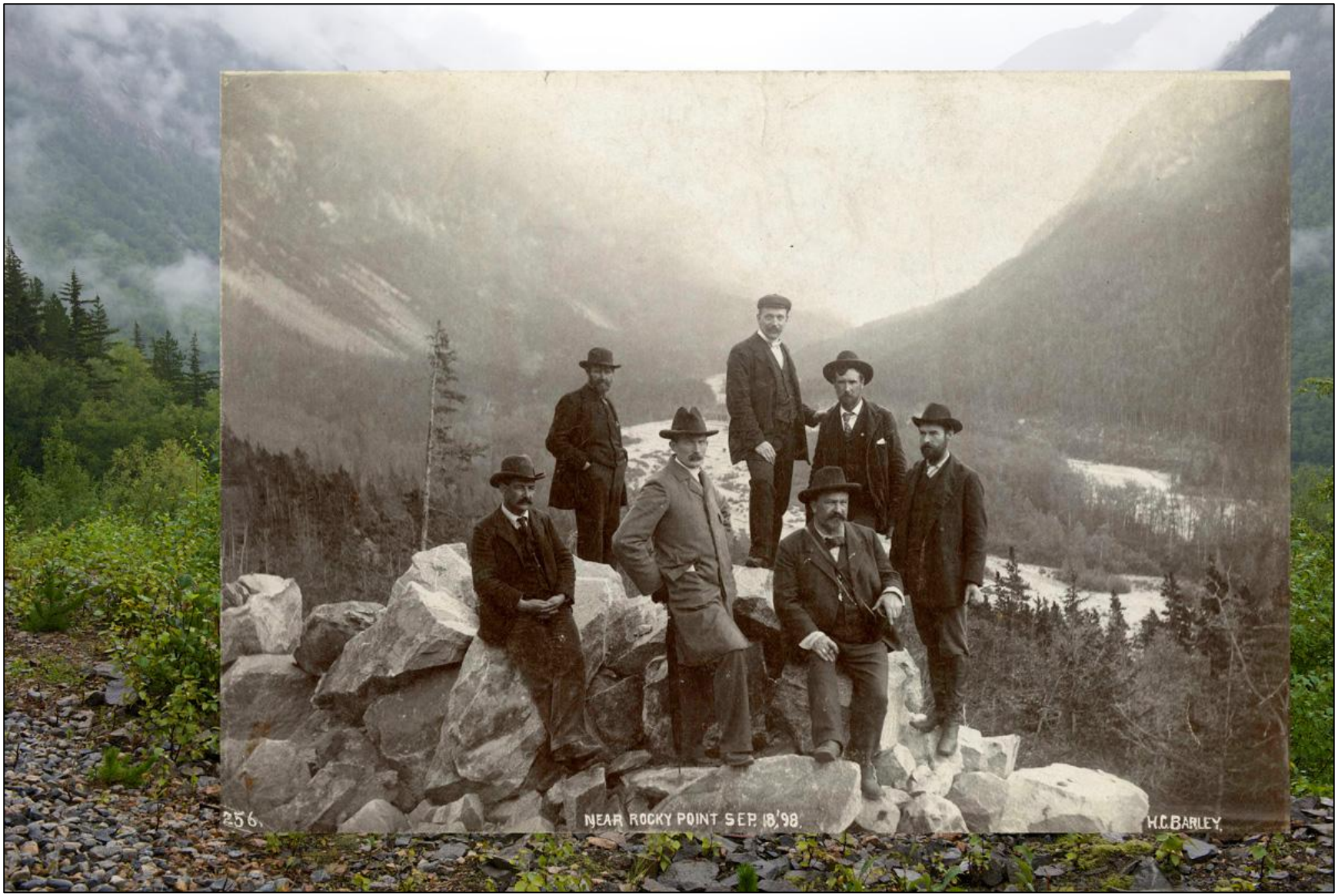

Figure 164. September 18, 1898 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 26 – Rocky Point (Photo Station WP-04)

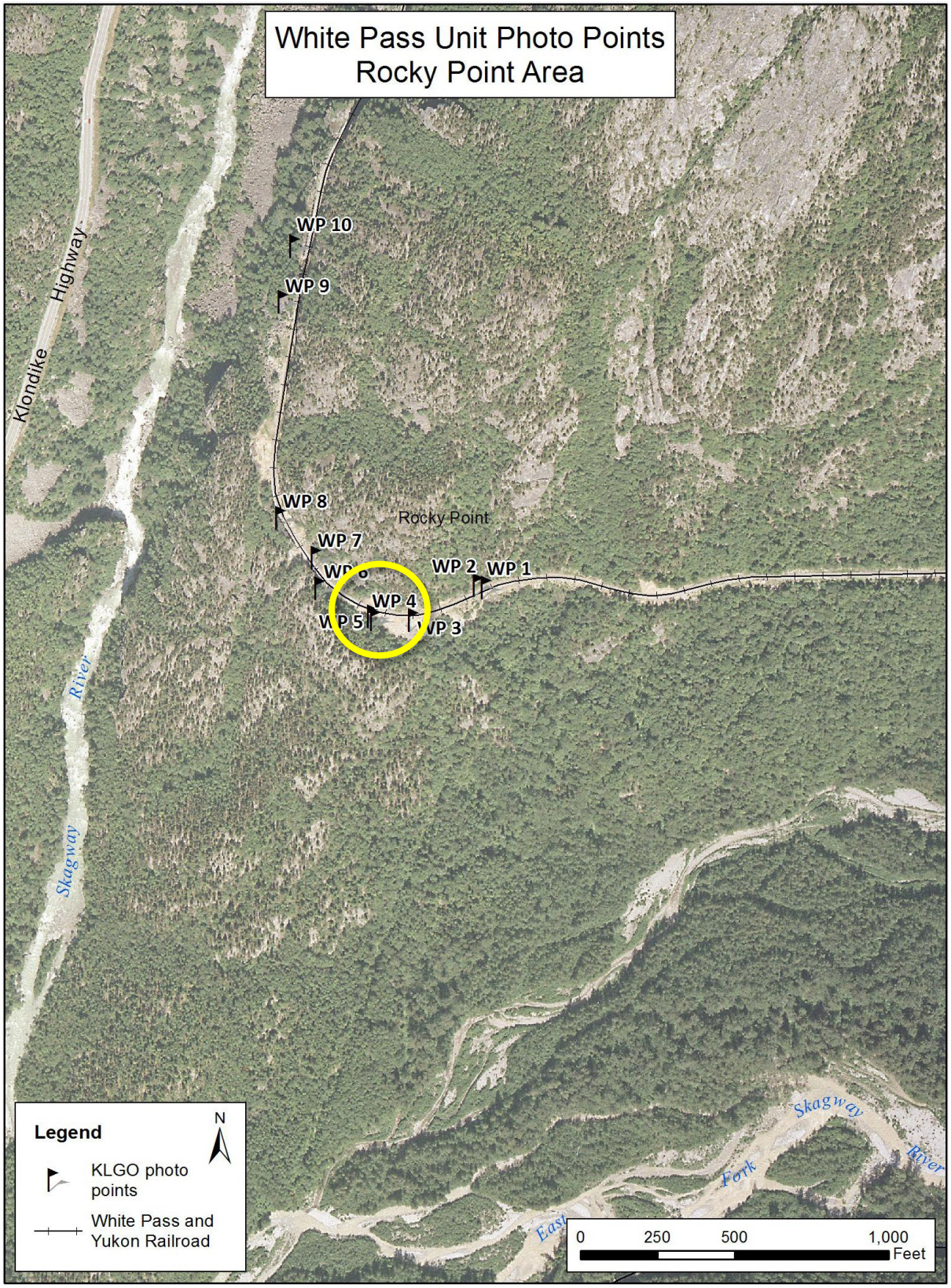

Figure 165. Detail map showing the location of photo station WP-04.

Figure 166. Reference photo looking southeast showing the location of Photo Station WP-04. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 29. Photo Station WP-04 Metadata.

Photo Station WP-04	Historic Photo	Repeat Photo
Date	August 1898	August 3, 2014
Time	unknown	1:42:24 PM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #109	Karpilo #20140803-01749
Photo Credit	Required Credit: Yukon Archives, H.C. Barley Collection, #5264	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 14-24mm f/2.8 @ 14mm
Camera Settings	unknown	ISO: 100, f/11, 1/100 second
Direction	southeast	
Latitude	59.50667° N	
Longitude	-135.24866° W	
Elevation	702 feet	
Notable Changes	Visible changes include blasting and construction of the railroad and an increase in the density of vegetation along the East Fork Skagway River and floodplain.	

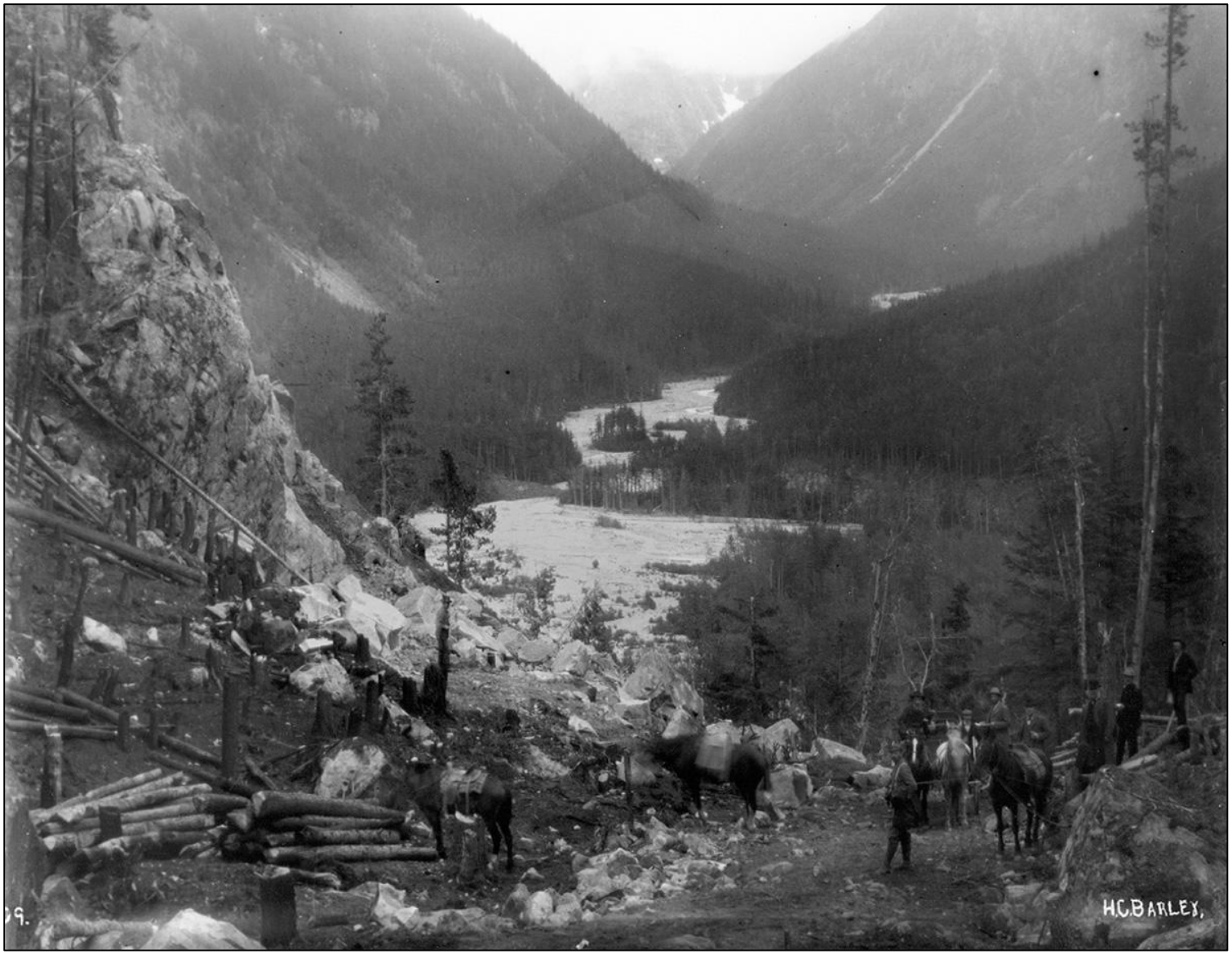

Figure 167. Photo Station WP-04: Rocky Point, August 1898 by H.C. Barley. View to the south of the East Fork Skagway River Valley before blasting for construction of the WP&YR Railway at Rocky Point, Alaska. Credit: Yukon Archives, H.C. Barley Collection, #5264.

Figure 168. Photo Station WP-04: Rocky Point, August 3, 2014 by R.D. Karpilo Jr. View south of the East Fork Skagway River from the WP&YR Railway at Rocky Point, Alaska.

Figure 169. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 170. August 1898 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 27 – Rocky Point (Photo Station WP-05)

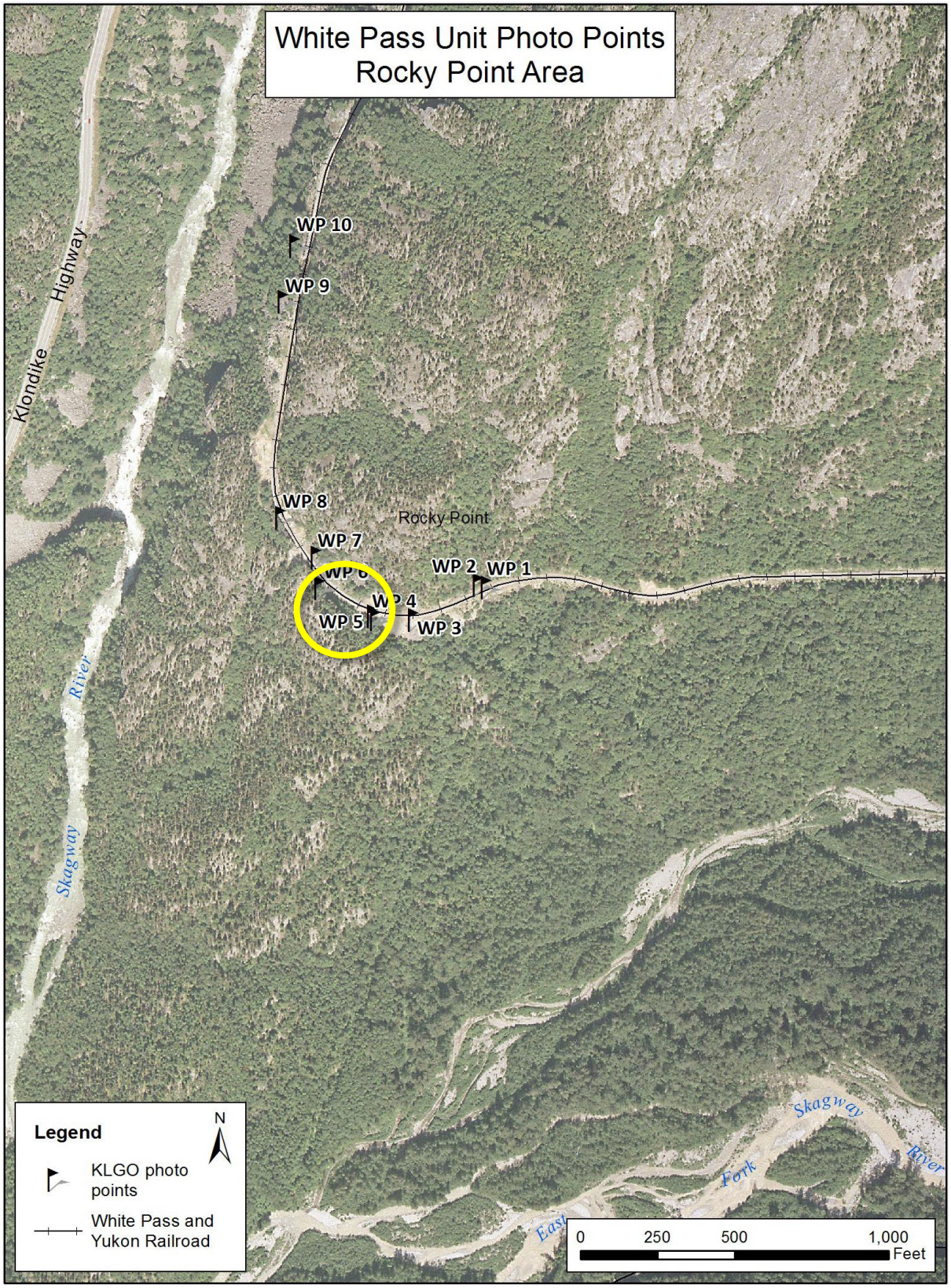

Figure 171. Detail map showing the location of photo station WP-05.

Figure 172. Reference photo looking southeast showing the location of Photo Station WP-05. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 30. Photo Station WP-05 Metadata.

Photo Station WP-05	Historic Photo	Repeat Photo
Date	c. 1898	August 3, 2014
Time	unknown	1:44:07 PM AKDT
Photographer	F. La Roche	R.D. Karpilo Jr.
Photo Number	La Roche #2158	Karpilo #20140803-01753
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Order #LAR280	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 14-24mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/11, 1/125 second
Direction	southeast	
Latitude	59.5067° N	
Longitude	-135.24871° W	
Elevation	699 feet	
Notable Changes	Visible changes include blasting and construction of the railroad and an increase in the density of vegetation along the East Fork Skagway River and floodplain.	

Figure 173. Photo Station WP-05: Rocky Point, c. 1898 by F. La Roche. View south of the East Fork Skagway River Valley from the WP&YR Railway at Rocky Point, Alaska. Credit: University of Washington Libraries, Special Collections, Order #LAR280.

Figure 174. Photo Station WP-05: Rocky Point, August 3, 2014 by R.D. Karpilo Jr. View south of the East Fork Skagway River from the WP&YR Railway at Rocky Point, Alaska.

Figure 175. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 176. c. 1898 image by La Roche overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 28 – Rocky Point (Photo Station WP-06)

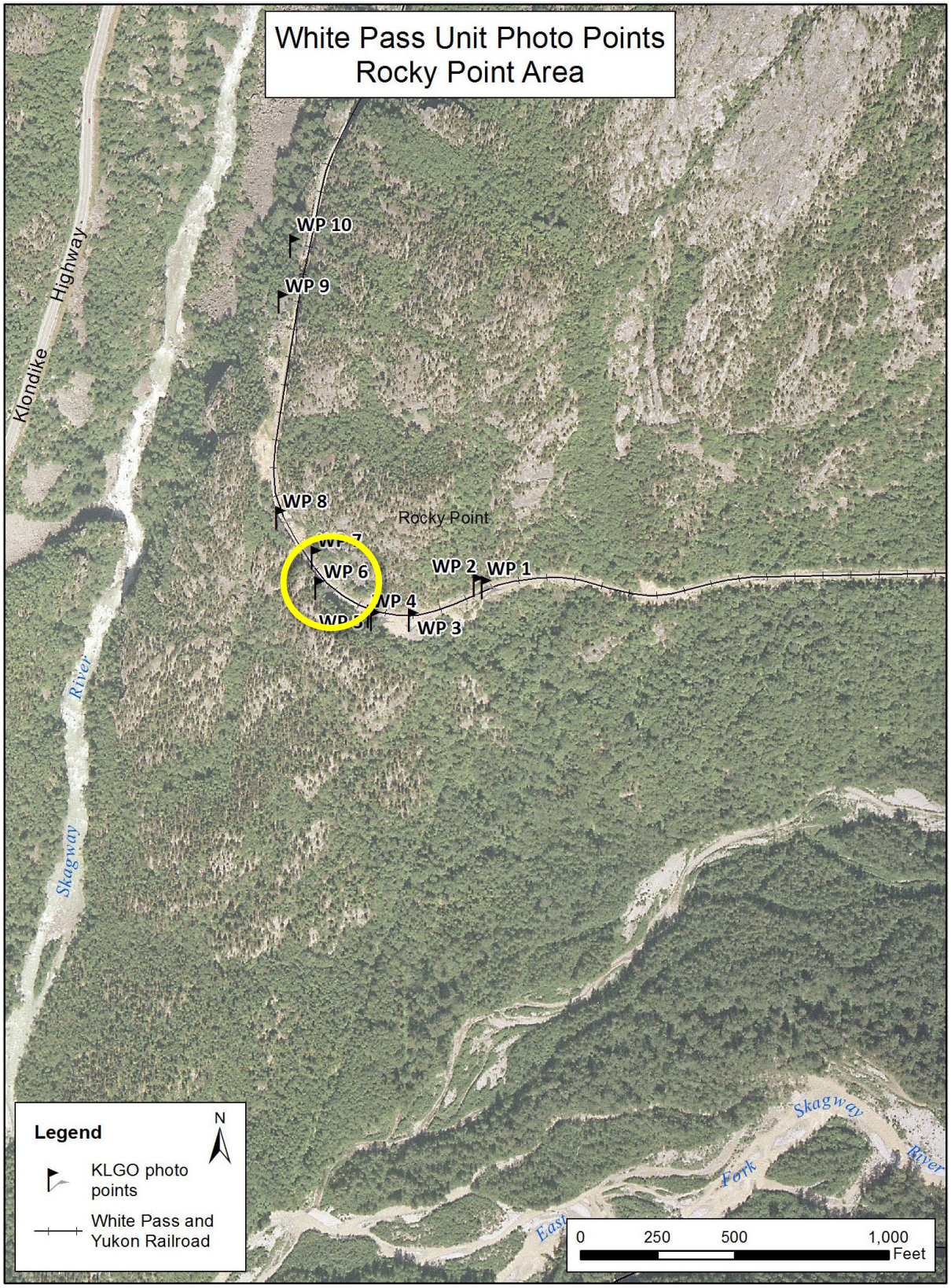

Figure 177. Detail map showing the location of photo station WP-06.

Figure 178. Reference photo looking west showing the location of Photo Station WP-06. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 31. Photo Station WP-06 Metadata.

Photo Station WP-06	Historic Photo	Repeat Photo
Date	August 1899	August 3, 2014
Time	unknown	1:19:29 PM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #2051	Karpilo #20140803-01659
Photo Credit	Required Credit: Yukon Archives, H.C. Barley Collection, #5509	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	tripod @ 4.92 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 14-24mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/10, 1/320 second
Direction	southeast	
Latitude	59.50695° N	
Longitude	-135.249635° W	
Elevation	633 feet	
Notable Changes	Visible changes include blasting and removal of rock along the railroad, an increase in the density of vegetation along the East Fork Skagway River, regrowth of vegetation in the area disturbed by the railroad construction, and a shift from predominantly spruce forest to a deciduous species dominated environment.	

Figure 179. Photo Station WP-06: Rocky Point, August 1899 by H.C. Barley. View to the south of the East Fork Skagway River Valley and a steam engine on the WP&YR Railway rounding the curve at Rocky Point, Alaska. Credit: Yukon Archives, H.C. Barley Collection, #5509.

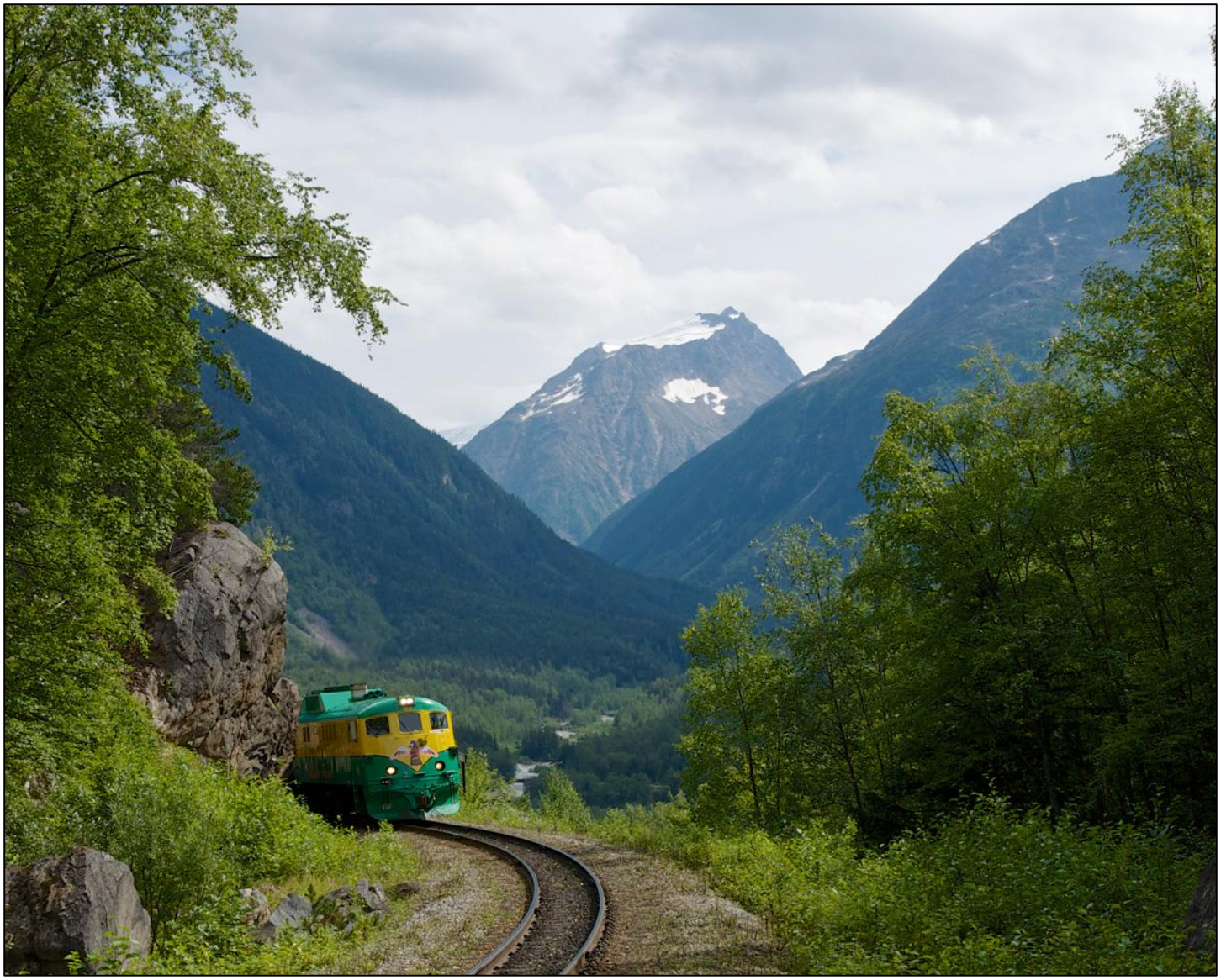

Figure 180. Photo Station WP-06: Rocky Point, August 3, 2014 by R.D. Karpilo Jr. View to the south of the East Fork Skagway River Valley and a diesel engine on the WP&YR Railway rounding the curve at Rocky Point, Alaska.

Figure 181. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 182. August 1899 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 29 – Rocky Point (Photo Station WP-07)

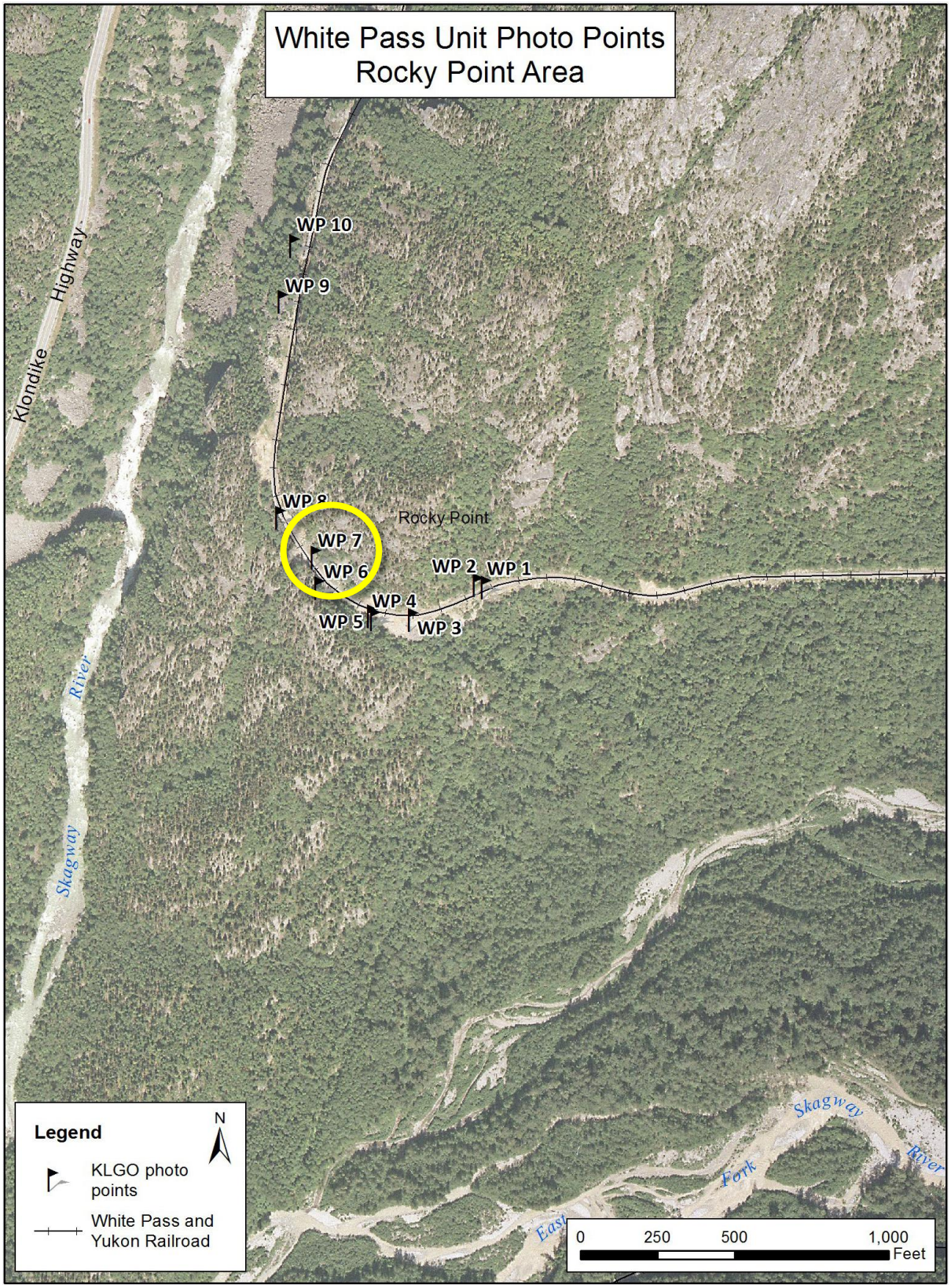

Figure 183. Detail map showing the location of photo station WP-07.

Figure 184. Reference photo looking northeast showing the location of Photo Station WP-07. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the east side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 32. Photo Station WP-07 Metadata.

Photo Station WP-07	Historic Photo	Repeat Photo
Date	September 18, 1898	August 10, 2014
Time	unknown	10:29:43 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #258	Karpilo #20140810-01105
Photo Credit	Required Credit: Yukon Archives, H.C. Barley Collection, #5358	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/7.1, 1/100 second
Direction	northwest	
Latitude	59.50722° N	
Longitude	-135.2497° W	
Elevation	686 feet	
Notable Changes	Visible changes include blasting and removal of loose rock along the railroad, regrowth of vegetation in the area disturbed by the railroad construction, and an increase in deciduous species. On the mountainside to the northwest, vegetative cover has expanded, blocking views of bedrock outcrops.	

Figure 185. Photo Station WP-07: Rocky Point, September 18, 1898 by H.C. Barley. View to the northwest of railroad officials at the cut at Rocky Point on the WP&YR Railway, Alaska. Credit: Yukon Archives, H.C. Barley Collection, #5358.

Figure 186. Photo Station WP-07: Rocky Point, August 10, 2014 by R.D. Karpilo Jr. View to the northwest of the railroad cut at Rocky Point on the WP&YR Railway, Alaska.

Figure 187. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 188. September 18, 1898 image by Barley overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 30 – Rocky Point (Photo Station WP-08)

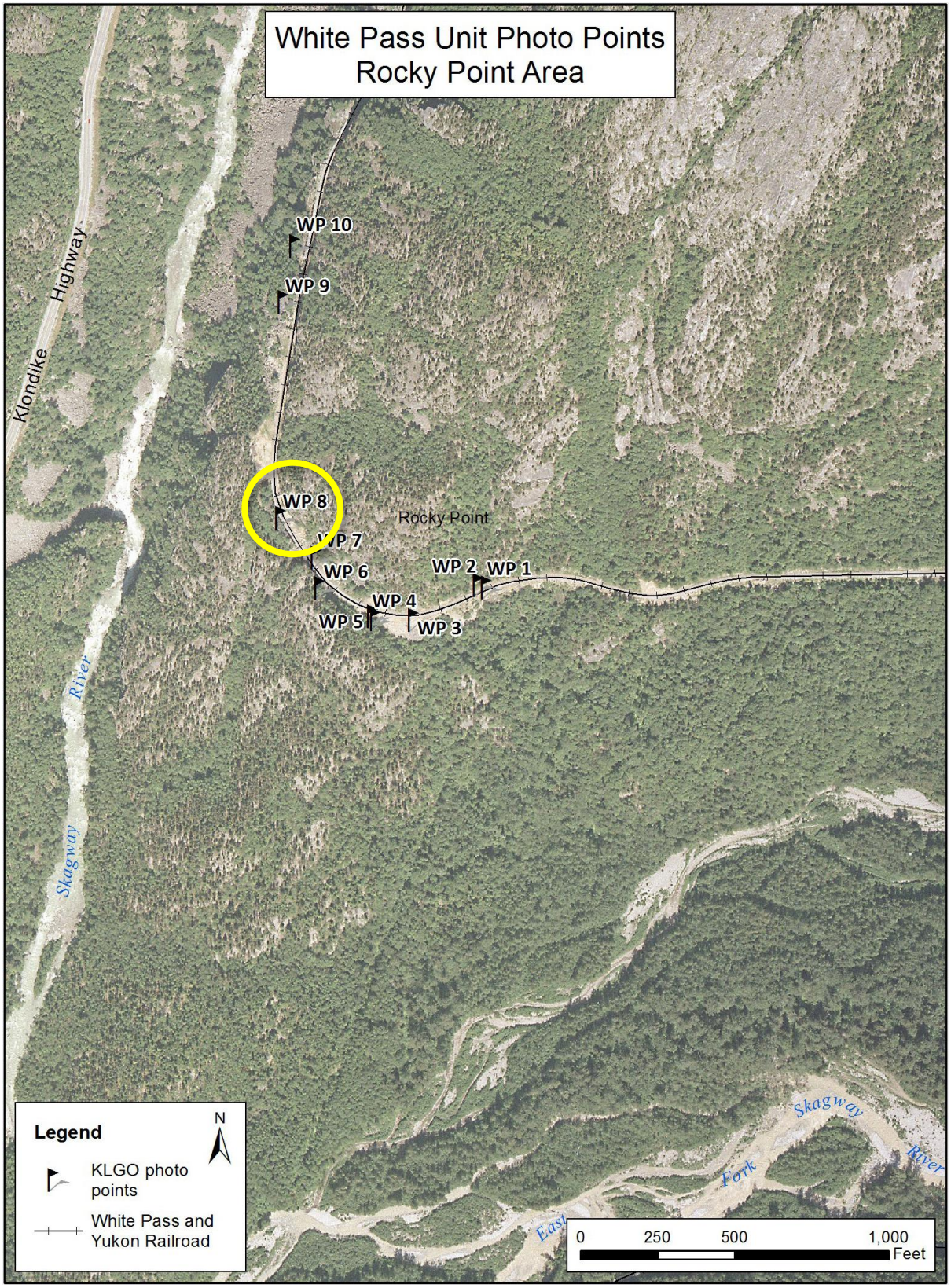

Figure 189. Detail map showing the location of photo station WP-08.

Figure 190. Reference photo looking north showing the location of Photo Station WP-08. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 33. Photo Station WP-08 Metadata.

Photo Station WP-08	Historic Photo	Repeat Photo
Date	c. 1898	August 3, 2014
Time	unknown	2:02:00 PM AKDT
Photographer	F.A. Callerman	R.D. Karpilo Jr.
Photo Number	Callerman #587	Karpilo #20140810-01841
Photo Credit	Required Credit: Yukon Archives, H.C. Barley Collection, #5491	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 14-24mm f/2.8 @ 19mm
Camera Settings	unknown	ISO: 250, f/10, 1/320 second
Direction	north	
Latitude	59.50757° N	
Longitude	-135.25032° W	
Elevation	697 feet	
Notable Changes	Visible changes include blasting and removal of loose rock along the railroad, establishment and regrowth of vegetation in the area disturbed by the railroad construction, and an increase in deciduous species. On the mountainside in the background, vegetation has expanded covering portions of the previously bare bedrock outcrops.	

Figure 191. Photo Station WP-08: Rocky Point, c. 1898 by F.A. Callerman. View to the north through the railroad cut north of Rocky Point on the WP&YR Railway, Alaska. Credit: Yukon Archives, H.C. Barley Collection, #5491.

Figure 192. Photo Station WP-08: Rocky Point, August 3, 2014 by R.D. Karpilo Jr. View to the north through the railroad cut north of Rocky Point on the WP&YR Railway, Alaska.

Figure 193. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 194. 1898 image by Callerman overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 31 – Rocky Point (Photo Station WP-09)

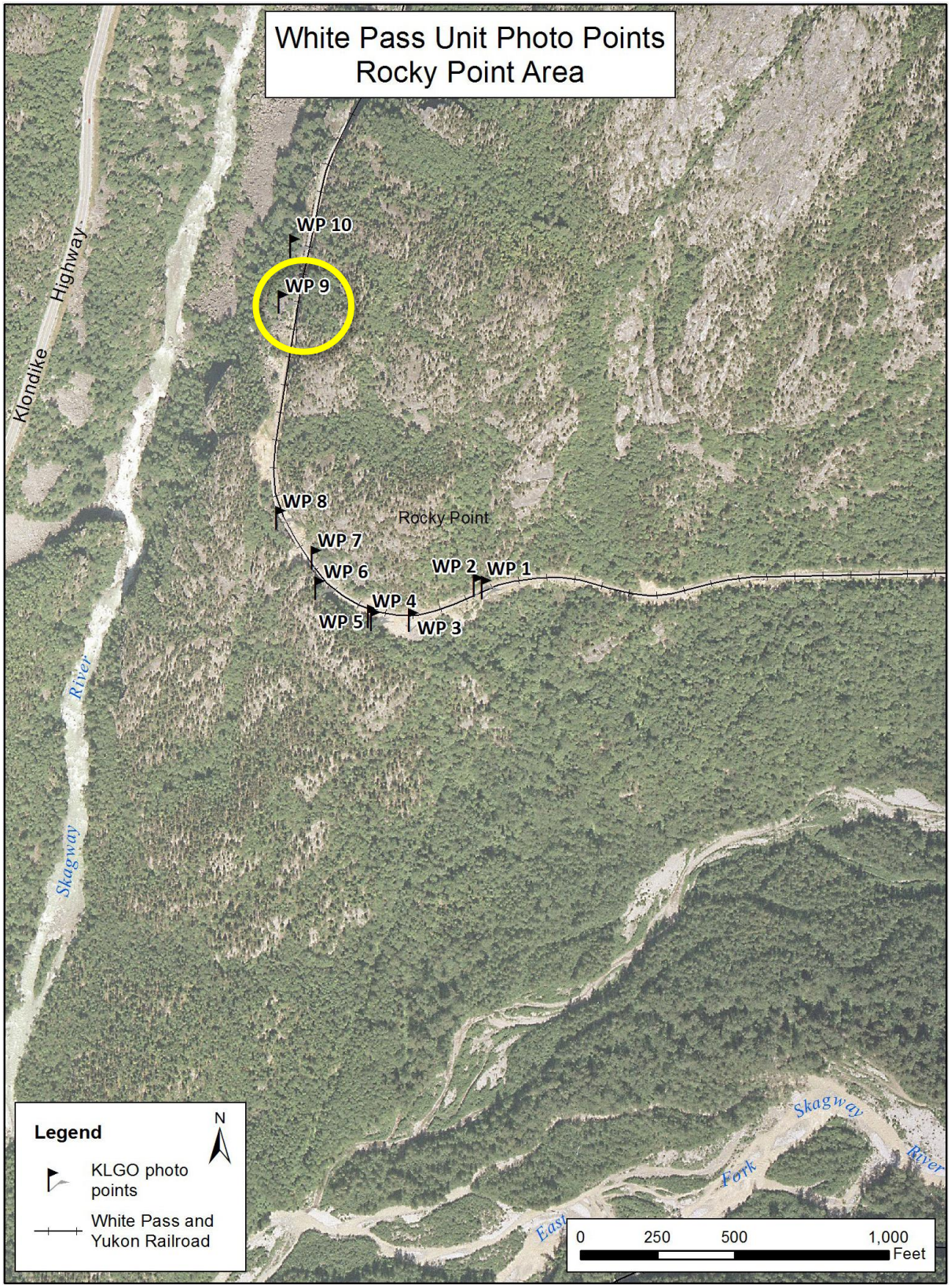

Figure 195. Detail map showing the location of photo station WP-09.

Figure 196. Reference photo looking north showing the location of Photo Station WP-09. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 34. Photo Station WP-09 Metadata.

Photo Station WP-09	Historic Photo	Repeat Photo
Date	c. 1899-1900	August 10, 2014
Time	unknown	10:25:36 AM AKDT
Photographer	W. H. Case and H.H. Draper	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140810-01087
Photo Credit	Suggested Credit: National Park Service, Klondike Gold Rush National Historical Park. George and Edna Rapuzzi Collection, KLGO 57584. Gift of the Rasmuson Foundation.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 320, f/10, 1/100 second
Direction	north	
Latitude	59.50949° N	
Longitude	-135.25029° W	
Elevation	701 feet	
Notable Changes	Visible changes include growth of trees and bushes along the railroad, in the Skagway River Valley, and on the previously bare bedrock areas of the slopes in the background. In addition, the concrete retaining wall was constructed to stabilize the railroad grade.	

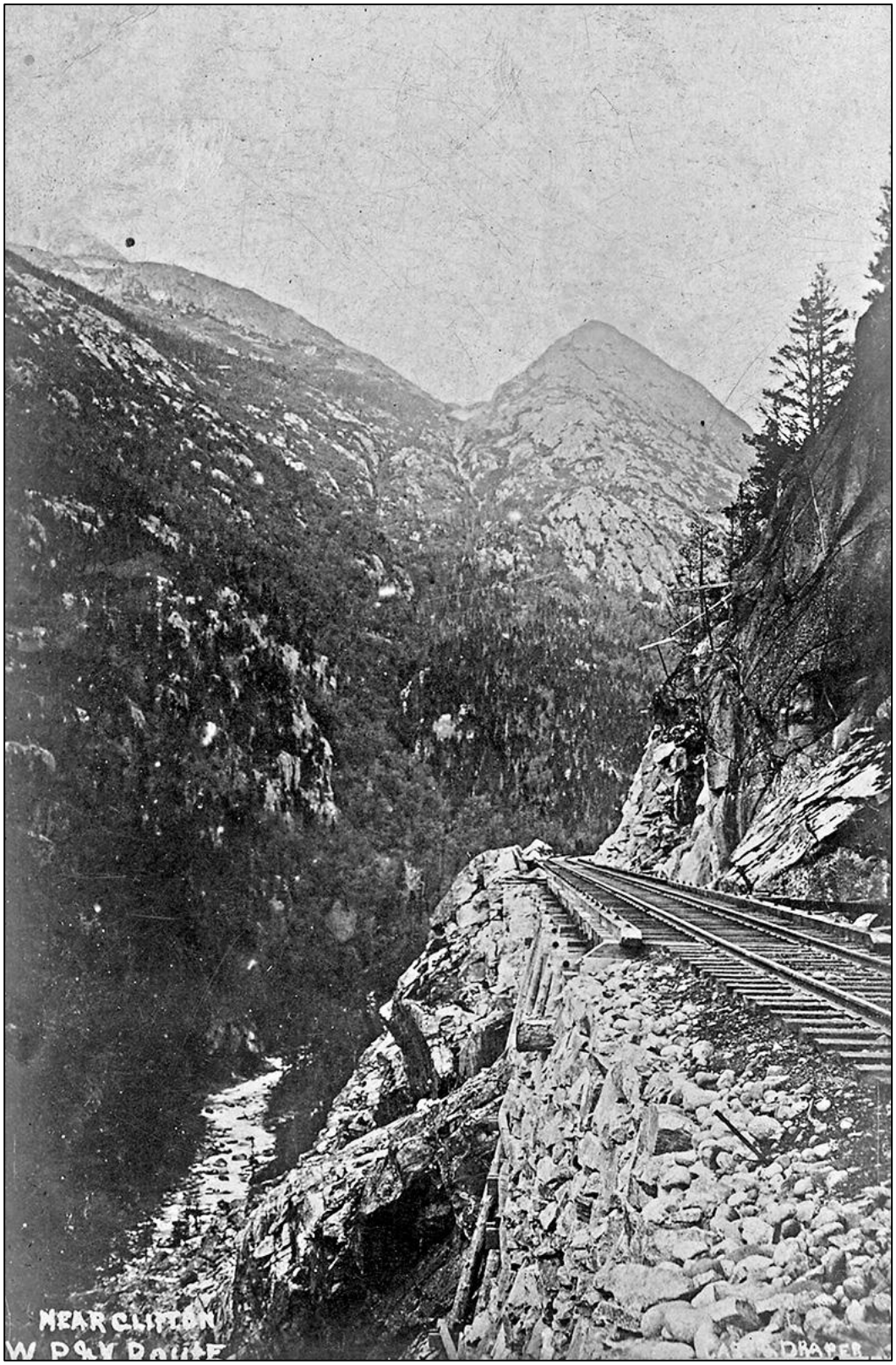

Figure 197. Photo Station WP-09: Rocky Point, c. 1899-1900 by W. H. Case and H.H. Draper. View north on the WP&YR Railway, Alaska. Credit: National Park Service, Klondike Gold Rush National Historical Park. George and Edna Rapuzzi Collection, KLGO 57584. Gift of the Rasmuson Foundation.

Figure 198. Photo Station WP-09: Rocky Point, August 10, 2014 R.D. Karpilo Jr. View to the north of Porcupine Hill from north of Rocky Point on the WP&YR Railway, Alaska.

Figure 199. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 200. c. 1899-1900 image by Case and Draper overlaid on the full uncropped version of the repeat image by Karpilo.

KLGO Photo Pair 32 – Rocky Point (Photo Station WP-10)

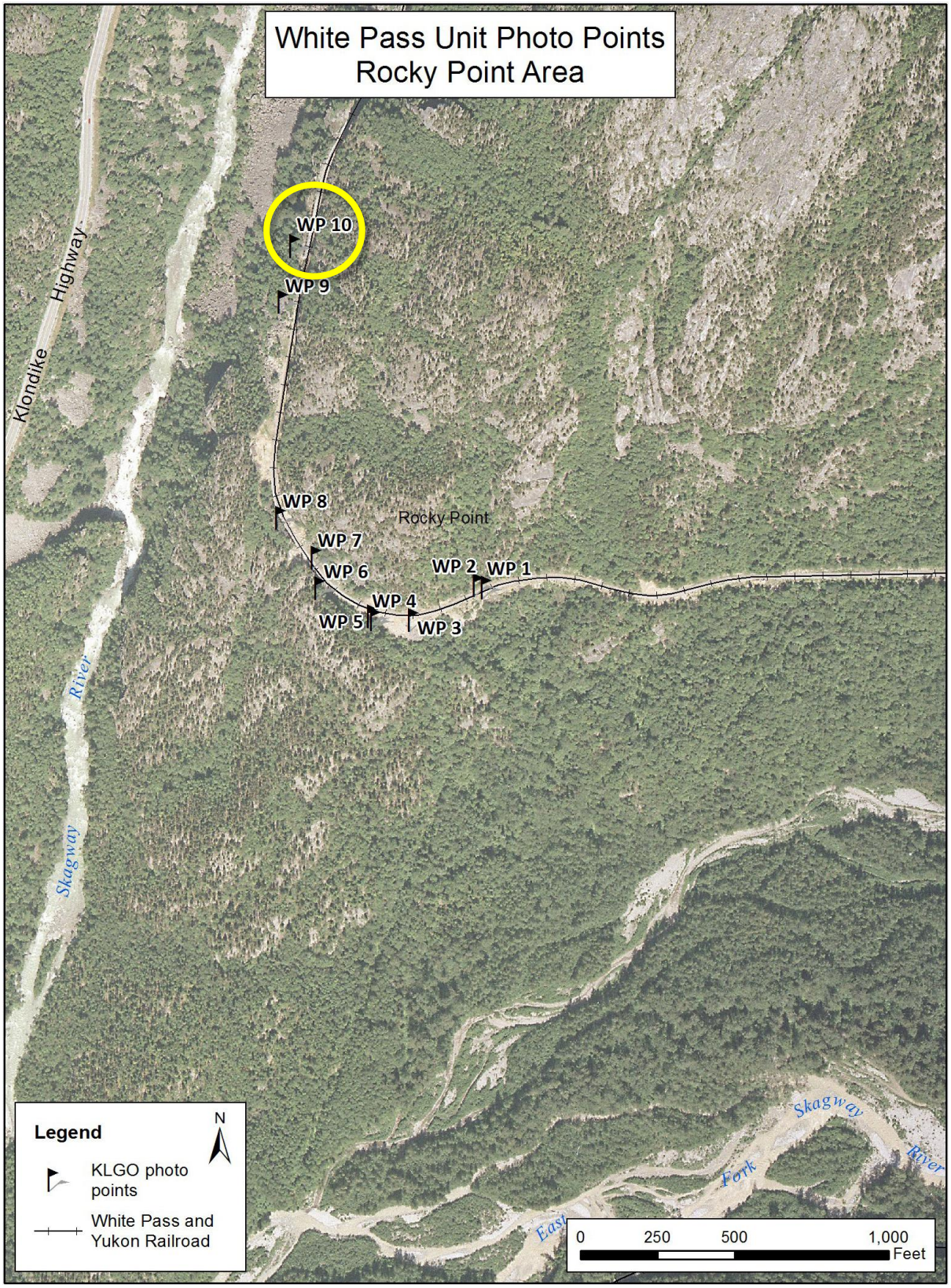

Figure 201. Detail map showing the location of photo station WP-10.

Figure 202. Reference photo looking south showing the location of Photo Station WP-10. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks, north of Rocky Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 35. Photo Station WP-10 Metadata.

Photo Station WP-10	Historic Photo	Repeat Photo
Date	early 1900s	August 10, 2014
Time	unknown	10:19:55 AM AKDT
Photographer	L.V. Winter and E.P. Pond	R.D. Karpilo Jr.
Photo Number	Winter and Pond #467	Karpilo #20140810-00994
Photo Credit	Required Credit: Image C-05885 courtesy of the Royal BC Museum and Archives	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 320, f/11, 1/60 second
Direction	southeast	
Latitude	59.50998° N	
Longitude	-135.25009° W	
Elevation	702 feet	
Notable Changes	Visible changes include growth of trees and bushes along the railroad and in the Skagway River Valley, Cultural changes include construction of the concrete retaining to stabilize the railroad grade, construction of Klondike Highway, and the apparent diversion of the stream that drained into the Skagway River in the historic photo.	

Figure 203. Photo Station WP-10: Rocky Point, early 1900s by L.V. Winter and E.P. Pond. View to the southeast toward the Rocky Point cut from north of Rocky Point on the WP&YR Railway, Alaska. Credit: Image C-05885 courtesy of the Royal BC Museum and Archives.

Figure 204. Photo Station WP-10: Rocky Point, August 10, 2014 R.D. Karpilo Jr. View to the southeast toward the Rocky Point cut from north of Rocky Point on the WP&YR Railway, Alaska.

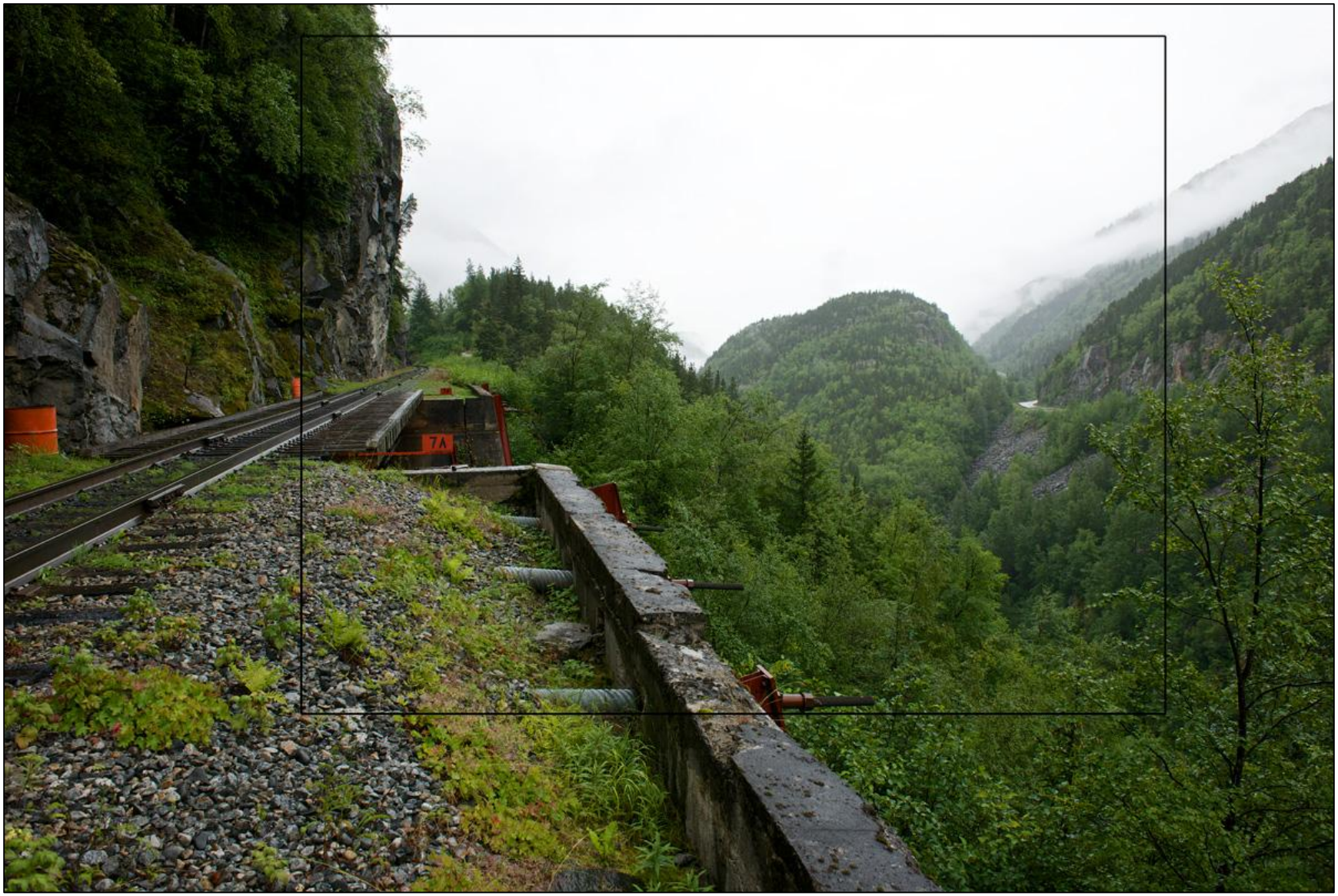

Figure 205. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

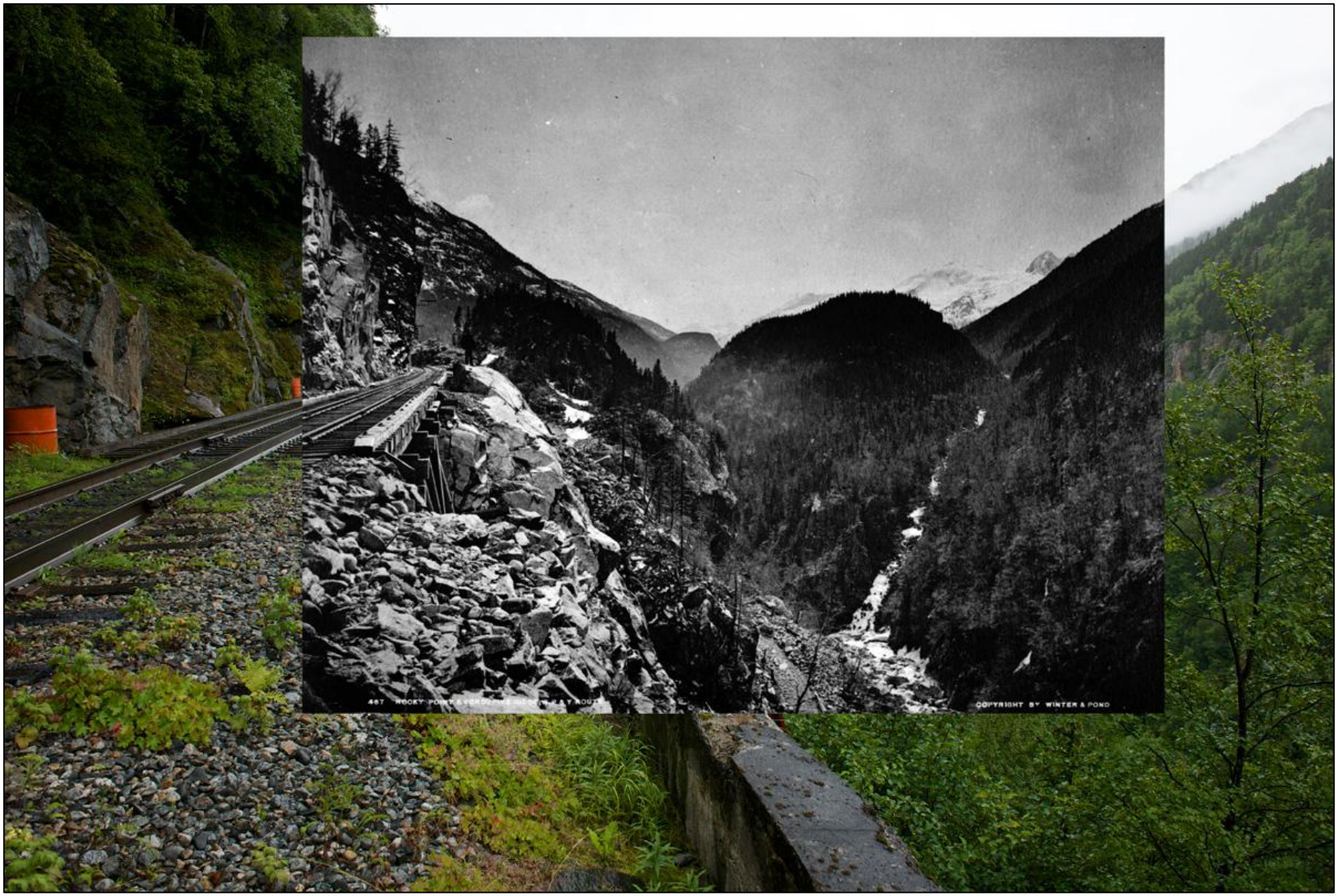

Figure 206. Early 1900s image by Winter and Pond overlaid on the uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 33 – Clifton (Photo Station WP-11)

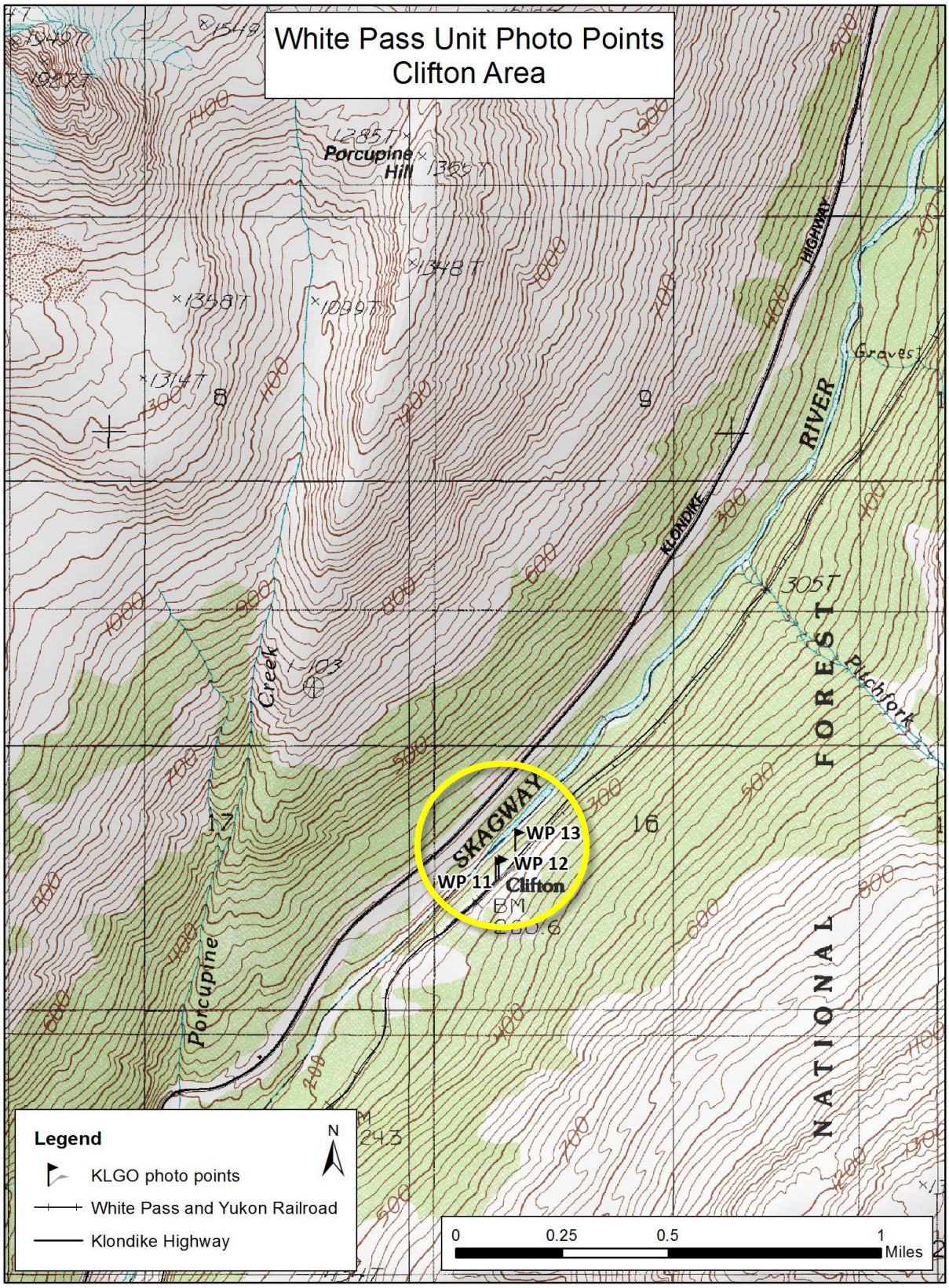

Figure 207. Detail map showing the location of photo station WP-11 in the Clifton area.

Figure 208. Reference photo looking north showing the location of Photo Station WP-11. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks at Clifton on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 36. Photo Station WP-11 Metadata.

Photo Station WP-11	Historic Photo	Repeat Photo
Date	late August 1898	August 3, 2014
Time	unknown	2:23:37 PM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley 205	Karpilo #20140803-01881
Photo Credit	Required Credit: H.C. Barley Photographs, UAF-2008-72-14, Archives, University of Alaska Fairbanks	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 14-24mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/9, 1/100 second
Direction	northeast	
Latitude	59.52654° N	
Longitude	-135.22517° W	
Elevation	898 feet	
Notable Changes	Visible changes include construction of the railroad, growth of vegetation along the railroad and cliff, and upslope advance of vegetation on the hillside in the background.	

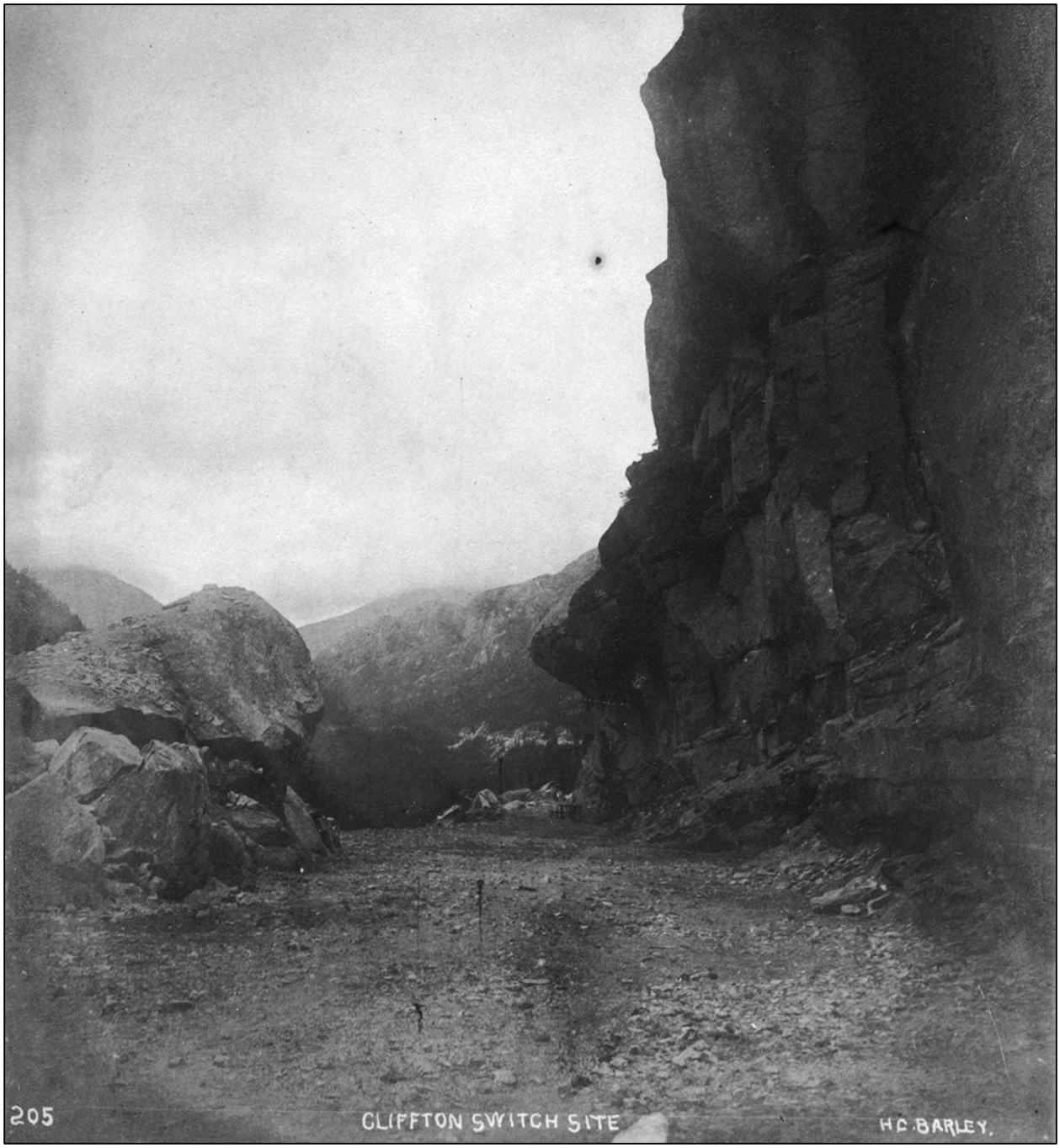

Figure 209. Photo Station WP-11: Clifton, late August 1898 by H.C. Barley. View to the northeast before the tracks were laid at the Clifton switch site on the WP&YR Railway, Alaska. Credit: H.C. Barley Photographs, UAF-2008-72-14, Archives, University of Alaska Fairbanks.

Figure 210. Photo Station WP-11: Clifton, August 3, 2014 R.D. Karpilo Jr. View to the northeast of the Clifton switch site on the WP&YR Railway, Alaska.

Figure 211. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

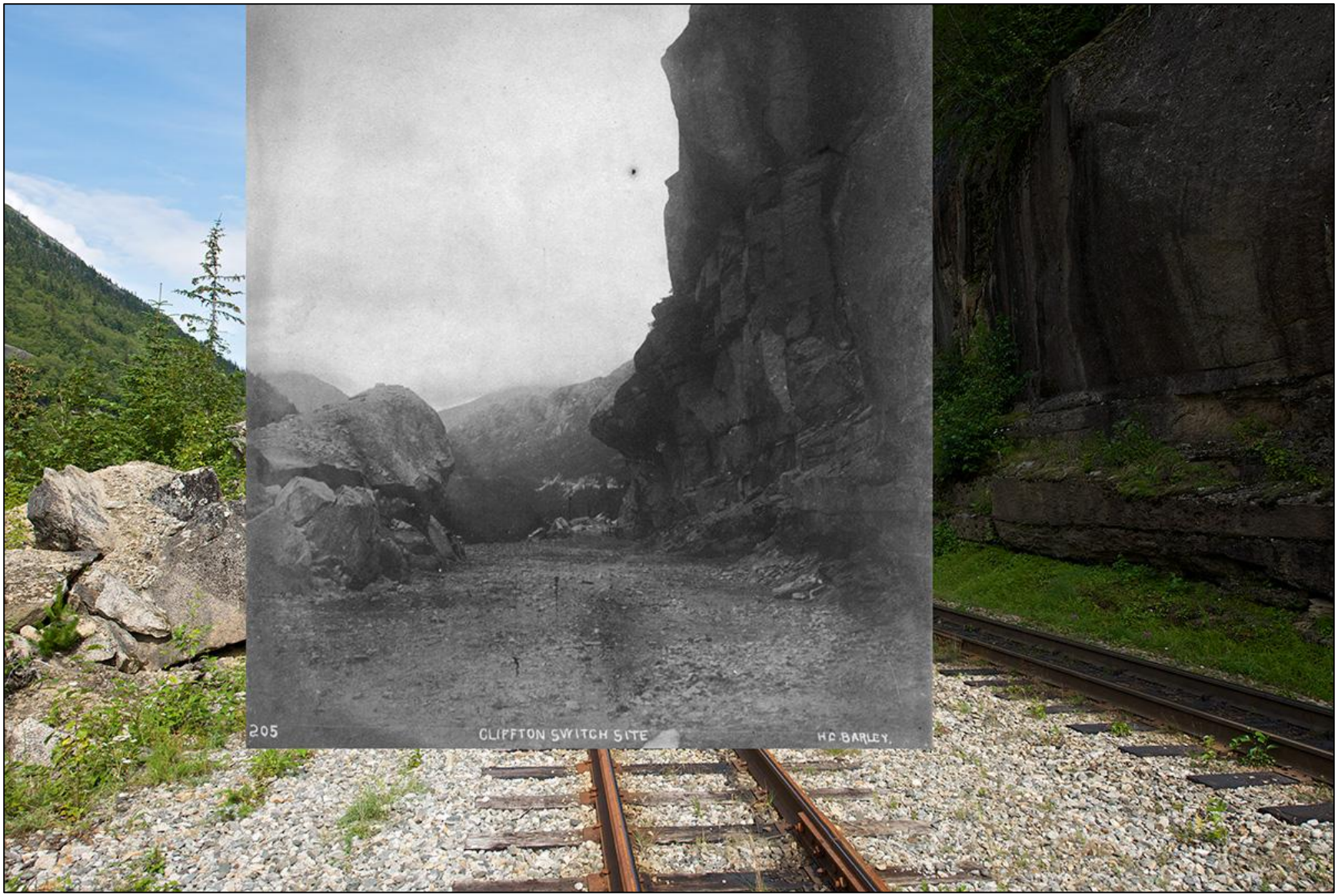

Figure 212. August 1898 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 34 – Clifton (Photo Station WP-12)

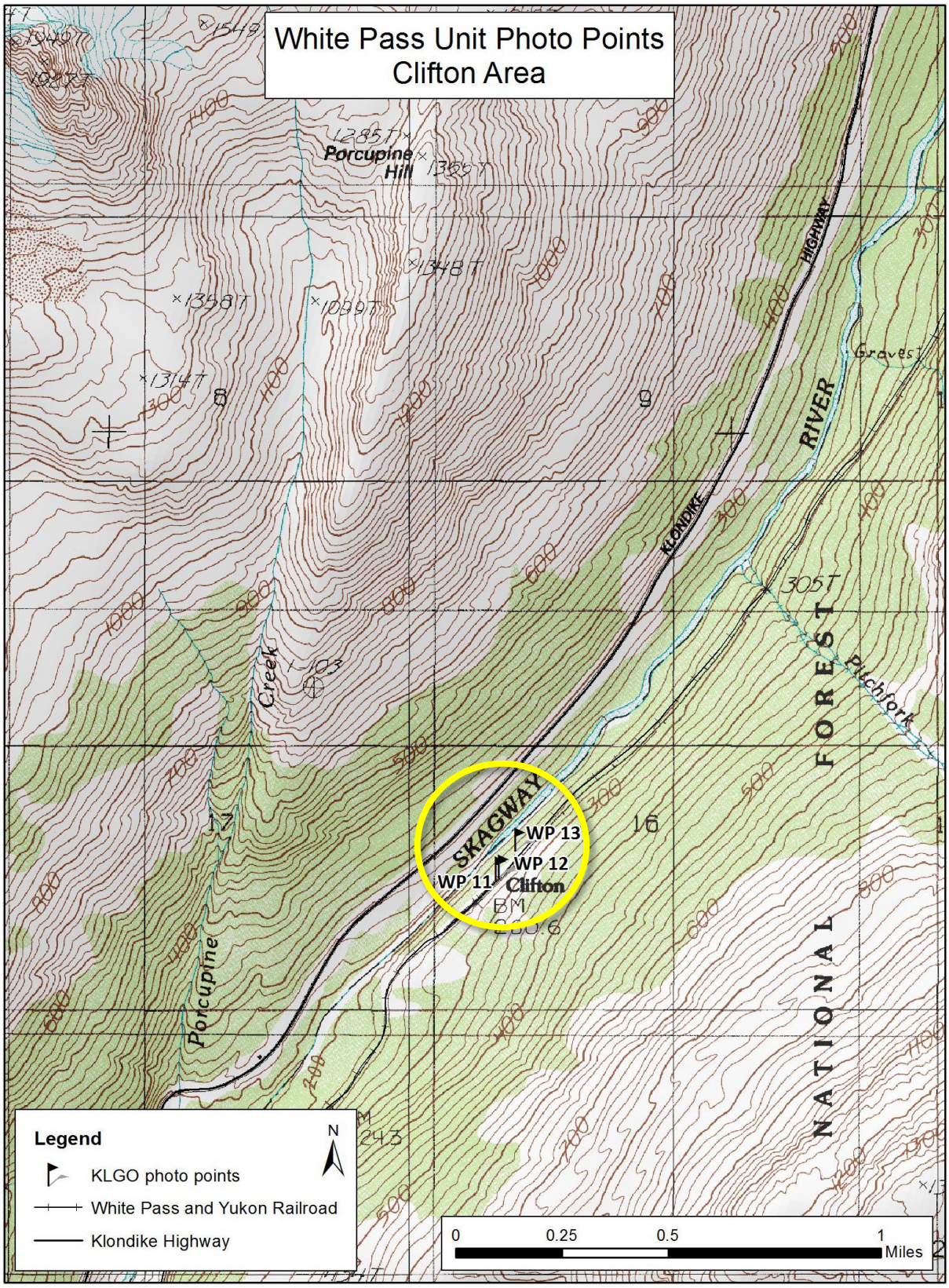

Figure 213. Detail map showing the location of photo station WP-12 in the Clifton area.

Figure 214. Reference photo looking north showing the location of Photo Station WP-12. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks at Clifton on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 37. Photo Station WP-12 Metadata.

Photo Station WP-12	**Historic Photo**	**Repeat Photo**
Date	c. 1899	August 3, 2014
Time	unknown	2:30:10 PM AKDT
Photographer	E.A. Hegg	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140803-01948
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Hegg 44	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/13, 1/80 second
Direction	northeast	
Latitude	59.5266° N	
Longitude	-135.22496° W	
Elevation	900 feet	
Notable Changes	Visible changes include removal of walkway and railing along the track, growth of alder, spruce and other vegetation adjacent to the railroad track, and noticeable upslope advance of vegetation on the hillside in the background.	

Figure 215. Photo Station WP-12: Clifton, c. 1899 by E.A. Hegg. View to the northeast of Clifton on the WP&YR Railway, Alaska. Credit: University of Washington Libraries, Special Collections, Hegg 44.

Figure 216. Photo Station WP-12: Clifton, August 3, 2014 R.D. Karpilo Jr. View to the northeast of the Clifton switch site on the WP&YR Railway, Alaska.

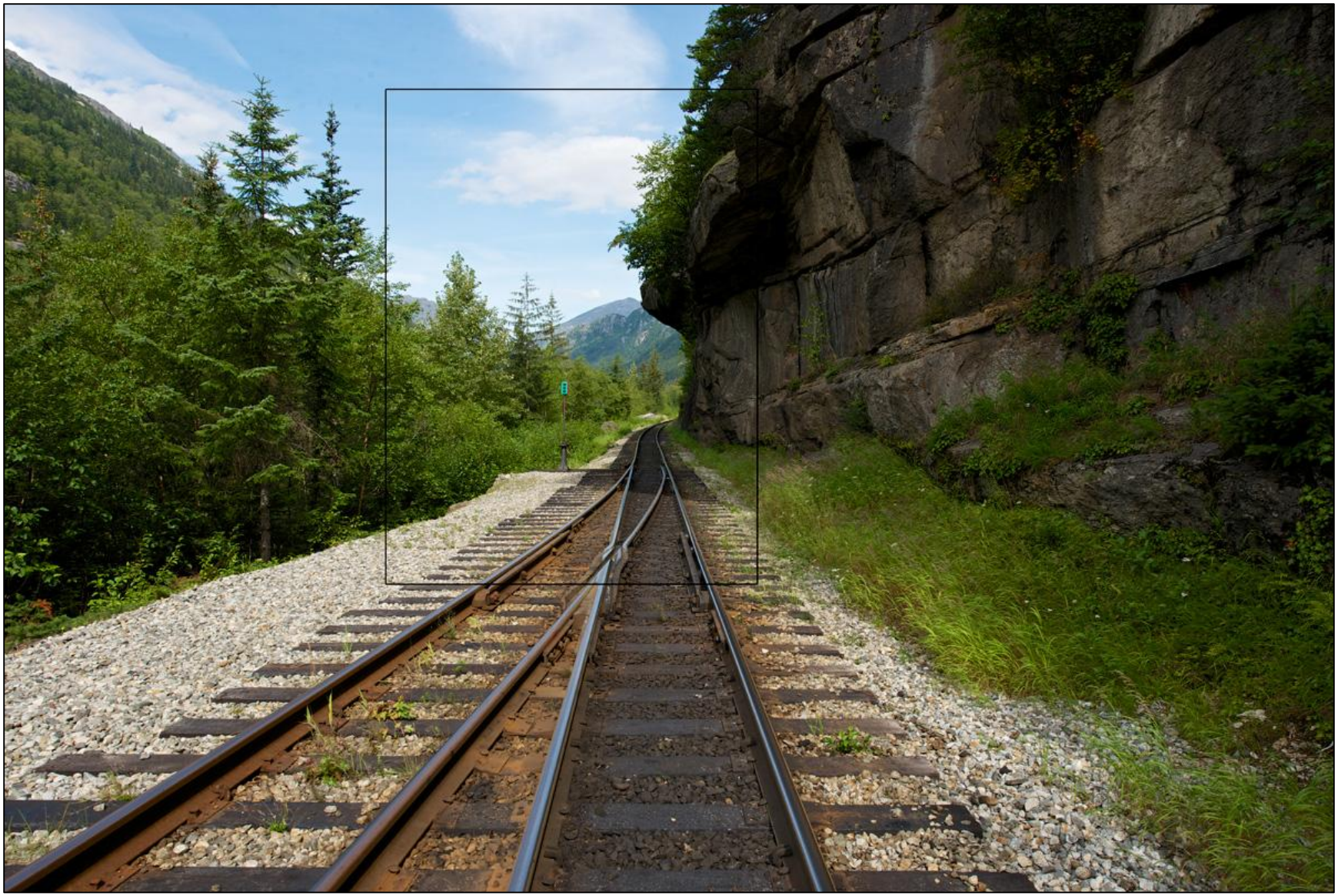

Figure 217. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

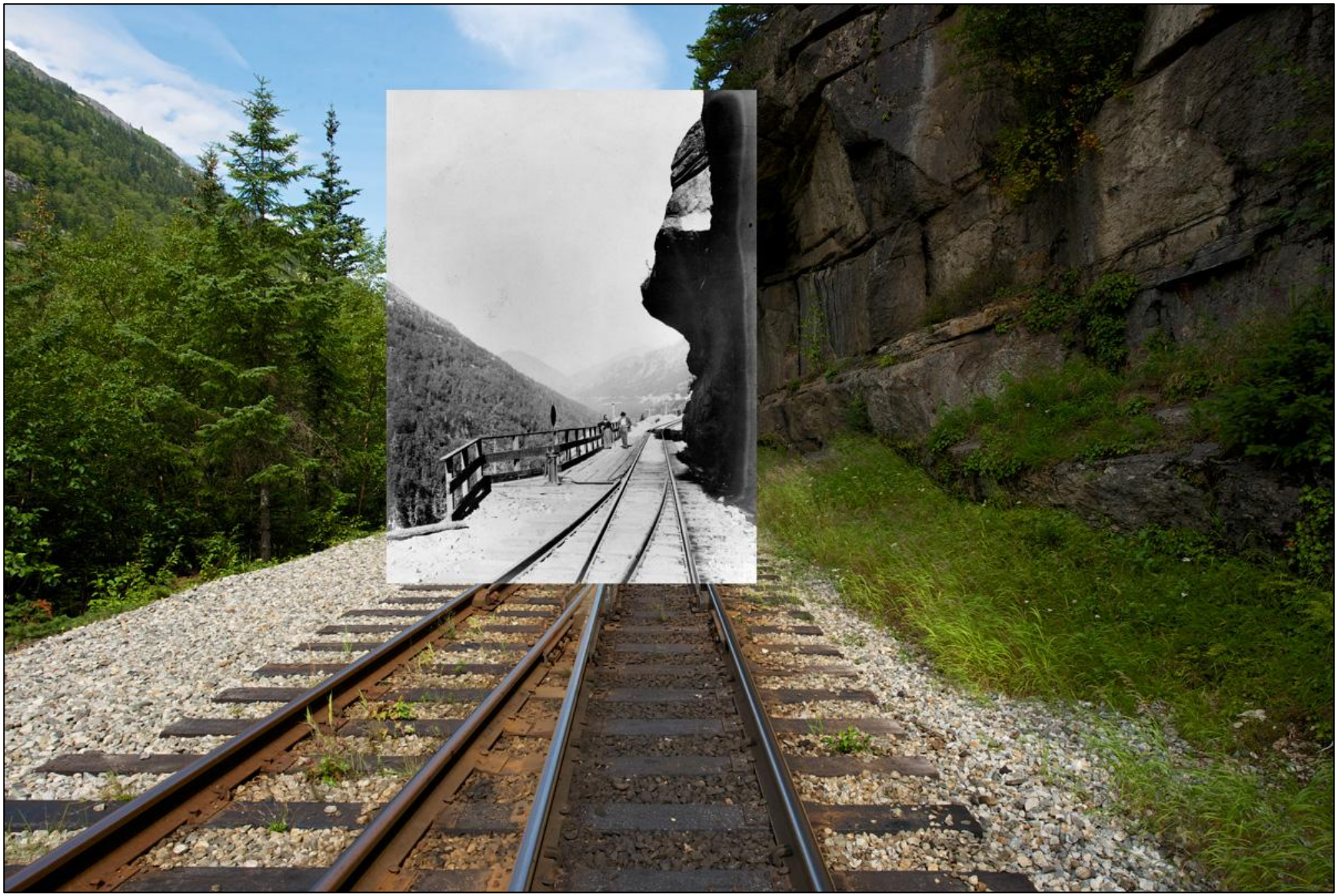

Figure 218. c. 1899 image by Hegg overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 35 – Clifton (Photo Station WP-13)

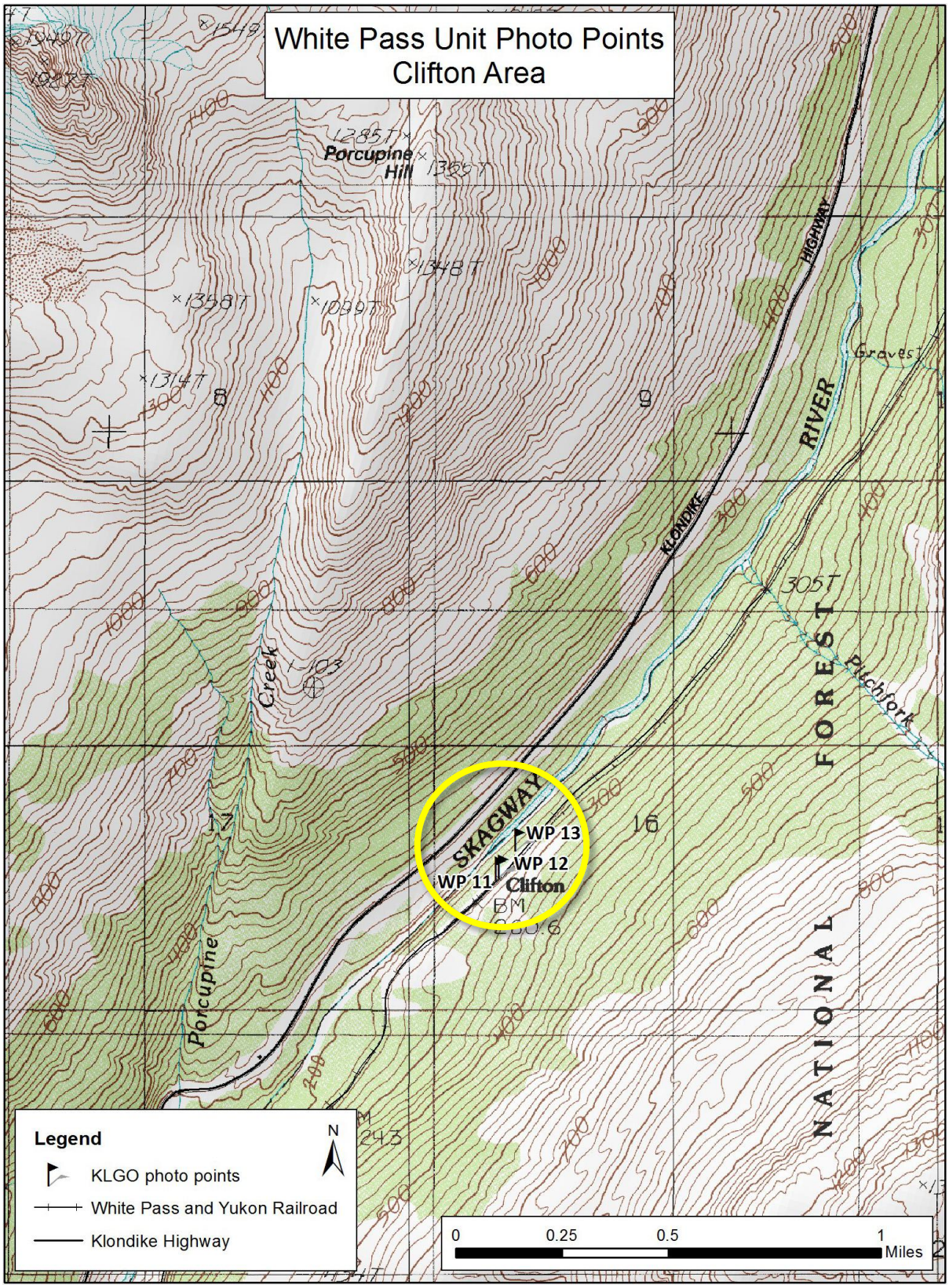

Figure 219. Detail map showing the location of photo station WP-13 in the Clifton area.

Figure 220. Reference photo looking south showing the location of Photo Station WP-13. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the east side of the train tracks north of Clifton on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 38. Photo Station WP-13 Metadata.

Photo Station WP-13	Historic Photo	Repeat Photo
Date	c. 1899	August 10, 2014
Time	unknown	9:56:16 AM AKDT
Photographer	E.A. Hegg	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140810-00839
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Hegg B318	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/9, 1/60 second
Direction	southwest	
Latitude	59.52751° N	
Longitude	-135.22386° W	
Elevation	912 feet	
Notable Changes	Visible changes include removal of the walkway, railing, and telegraph line along the track; growth vegetation on the previously bare cliff; and growth of alder, spruce and other vegetation adjacent to the railroad tracks.	

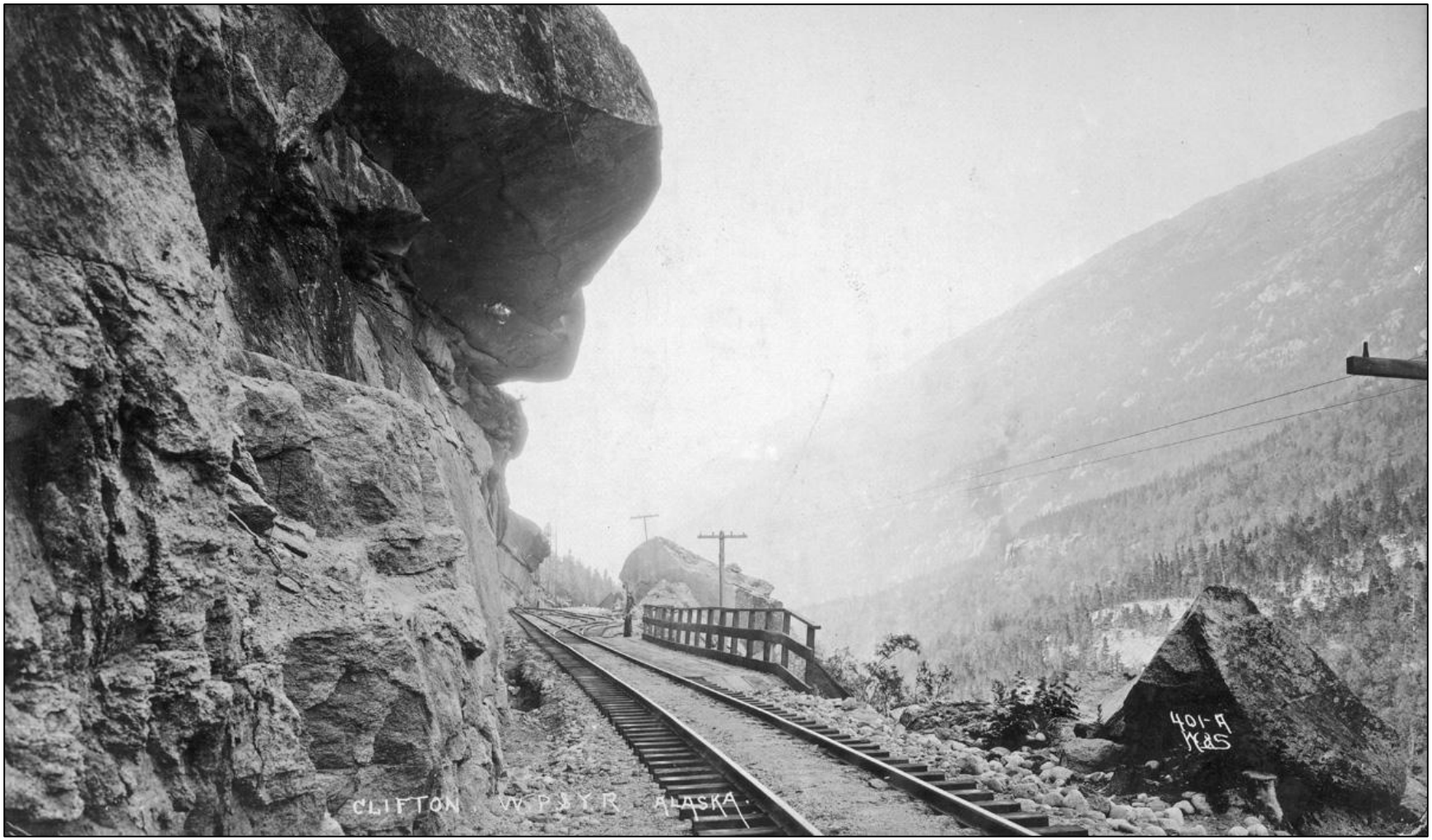

Figure 221. Photo Station WP-13: Clifton, c. 1899 by E.A. Hegg. View to the south of the Clifton switch site on the WP&YR Railway, Alaska. Credit: University of Washington Libraries, Special Collections, Hegg B318.

Figure 222. Photo Station WP-13: Clifton, August 10, 2014 R.D. Karpilo Jr. View to the south of the Clifton switch site on the WP&YR Railway, Alaska.

Figure 223. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 224. c. 1899 image by Hegg overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 36 – Heney (Photo Station WP-14)

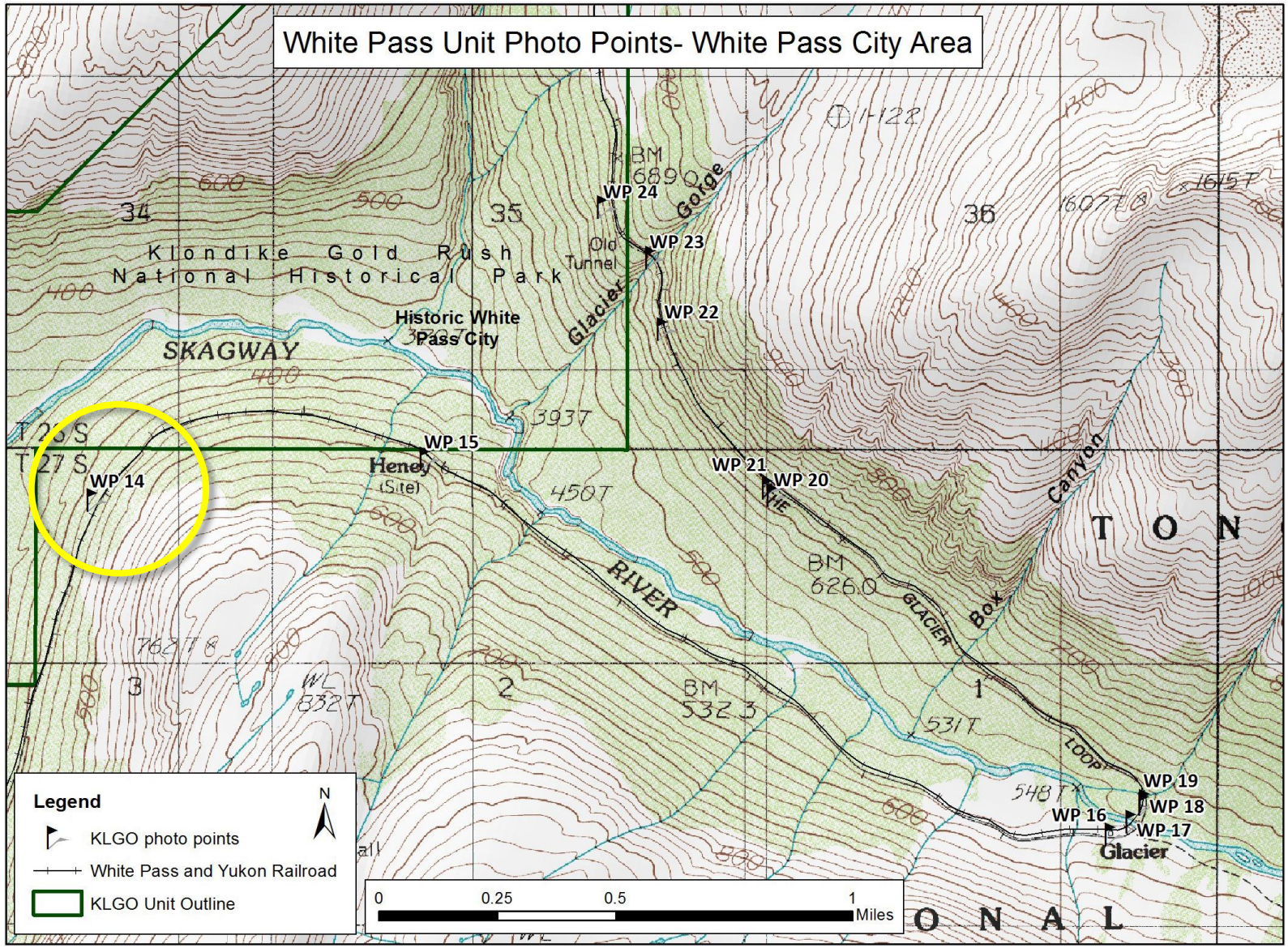

Figure 225. Detail map showing the location of photo station WP-14 in the White Pass City area.

Figure 226. Reference photo looking southwest showing the location of Photo Station WP-14. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks near Heney on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar. The repeat photo was taken from the railroad motorcar.

Table 39. Photo Station WP-14 Metadata.

Photo Station WP-14	Historic Photo	Repeat Photo
Date	June 1904	August 10, 2014
Time	unknown	9:40:35 AM AKDT
Photographer	S. Paige	R.D. Karpilo Jr.
Photo Number	Paige #206	Karpilo #20140810-00778
Photo Credit	Suggested Credit: Sidney Paige, U.S. Geological Survey	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 250, f/10, 1/160 second
Direction	northwest	
Latitude	59.56272° N	
Longitude	-135.18365° W	
Elevation	1,435 feet	
Notable Changes	Visible changes include thickening of vegetation in the valley bottom, surrounding slopes, and around Bridal Veil Falls. Cultural changes include construction of the Klondike Highway.	

Figure 227. Photo Station WP-14: Heney, June 1904 by S. Paige. View to the northwest of Bridal Veil Falls from west of Heney on the WP&YR Railway, Alaska. Credit: Sidney Paige, U.S. Geological Survey.

Figure 228. Photo Station WP-14: Heney, August 10, 2014 R.D. Karpilo Jr. View to the northwest of Bridal Veil Falls from west of Heney on the WP&YR Railway, Alaska.

Figure 229. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 230. June 1904 image by Paige overlaid on the full uncropped version of image by Karpilo.

KLGO Photo Pair 37 – Heney (Photo Station WP-15)

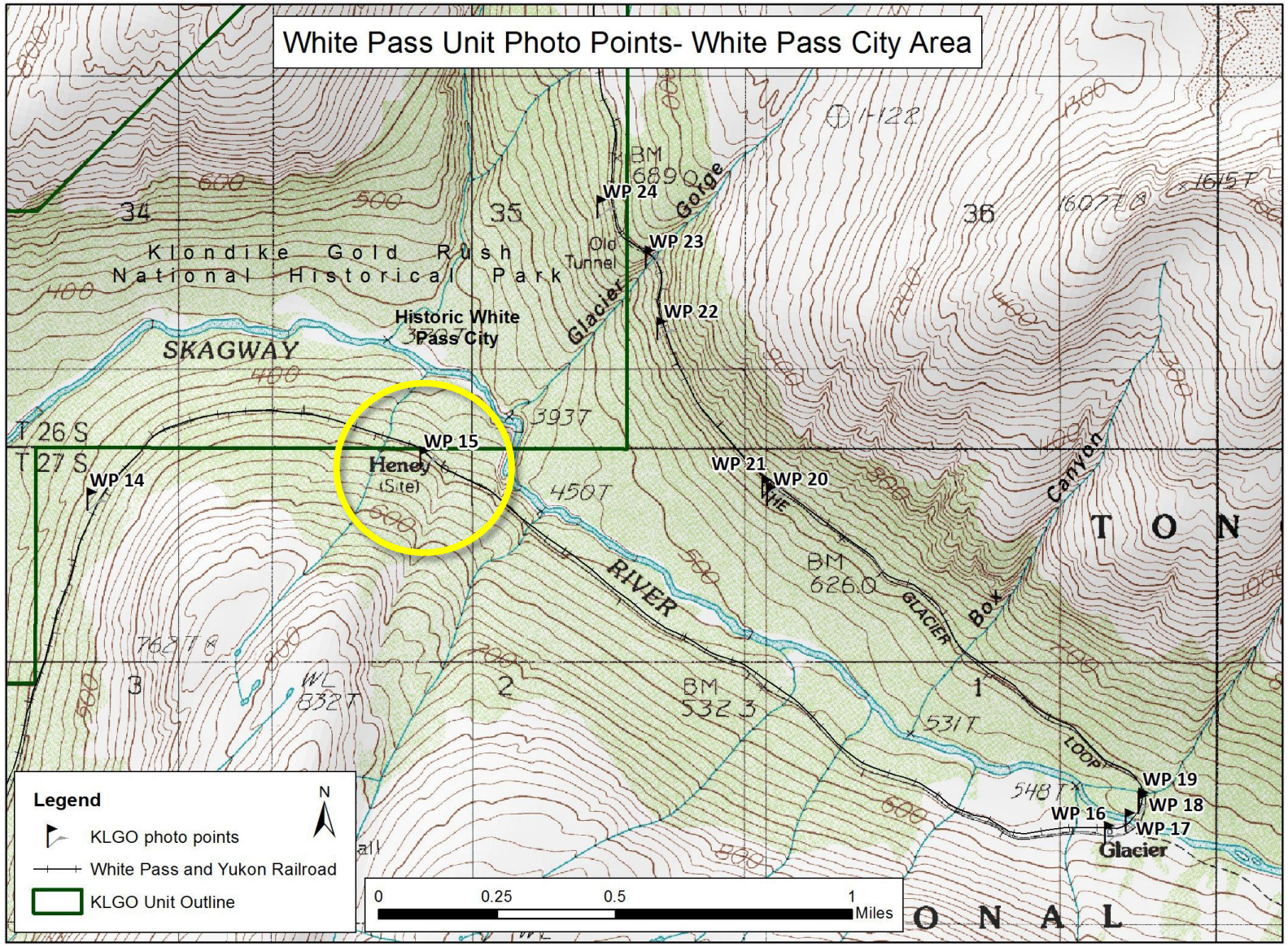

Figure 231. Detail map showing the location of photo station WP-15 in the Heney area.

Figure 232. Reference photo looking west showing the location of Photo Station WP-15. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks near Heney on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar. The repeat photo was taken from the railroad motorcar.

Table 40. Photo Station WP-15 Metadata.

Photo Station WP-15	Historic Photo	Repeat Photo
Date	unknown	August 10, 2014
Time	unknown	9:29:35 AM AKDT
Photographer	unknown	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140810-00692
Photo Credit	Required Credit: Image E-5463 courtesy of the Royal BC Museum and Archives,	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 200, f/10, 1/60 second
Direction	north	
Latitude	59.56401° N	
Longitude	-135.16362° W	
Elevation	1,596 feet	
Notable Changes	Visible changes include reforestation in the White Pass City area and a general thickening and upslope advance of vegetation.	

Figure 233. Photo Station WP-15: Heney, unknown date by an unknown photographer. View north of White Pass City on the WP&YR Railway, Alaska. Credit: Image E-5463 courtesy of the Royal BC Museum and Archives.

Figure 234. Photo Station WP-15: Heney, August 10, 2014 R.D. Karpilo Jr. View to the north of the former site of White Pass City from Heney on the WP&YR Railway, Alaska.

Figure 235. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 236. Historic image overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 38 – Glacier Station (Photo Station WP-16)

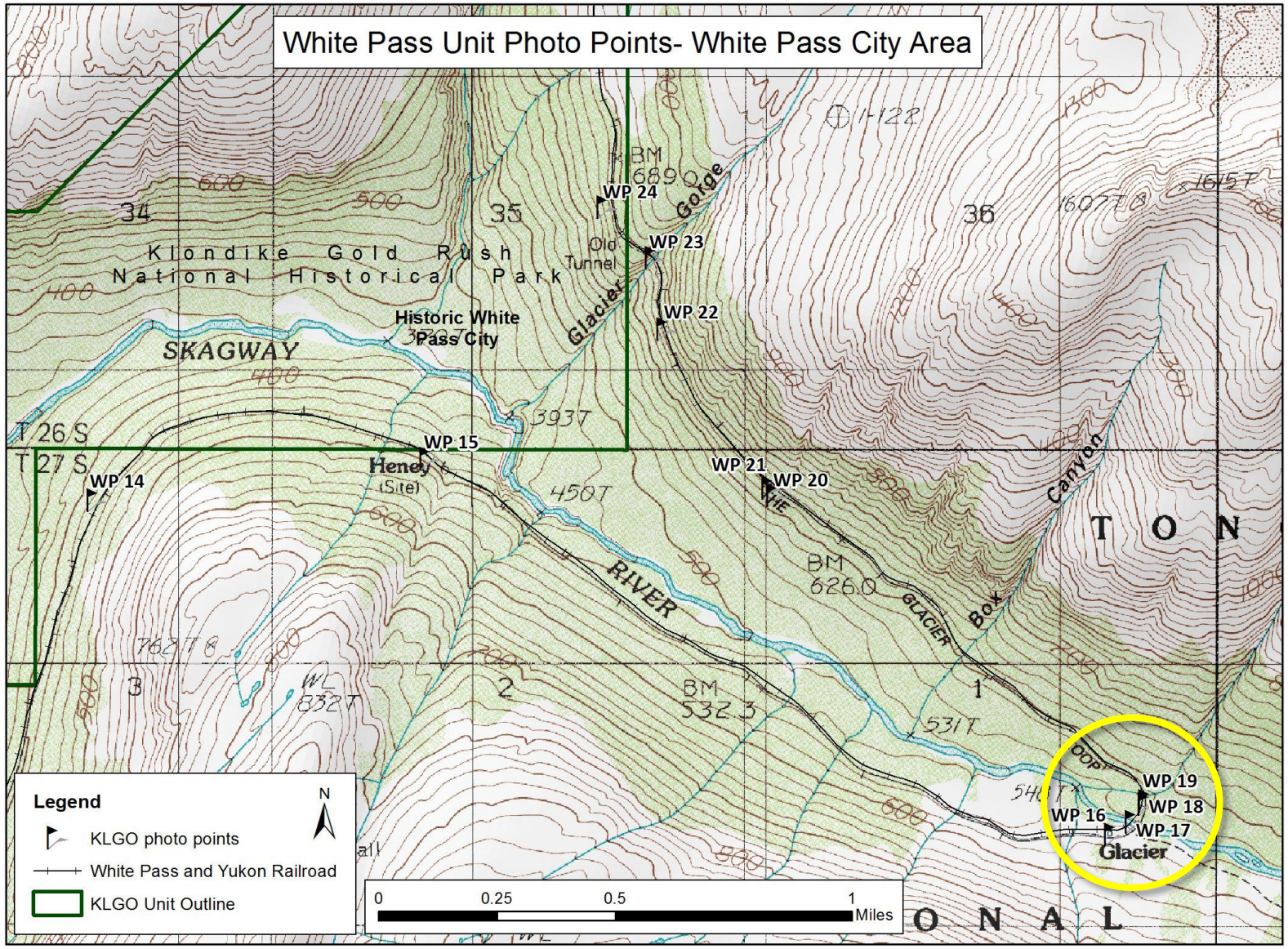

Figure 237. Detail map showing the location of photo station WP-16 in the Glacier Station area.

Figure 238. Reference photo looking south showing the location of Photo Station WP-16. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks at Glacier Station on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 41. Photo Station WP-16 Metadata.

Photo Station WP-16	Historic Photo	Repeat Photo
Date	c. 1899	August 10, 2014
Time	unknown	8:54:42 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #34	Karpilo #20140810-00594
Photo Credit	Suggested Credit: Courtesy of Candy Waugaman	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 250, f/10, 1/100 second
Direction	east	
Latitude	59.55257° N	
Longitude	-135.12235° W	
Elevation	1,898 feet	
Notable Changes	Visible changes include an increase in density of vegetation and upslope advance of several hundred feet of spruce, alder, and other vegetation. There is a noticeable increase in deciduous vegetation present in the area. In addition the wooden train trestle was upgraded to a combination wood and steel trestle.	

Figure 239. Photo Station WP-16: Glacier Station, c. 1899 by H.C. Barley. View to the east of a train crossing the trestle over the Skagway River on the WP&YR Railway at Glacier Station, Alaska. Credit: Courtesy of Candy Waugaman.

Figure 240. Photo Station WP-16: Glacier Station, August 10, 2014 R.D. Karpilo Jr. View to the east of the trestle over the Skagway River on the WP&YR Railway at Glacier Station, Alaska.

Figure 241. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 242. c. 1899 image by Barley overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 39 – Glacier Station (Photo Station WP-17)

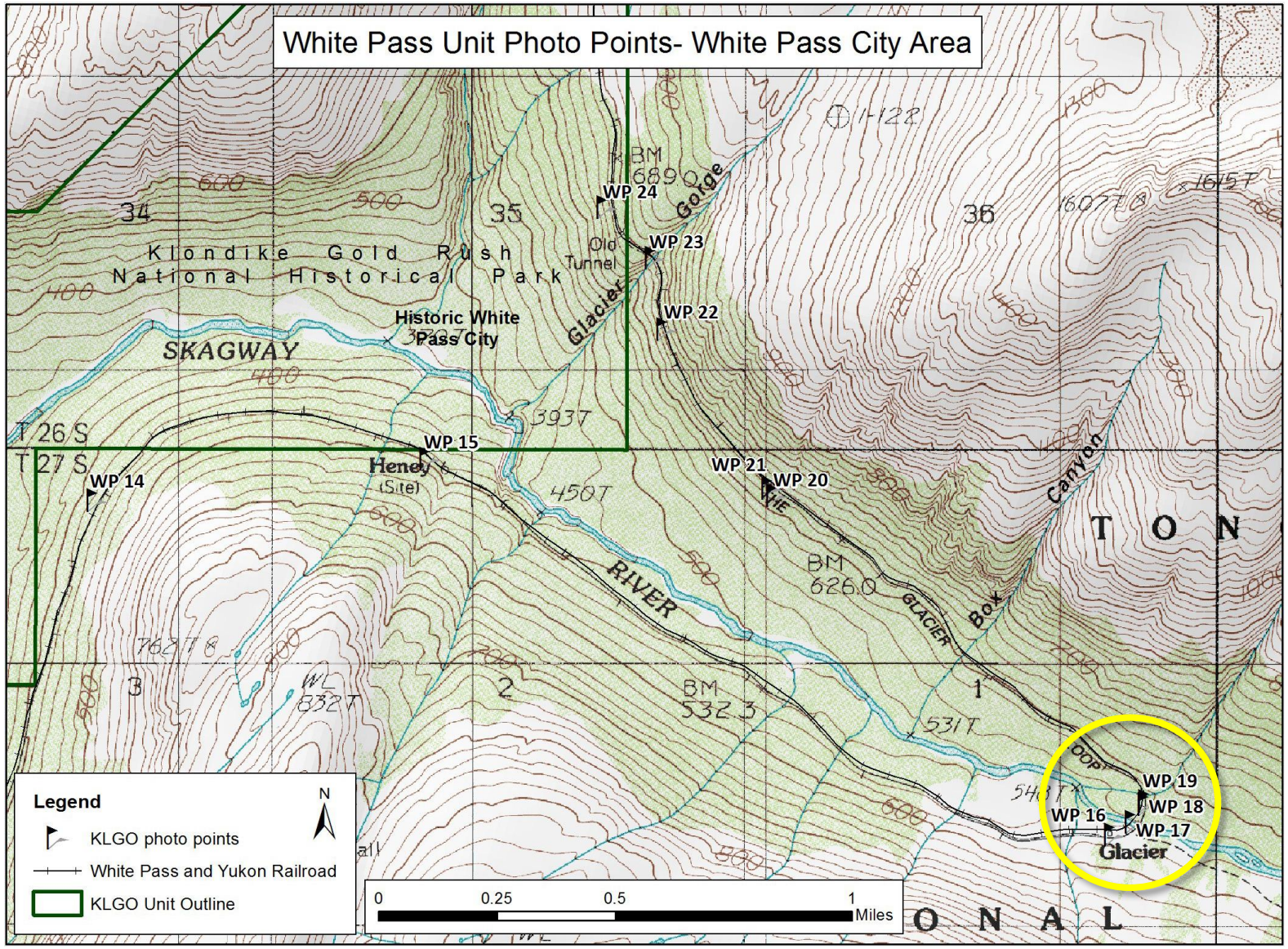

Figure 243. Detail map showing the location of photo station WP-17 in the Glacier Station area.

Figure 244. Reference photo looking south showing the location of Photo Station WP-17. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the railroad trestle at Glacier Station on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar. The repeat photo was taken from the railroad motorcar.

Table 42. Photo Station WP-17 Metadata.

Photo Station WP-17	Historic Photo	Repeat Photo
Date	c. 1899	August 10, 2014
Time	unknown	8:40:25 AM AKDT
Photographer	F.A. Callarman	R.D. Karpilo Jr.
Photo Number	Callarman #821	Karpilo #20140810-00474
Photo Credit	Required Credit: Yukon Archives, H.C. Barley Collection, #5437	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/10, 1/100 second
Direction	southeast	
Latitude	59.55296° N	
Longitude	-135.12108° W	
Elevation	1,902 feet	
Notable Changes	Visible changes include a general increase in height of spruce trees, an increase in density of vegetation, and upslope advance of vegetation onto the previously bare bedrock areas on the slope in the background.	

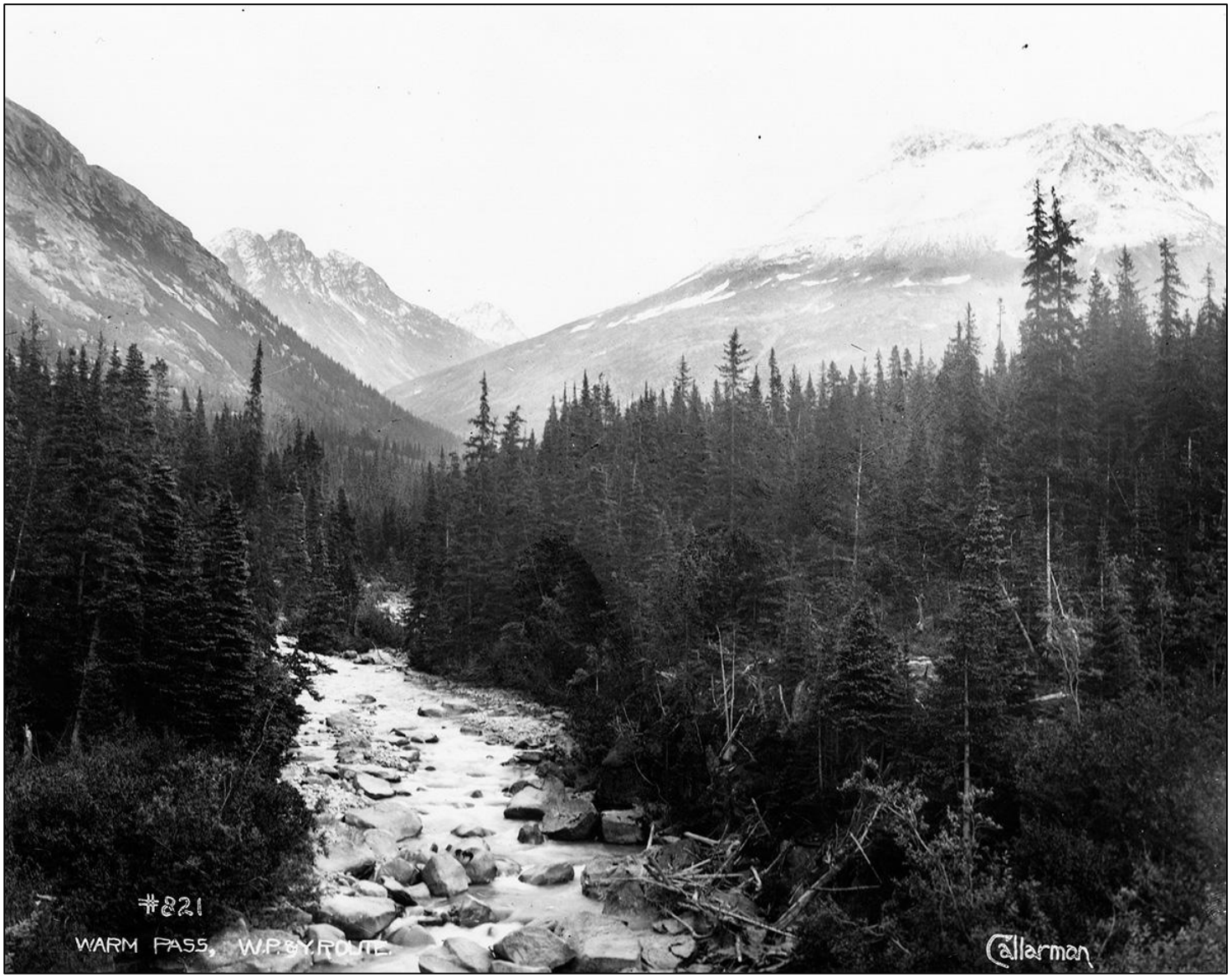

Figure 245. Photo Station WP-17: Glacier Station, c. 1899 by F.A. Callarman. View to the east of the Skagway River and Warm Pass Valley from the trestle on the WP&YR Railway at Glacier Station, Alaska. Credit: Yukon Archives, H.C. Barley Collection, #5437.

Figure 246. Photo Station WP-17: Glacier Station, August 10, 2014 R.D. Karpilo Jr. View to the east of the Skagway River and Warm Pass Valley from the trestle on the WP&YR Railway at Glacier Station, Alaska.

Figure 247. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 248. c. 1899 image by Callarman overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 40 – Glacier Station (Photo Station WP-18)

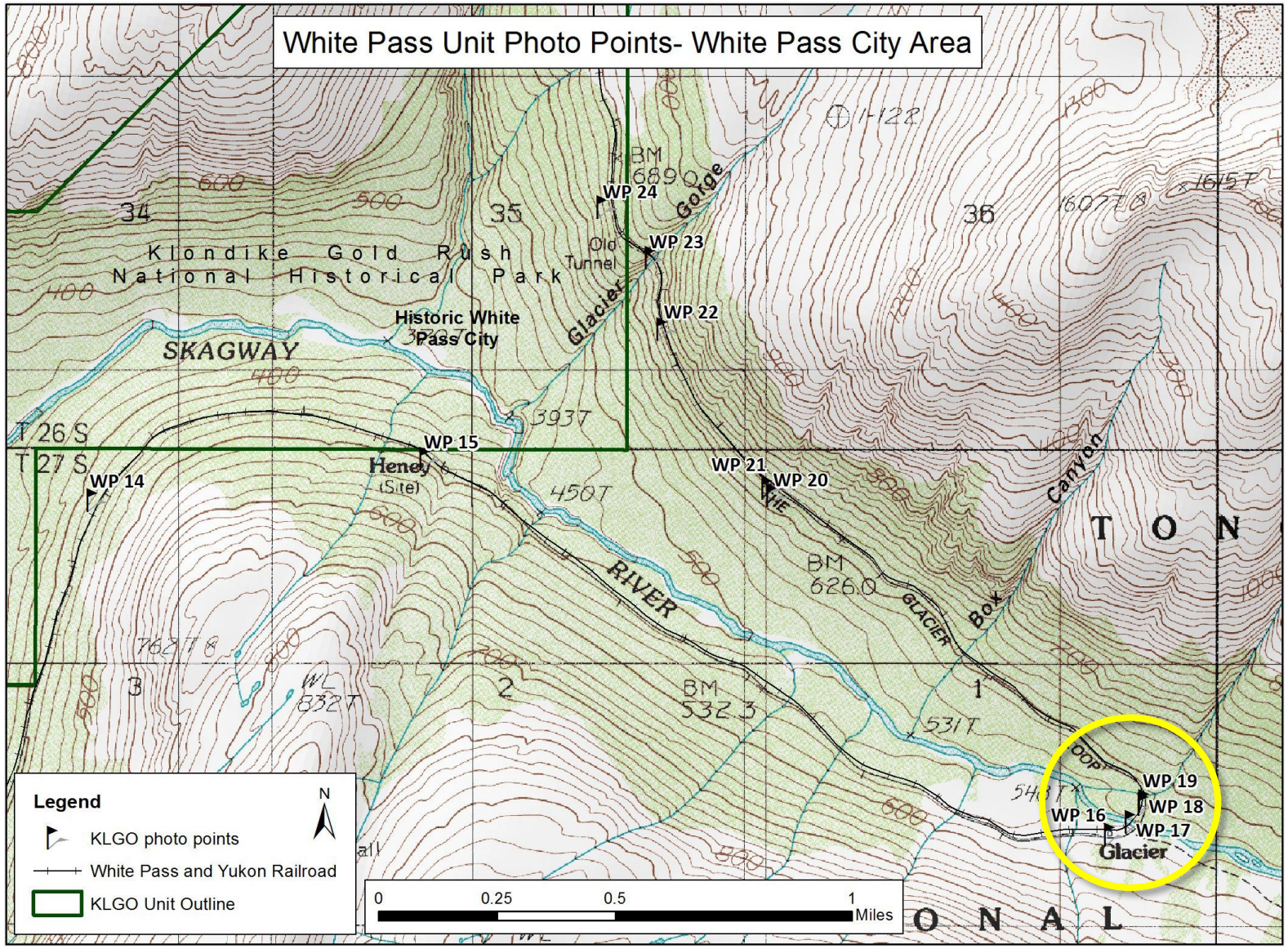

Figure 249. Detail map showing the location of photo station WP-18 in the Glacier Station area.

Figure 250. Reference photo looking south showing the location of Photo Station WP-18. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks at Glacier Station on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 43. Photo Station WP-18 Metadata.

Photo Station WP-18	Historic Photo	Repeat Photo
Date	August 16, 1899	August 10, 2014
Time	unknown	8:36:59 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #526	Karpilo #20140810-00449
Photo Credit	Required Credit: University of Washington Libraries, Edith Feero Larson Collection, 26312	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/9, 1/80 second
Direction	southwest	
Latitude	59.5535° N	
Longitude	-135.12033° W	
Elevation	1,916 feet	
Notable Changes	Visible changes include reforestation of the area cleared for railroad construction, an increase in density of spruce, alder, and other vegetation along the Skagway River and on the slope behind Glacier Station. In addition the wooden train trestle was upgraded to a combination wood and steel trestle and several buildings were removed.	

Figure 251. Photo Station WP-18: Glacier Station, August 16, 1899 by H.C. Barley. View to the southwest of a train on the WP&YR Railway at Glacier Station, Alaska. Credit: University of Washington Libraries, Edith Feero Larson Collection, 26312.

Figure 252. Photo Station WP-18: Glacier Station, August 10, 2014 R.D. Karpilo Jr. View to the southwest from the east side of the track of the trestle over the Skagway River on the WP&YR Railway at Glacier Station, Alaska.

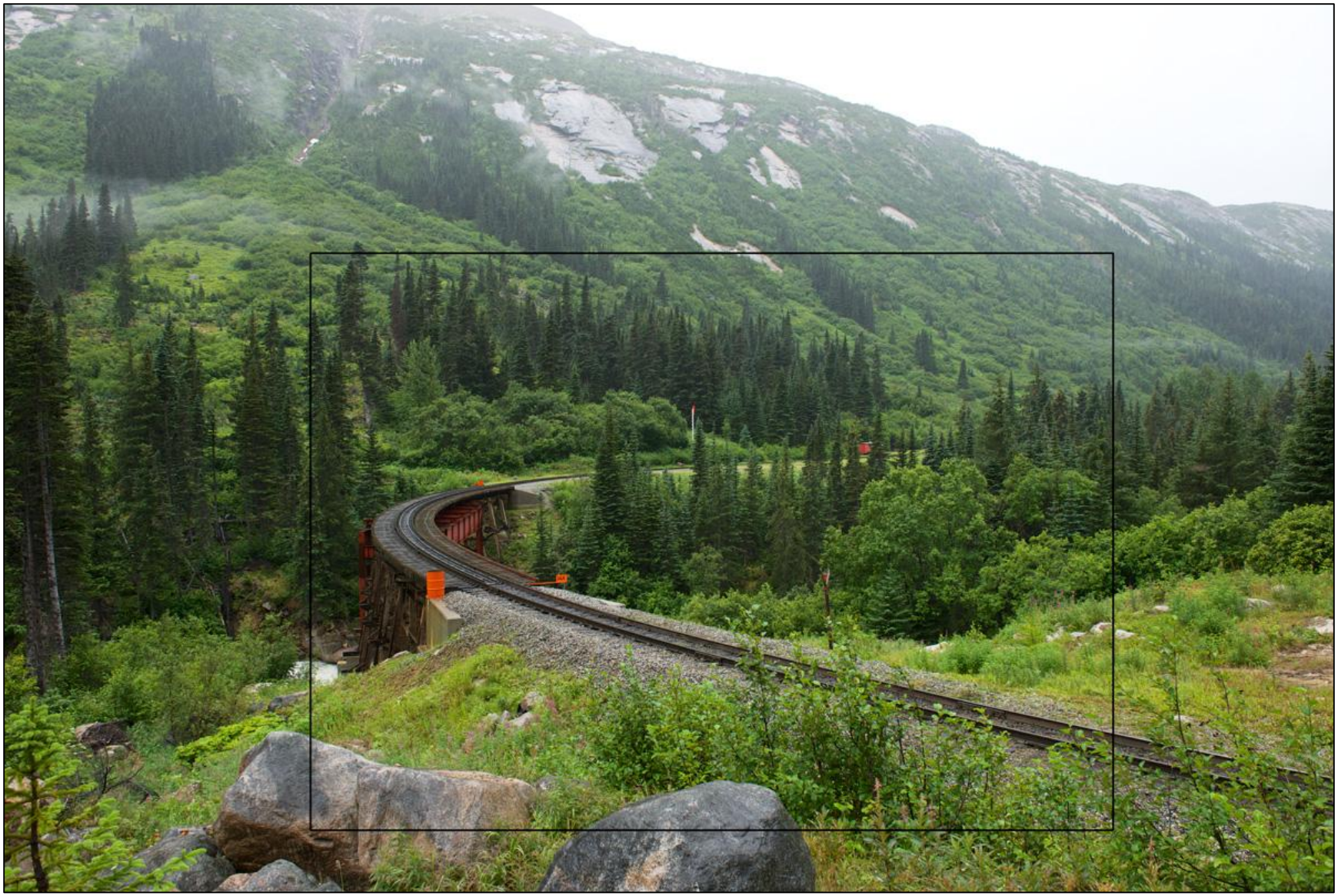

Figure 253. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 254. August 16, 1899 image by Barley overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 41 – Glacier Station (Photo Station WP-19)

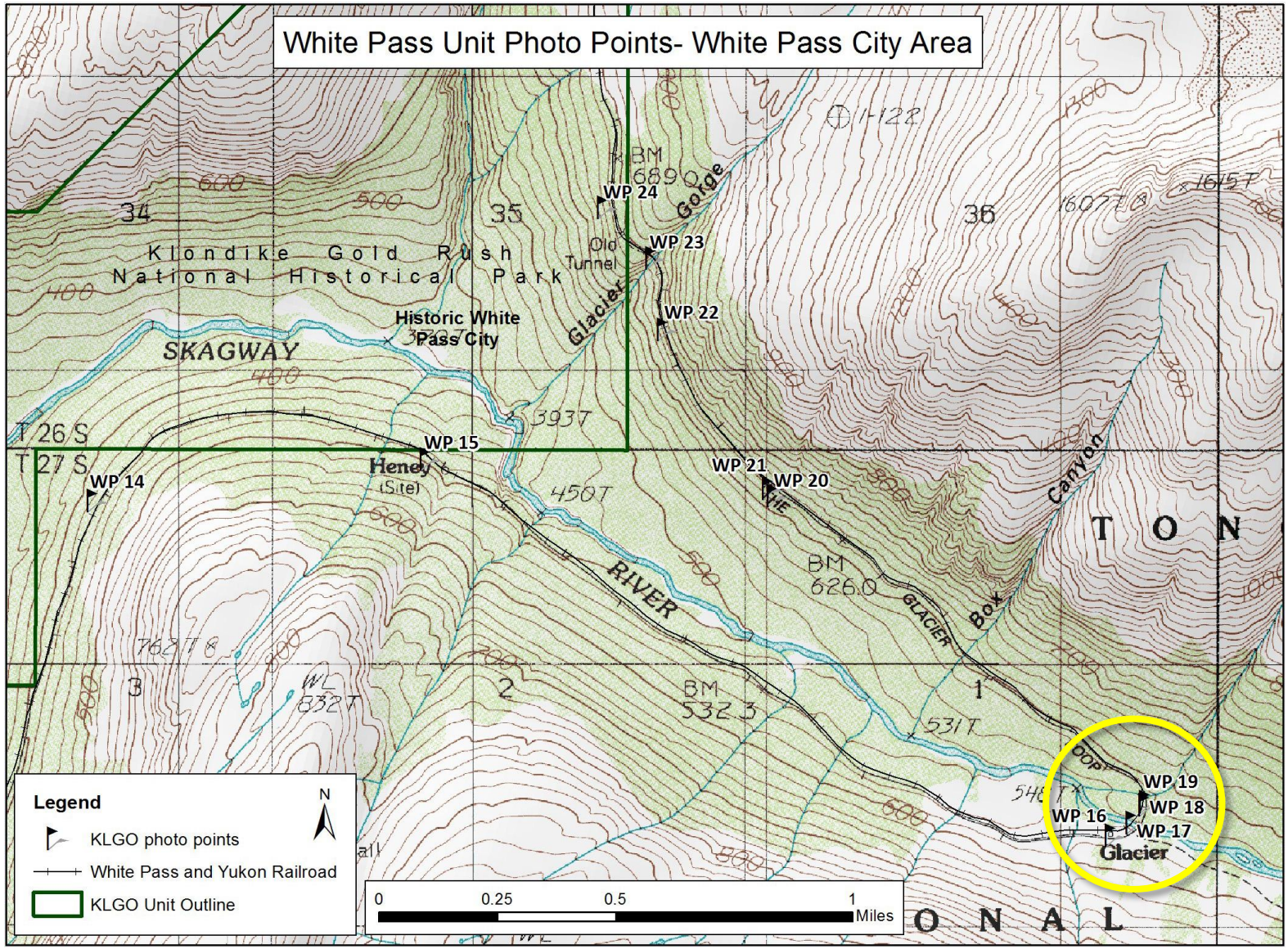

Figure 255. Detail map showing the location of photo station WP-19 in the Glacier Station area.

Figure 256. Reference photo looking south showing the location of Photo Station WP-19. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks at Glacier Station on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 44. Photo Station WP-19 Metadata.

Photo Station WP-19	Historic Photo	Repeat Photo
Date	1908	August 10, 2014
Time	unknown	8:34:54 AM AKDT
Photographer	unknown	R.D. Karpilo Jr.
Photo Number		Karpilo #20140810-00425
Photo Credit	Required Credit: Image I-56960 courtesy of the Royal BC Museum and Archives	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 500, f/11, 1/80 second
Direction	northwest	
Latitude	59.5536° N	
Longitude	-135.12029° W	
Elevation	1,923 feet	
Notable Changes	Visible changes include reforestation of the area cleared for railroad construction and burn area, an increase in deciduous species, and an increase in the density and size of spruce trees. In addition the water storage structure was removed.	

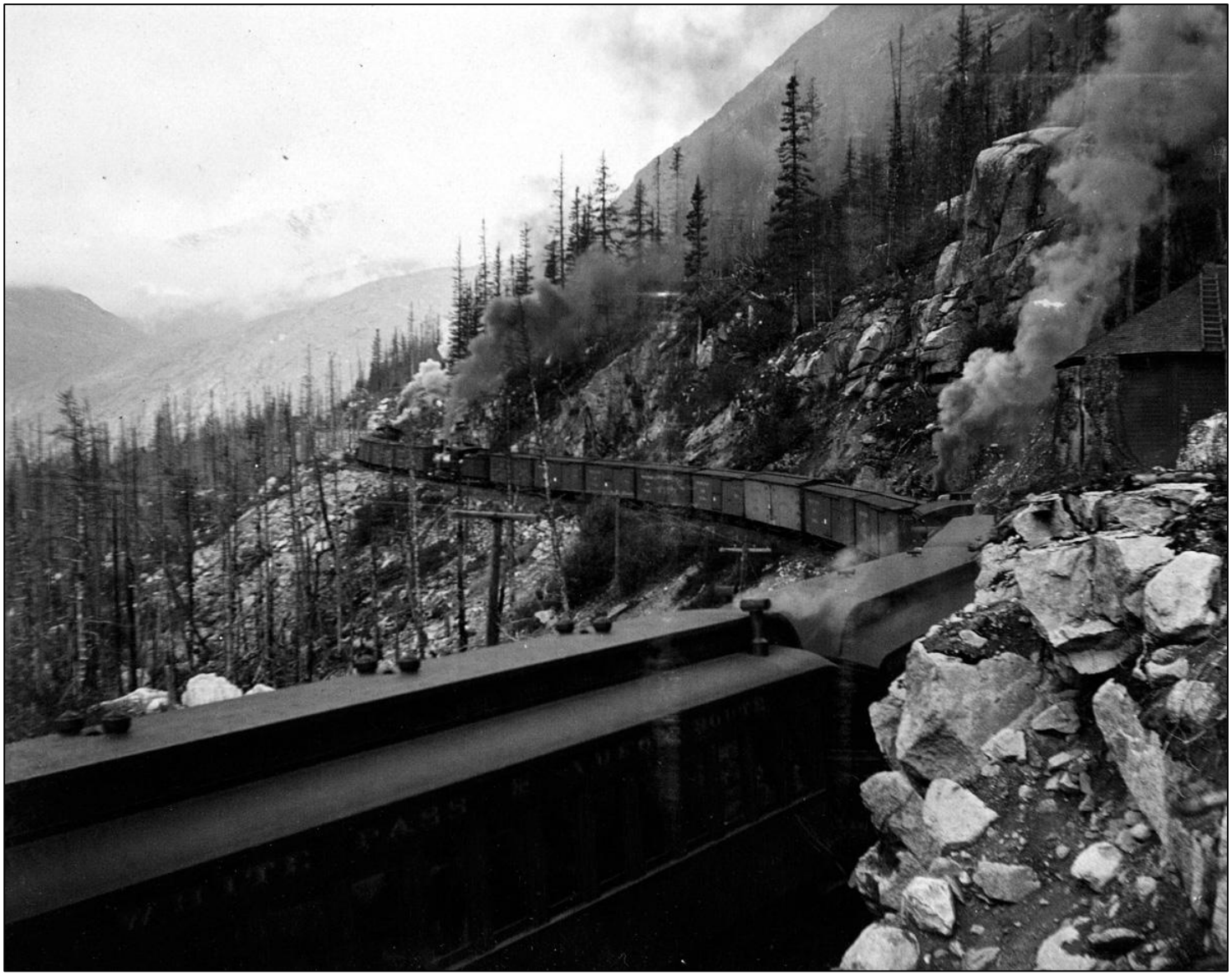

Figure 257. Photo Station WP-19: Glacier Station, 1908 by unknown photographer. View to the northwest of a train rounding a corner on the WP&YR Railway north of Glacier Station, Alaska. Credit: Image I-56960 courtesy of the Royal BC Museum and Archives.

Figure 258. Photo Station WP-19: Glacier Station, August 10, 2014 R.D. Karpilo Jr. View to the northwest of a railroad motorcar on the WP&YR Railway north of Glacier Station, Alaska..

Figure 259. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 260. 1908 image by overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 42 – Tunnel Mountain (Photo Station WP-20)

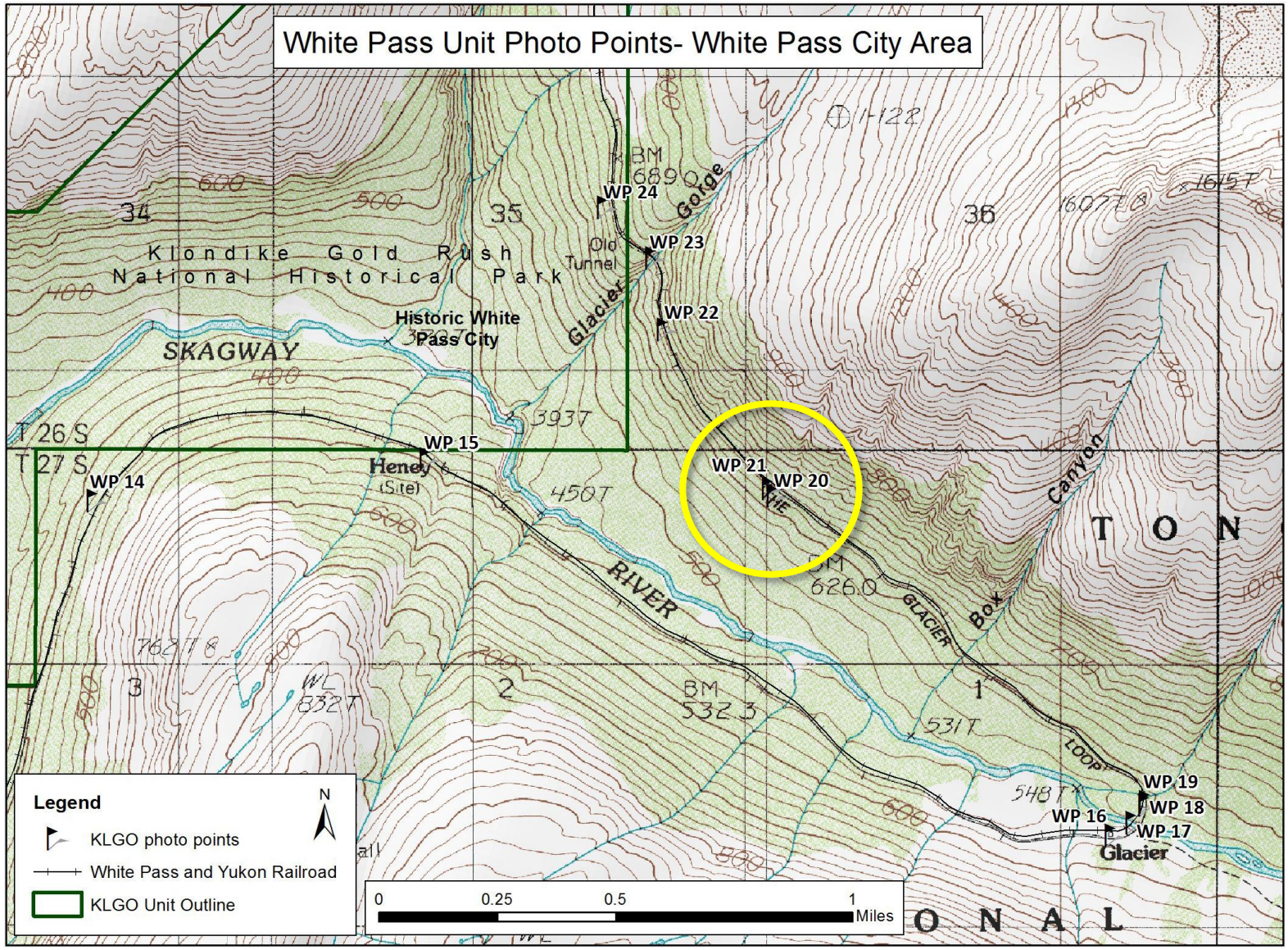

Figure 261. Detail map showing the location of photo station WP-20 in the Tunnel Mountain area.

Figure 262. Reference photo looking southeast showing the location of Photo Station WP-20. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks at Glacier Station on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 45. Photo Station WP-20 Metadata.

Photo Station WP-20	Historic Photo	Repeat Photo
Date	c. 1899	August 10, 2014
Time	unknown	7:39:51 AM AKDT
Photographer	E.A. Hegg	R.D. Karpilo Jr.
Photo Number		Karpilo #20140810-00261
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, Hegg B291	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/11, 1/50 second
Direction	southeast	
Latitude	59.56293° N	
Longitude	-135.14273° W	
Elevation	2,104 feet	
Notable Changes	Visible changes include regrowth of vegetation in the cut and fill area of the railroad right of way, recovery of the area impacted by a possible forest fire, growth of vegetation on the lateral moraine of Laughton Glacier, an increase in deciduous species, and an upslope advance of spruce trees and other vegetation. In addition, the small unnamed alpine glaciers on mountain in the background have thinned and retreated. Cultural changes include removable of wooden trestle.	

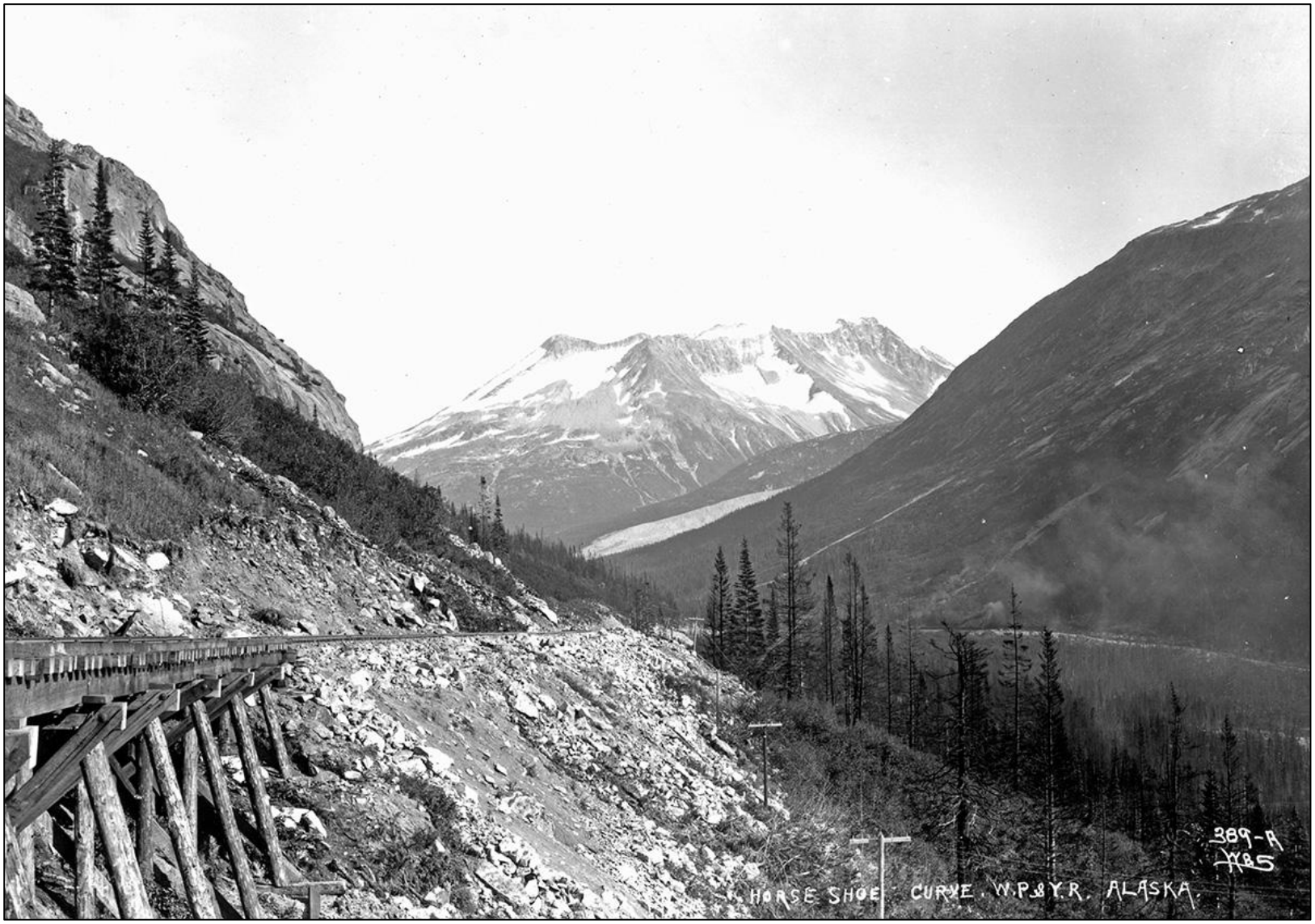

Figure 263. Photo Station WP-20: Tunnel Mountain, c. 1899 by E.A. Hegg. View to the southeast toward Glacier Station from south of Glacier Gorge on the WP&YR Railway, Tunnel Mountain, Alaska. Credit: University of Washington Libraries, Special Collections, Hegg B291.

Figure 264. Photo Station WP-20: Tunnel Mountain, August 10, 2014 R.D. Karpilo Jr. View to the southeast toward Glacier Station from south of Glacier Gorge on the WP&YR Railway, Tunnel Mountain, Alaska. The lateral moraine of Laughton Glacier is visible in the center of the image.

Figure 265. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 266. c. 1899 image by Hegg overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 43 – Tunnel Mountain (Photo Station WP-21)

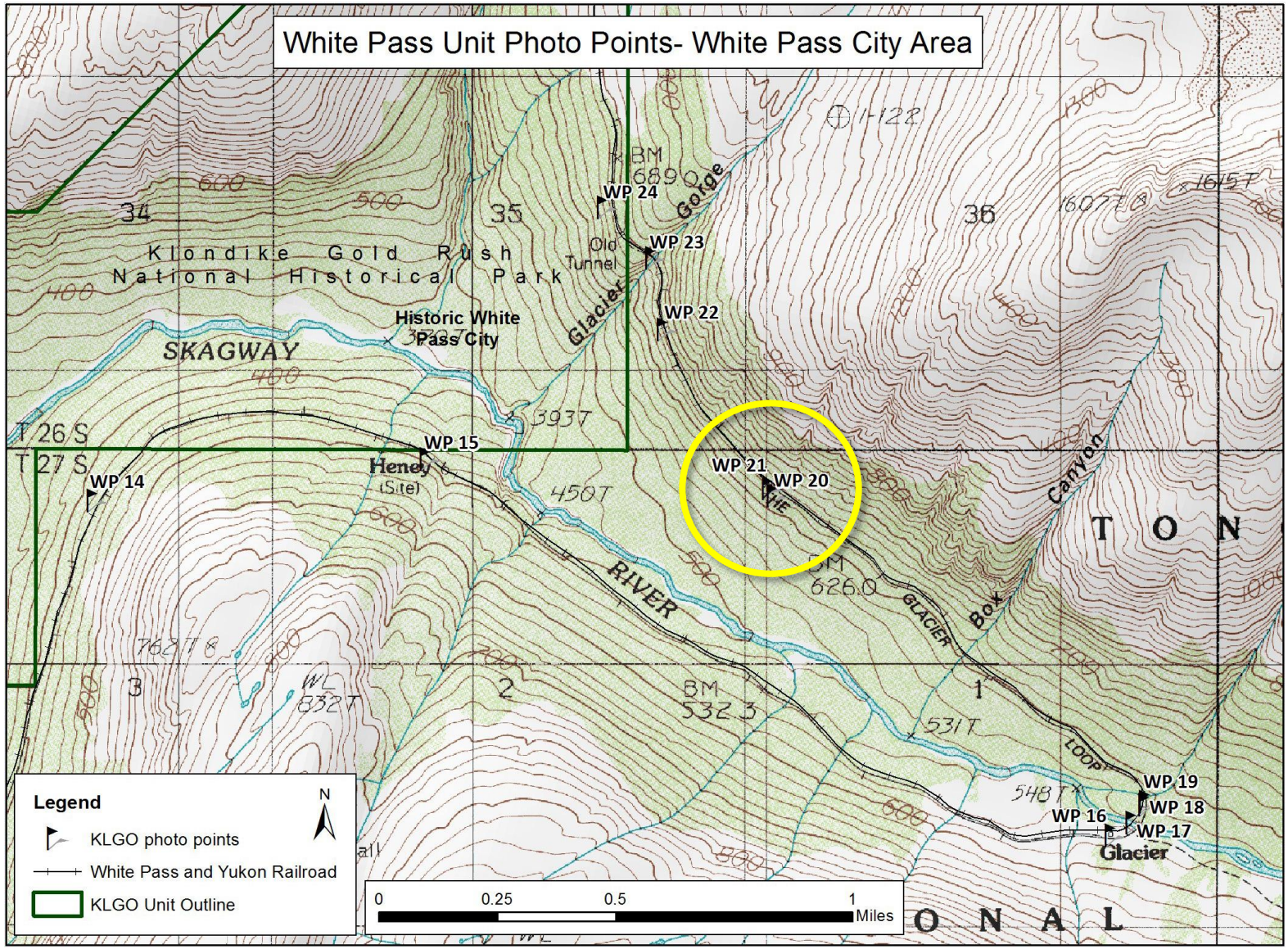

Figure 267. Detail map showing the location of photo station WP-21 in the Tunnel Mountain area.

Figure 268. Reference photo looking south showing the location of Photo Station WP-21. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the south side of the train tracks at Glacier Station on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 46. Photo Station WP-21 Metadata.

Photo Station WP-21	Historic Photo	Repeat Photo
Date	c. 1914	August 10, 2014
Time	unknown	7:58:36 AM AKDT
Photographer	A. Curtis	R.D. Karpilo Jr.
Photo Number	Curtis #29070	Karpilo #20140810-00144
Photo Credit	Required Credit: University of Washington Libraries, Special Collections, CUR1923	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 35mm
Camera Settings	unknown	ISO: 400, f/11, 1/125 second
Direction	southeast	
Latitude	59.56315° N	
Longitude	-135.14301° W	
Elevation	2,107 feet	
Notable Changes	Visible changes include reforestation of the area impacted by a possible forest fire, growth of vegetation on the lateral moraine of Laughton Glacier, an increase in deciduous species, and an increase in the density of spruce trees and other vegetation. It seems that the small unnamed alpine glaciers on mountain in the background have thinned and retreated. The exact scope of the glacier retreat is not determinable because of the lingering early summer snow in the historic photo masks the full extent of the glaciers.	

Figure 269. Photo Station WP-21: Tunnel Mountain, c. 1914 by A. Curtis. View southeast on the WP&YR Railway, Tunnel Mountain, Alaska. The lateral moraine of Laughton Glacier is visible in the center of the image. Credit: University of Washington Libraries, Special Collections, CUR1923.

Figure 270. Photo Station WP-21: Tunnel Mountain, August 10, 2014 R.D. Karpilo Jr. View to the southeast toward Glacier Station from south of Glacier Gorge on the WP&YR Railway, Tunnel Mountain, Alaska. The lateral moraine of Laughton Glacier is visible in the center of the image.

Figure 271. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 272. c. 1914 image by Curtis overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 44 – Tunnel Mountain (Photo Station WP-22)

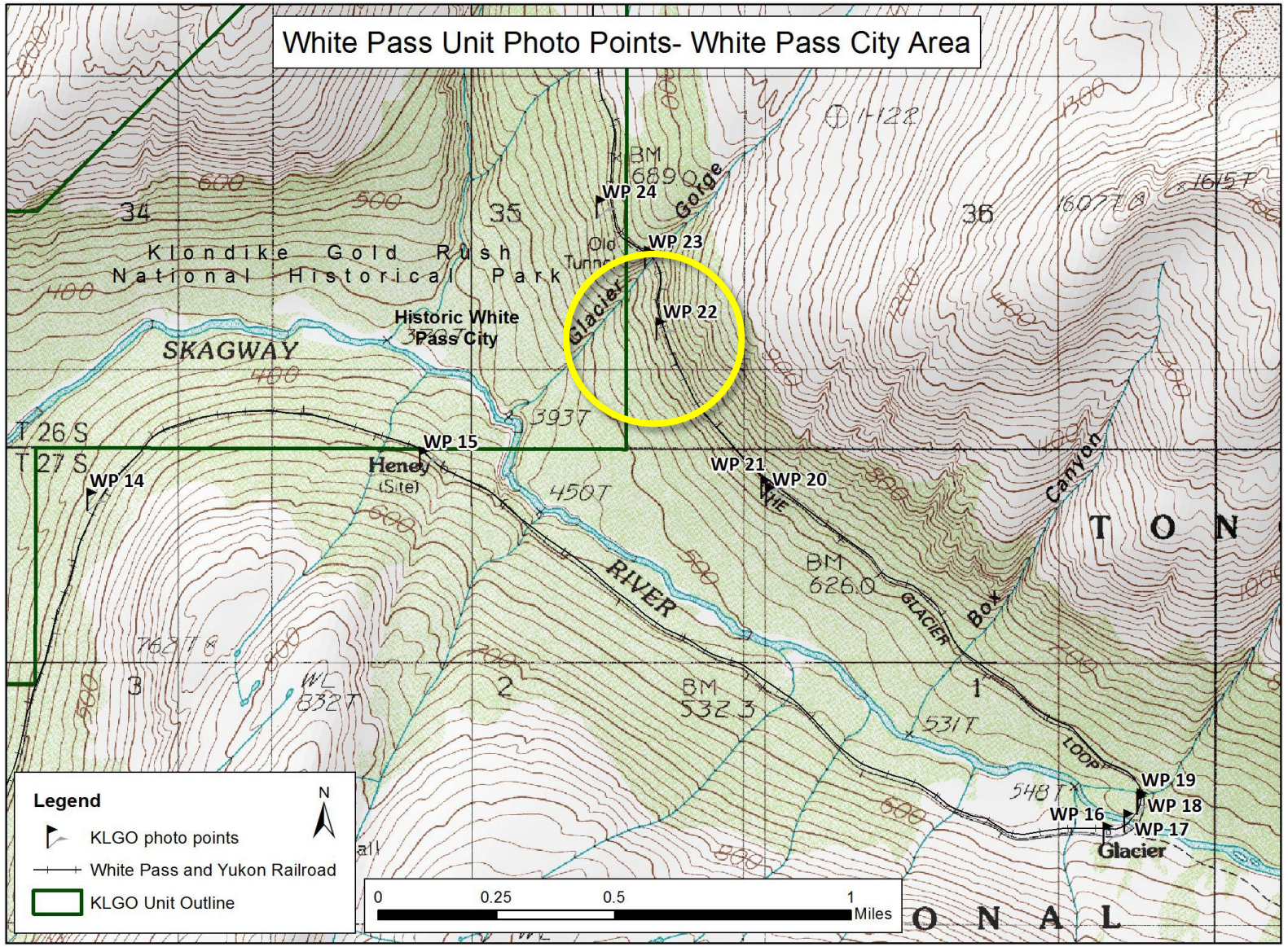

Figure 273. Detail map showing the location of photo station WP-22 in the Tunnel Mountain area.

Figure 274. Reference photo looking south showing the location of Photo Station WP-22. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks on Tunnel Mountain on the WP&YR Railway, Alaska. The site was accessed by riding the WP&YR Railway. The repeat photo was taken from the viewing platform of the moving train.

Table 47. Photo Station WP-22 Metadata.

Photo Station WP-22	Historic Photo	Repeat Photo
Date	June 11, 1903	August 23, 2013
Time	unknown	3:47:49 PM AKDT
Photographer	S. Paige	R.D. Karpilo Jr.
Photo Number	Paige #25	Karpilo #20130823-00872
Photo Credit	Suggested Credit: Sidney Paige, U.S. Geological Survey	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	Handheld on train viewing deck @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/8, 1/200 second
Direction	east	
Latitude	59.567987° N	
Longitude	-135.149352° W	
Elevation	2,126 feet	
Notable Changes	Visible changes include regrowth of vegetation disturbed in the cut and fill area of the railroad right of way, the White Pass City town site, and the roads connecting the railroad and the town. There is a noticeable thickening and upslope advance of spruce trees and other vegetation. The Klondike Highway is visible on the mountain in the background in the modern image.	

Figure 275. Photo Station WP-22: Tunnel Mountain, June 11, 1903 by S. Paige. View to the east of the Skagway River Valley and White Pass City area from the WP&YR Railway, Tunnel Mountain, Alaska. Credit: Sidney Paige, U.S. Geological Survey.

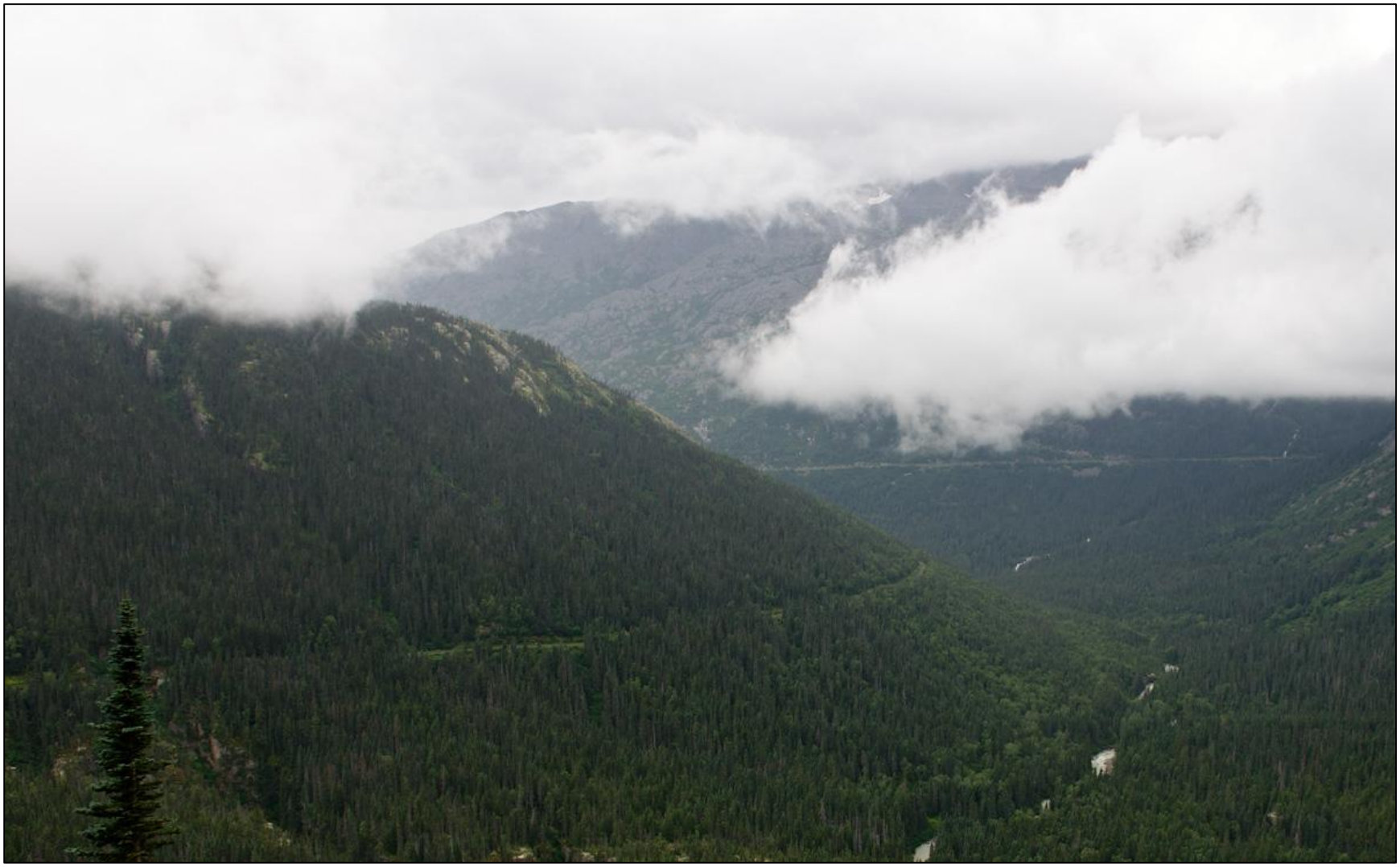

Figure 276. Photo Station WP-22: Tunnel Mountain, August 23, 2013 by R.D. Karpilo Jr. View to the east of the Skagway River Valley and White Pass City area from the WP&YR Railway, Tunnel Mountain, Alaska.

Figure 277. Full uncropped version of the August 23, 2013 repeat image. Box represents the field of view of the historic photo.

Figure 278. June 11, 1903 image by Paige overlaid on the full uncropped version of the August 23, 2013 repeat image by Karpilo.

KLGO Photo Pair 45 – Tunnel Mountain (Photo Station WP-23)

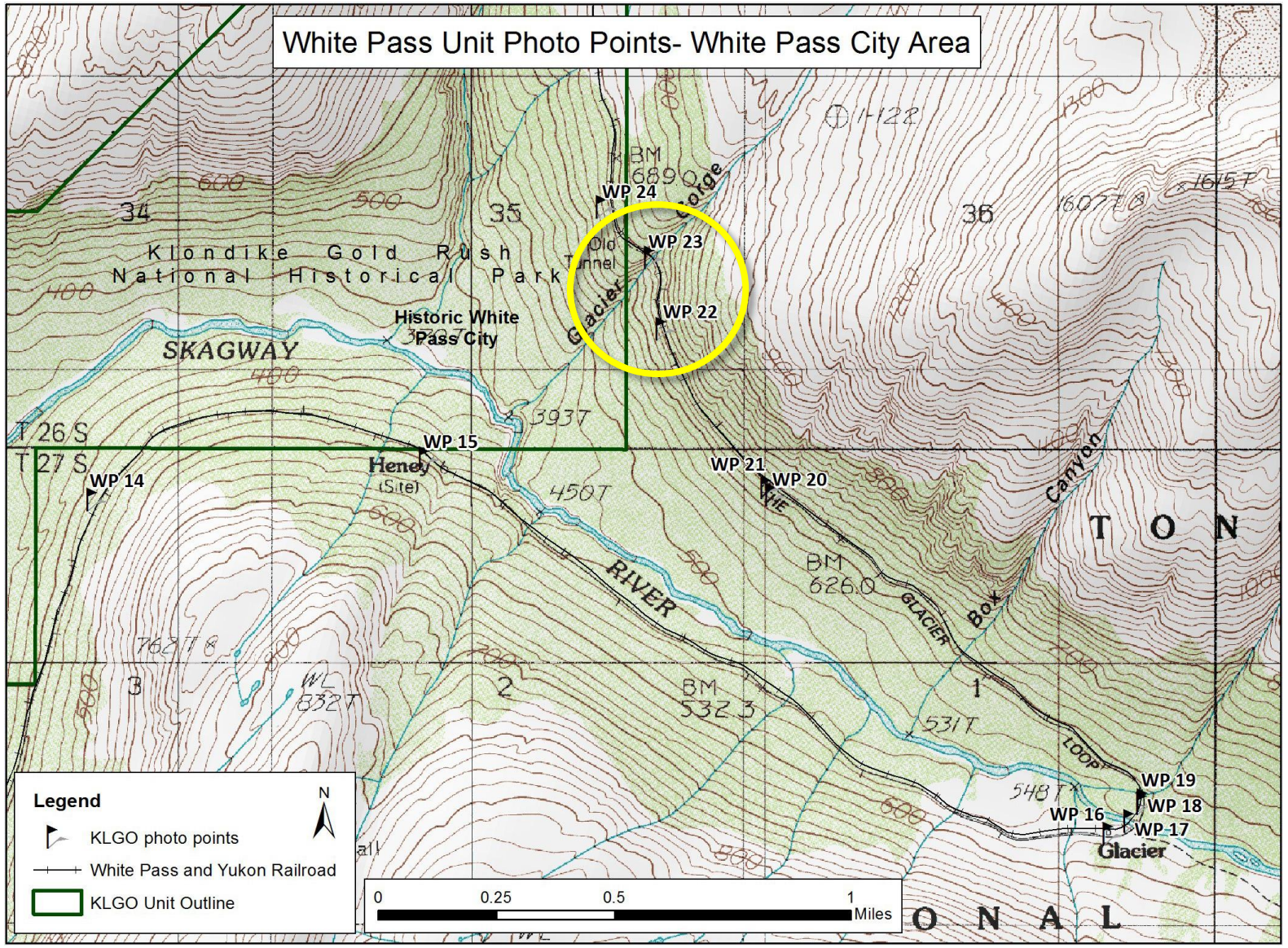

Figure 279. Detail map showing the location of photo station WP-23 in the Glacier Gorge area.

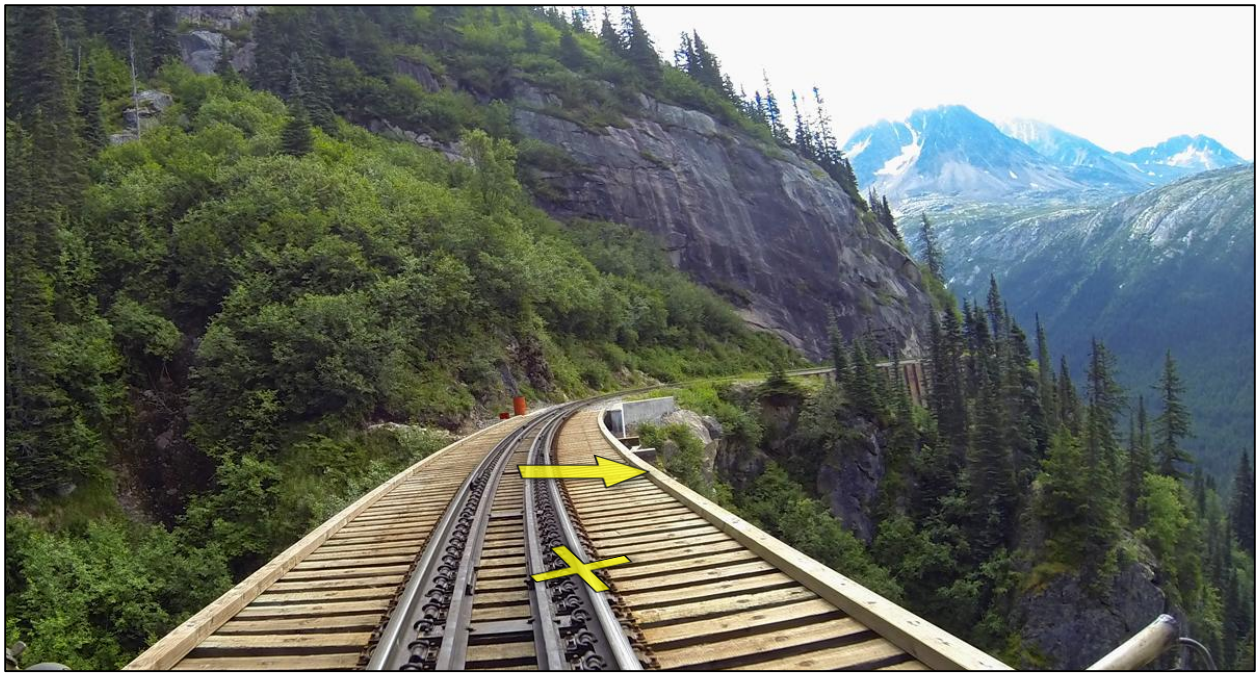

Figure 280. Reference photo looking south showing the location of Photo Station WP-23. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks at Glacier Gorge on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar. The repeat photo was taken from the moving railroad motorcar.

Table 48. Photo Station WP-23 Metadata.

Photo Station WP-23	Historic Photo	Repeat Photo
Date	1898	August 3, 2014
Time	unknown	7:03:15 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140803-00179
Photo Credit	Suggested Credit: National Park Service, Klondike Gold Rush National Historical Park. KLGO 59762, George and Edna Rapuzzi Collection. Gift of the Rasmuson Foundation.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/5.6, 1/100 second
Direction	southwest	
Latitude	59.57017° N	
Longitude	-135.15008° W	
Elevation	2,153 feet	
Notable Changes	Visible changes include regrowth of vegetation disturbed by railroad construction on the mountain in background. There is a noticeable thickening and upslope advance of spruce, alder, and other vegetation in Glacier Gorge and the mountain in the background.	

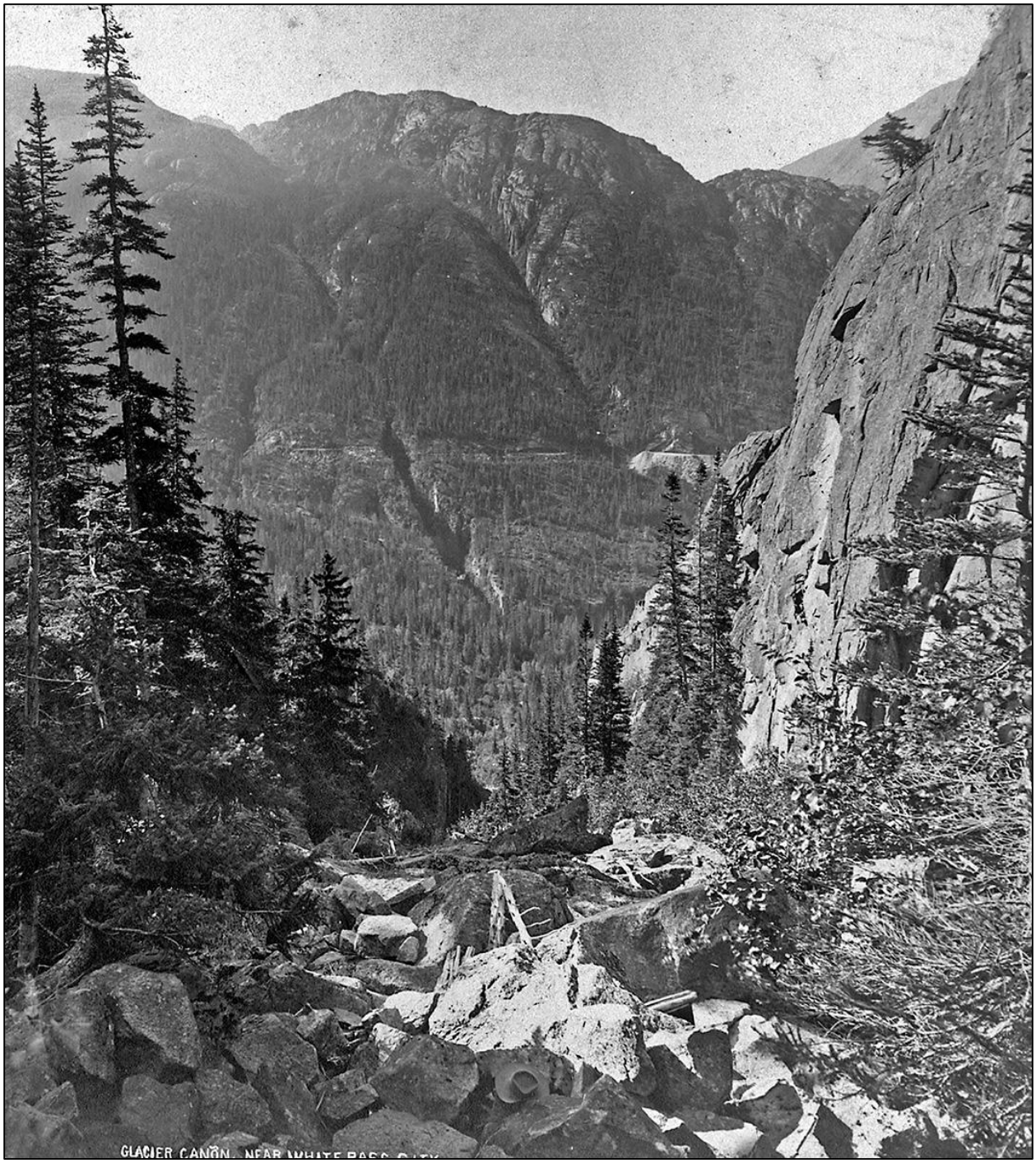

Figure 281. Photo Station WP-23: Glacier Gorge, 1898 by H.C. Barley. View to the southwest down Glacier Gorge from below the trestle on the WP&YR Railway, Tunnel Mountain, Alaska. Credit: National Park Service, Klondike Gold Rush National Historical Park. KLGO 59762, George and Edna Rapuzzi Collection. Gift of the Rasmuson Foundation.

Figure 282. Photo Station WP-23: Glacier Gorge, August 3, 2014 R.D. Karpilo Jr. View to the southwest down Glacier Gorge from the moving railroad motor car on the trestle on the WP&YR Railway, Tunnel Mountain, Alaska.

Figure 283. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

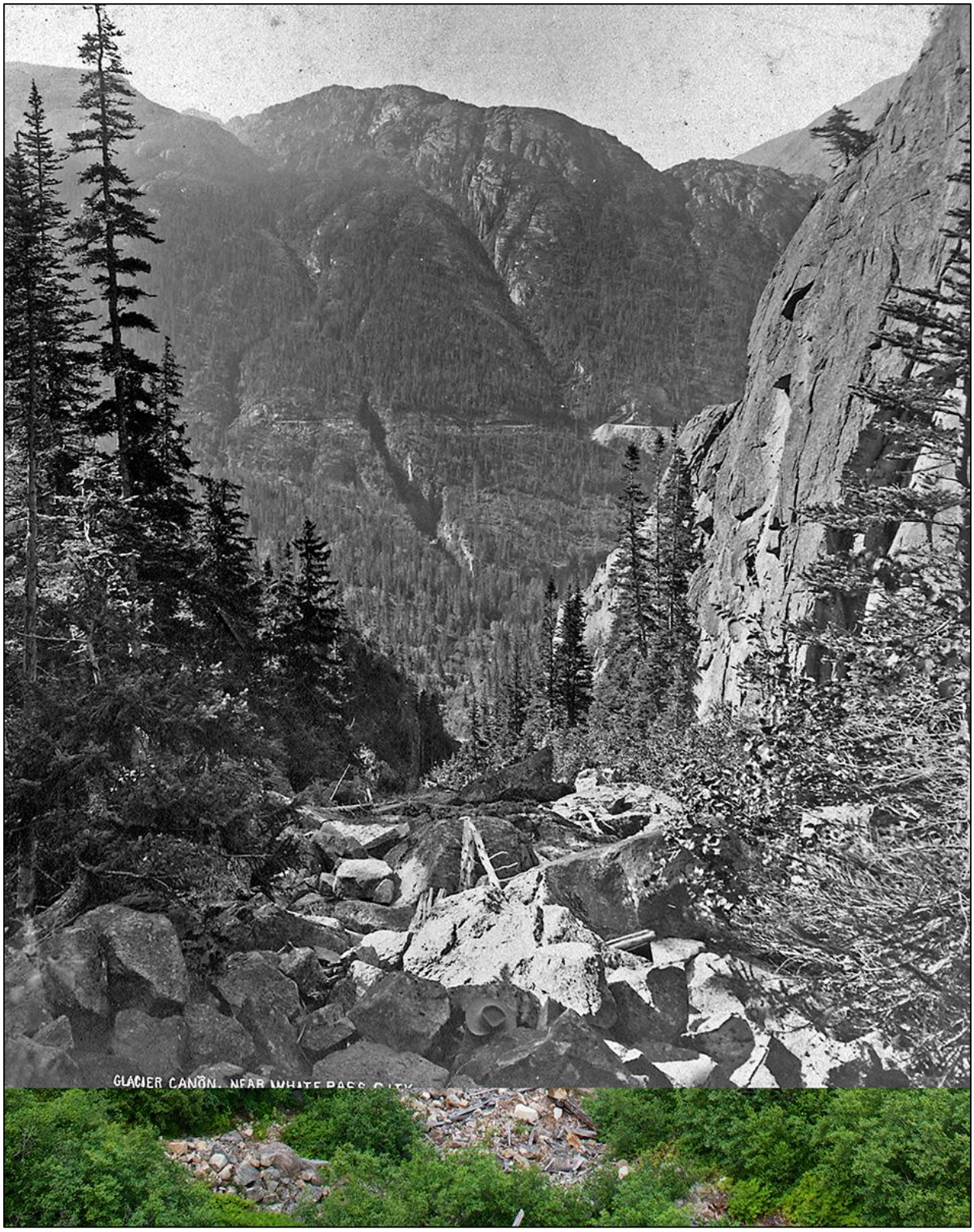

Figure 284. 1898 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 46 – Tunnel Mountain (Photo Station WP-24)

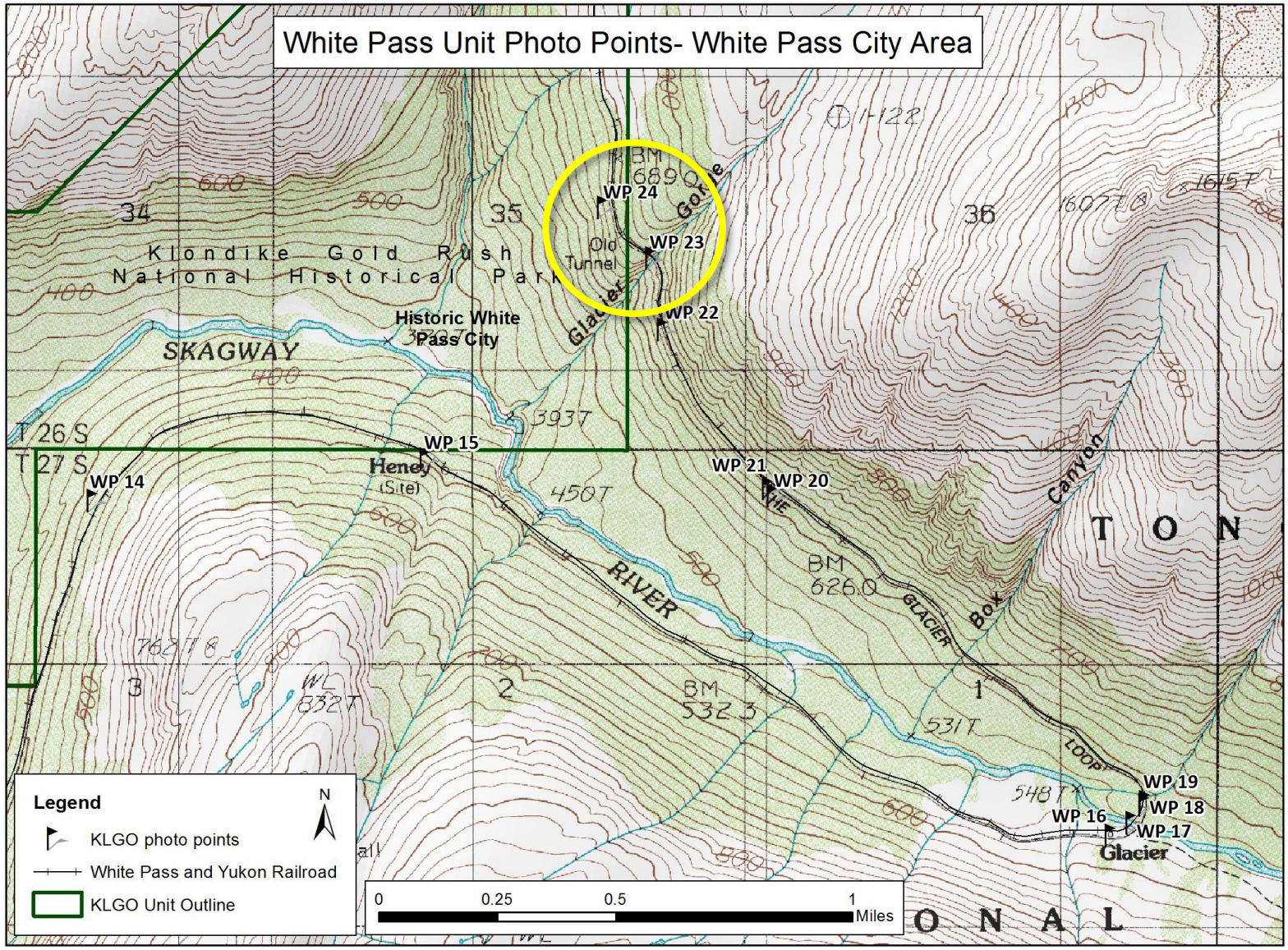

Figure 285. Detail map showing the location of photo station WP-24 in the Tunnel Mountain area.

Figure 286. Reference photo looking south showing the location of Photo Station WP-24. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the train tracks on Tunnel Mountain on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar. The repeat photo was taken from the moving railroad motorcar.

Table 49. Photo Station WP-24 Metadata.

Photo Station WP-24	**Historic Photo**	**Repeat Photo**
Date	September 1898	August 3, 2014
Time	unknown	7:04:17 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #65	Karpilo #20140803-00189
Photo Credit	Suggested Credit: National Park Service, Klondike Gold Rush National Historical Park. KLGO 59757, George and Edna Rapuzzi Collection. Gift of the Rasmuson Foundation.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	Handheld on train viewing deck @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 26mm
Camera Settings	unknown	ISO: 400, f/8, 1/200 second
Direction	southwest	
Latitude	59.57172° N	
Longitude	-135.15296° W	
Elevation	2,188 feet	
Notable Changes	Visible changes include regrowth of vegetation disturbed in the cut and fill area of the railroad right of way and the White Pass City town site. There is a noticeable thickening and upslope advance of spruce trees and other vegetation. The small unnamed alpine glaciers on mountain in the background have retreated. The White Pass City historic structures are no longer visible. The Klondike Highway is visible on the mountain in the background in the modern image.	

Figure 287. Photo Station WP-24: Tunnel Mountain, September 1898 by H.C. Barley. View to the south of the Skagway River Valley and White Pass City area from the WP&YR Railway, Tunnel Mountain, Alaska. Credit: National Park Service, Klondike Gold Rush National Historical Park. KLGO 59757, George and Edna Rapuzzi Collection. Gift of the Rasmuson Foundation.

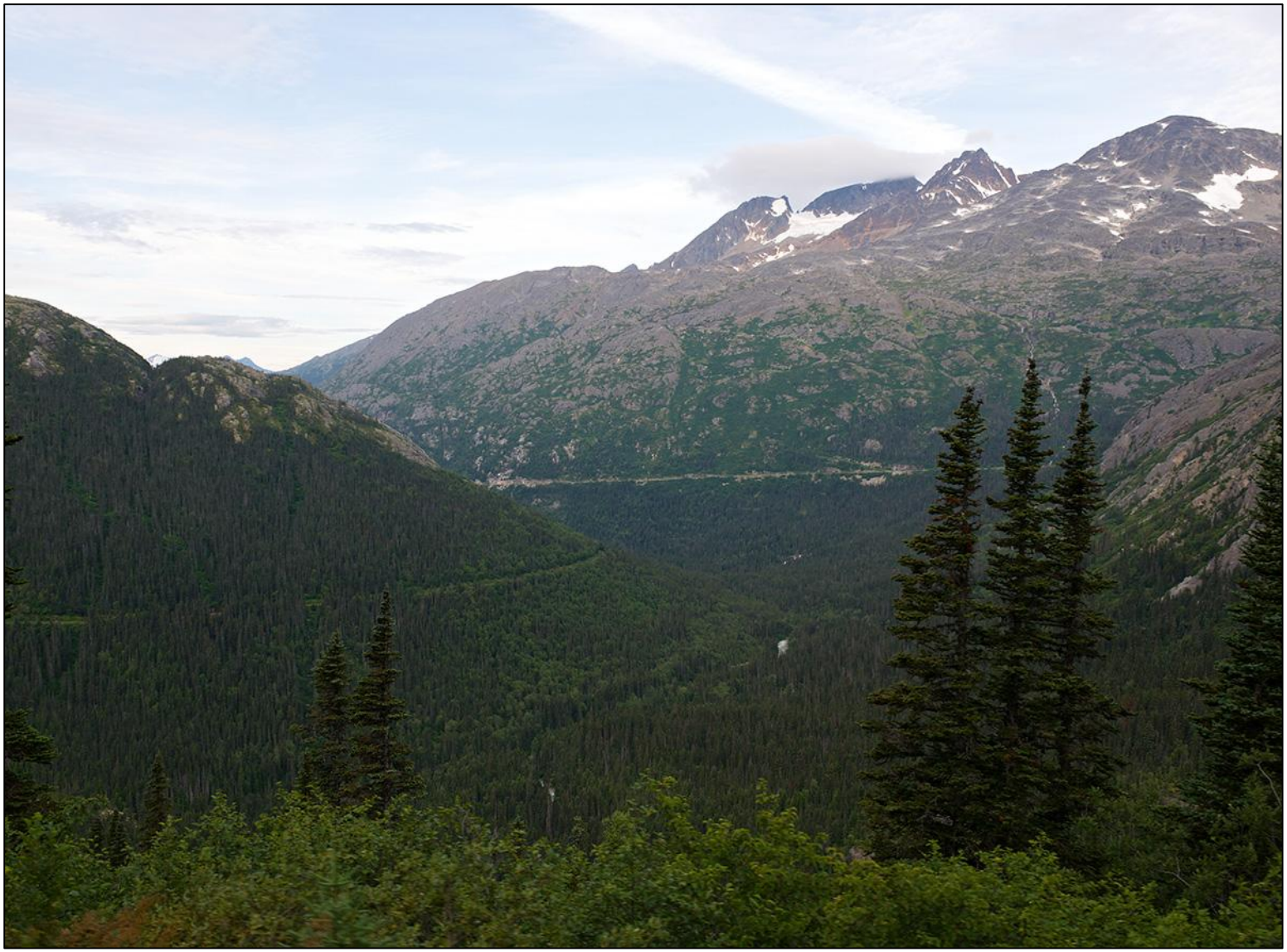

Figure 288. Photo Station WP-24: Tunnel Mountain, August 3, 2014 R.D. Karpilo Jr. View to the south of the Skagway River Valley and White Pass City area from the WP&YR Railway, Tunnel Mountain, Alaska.

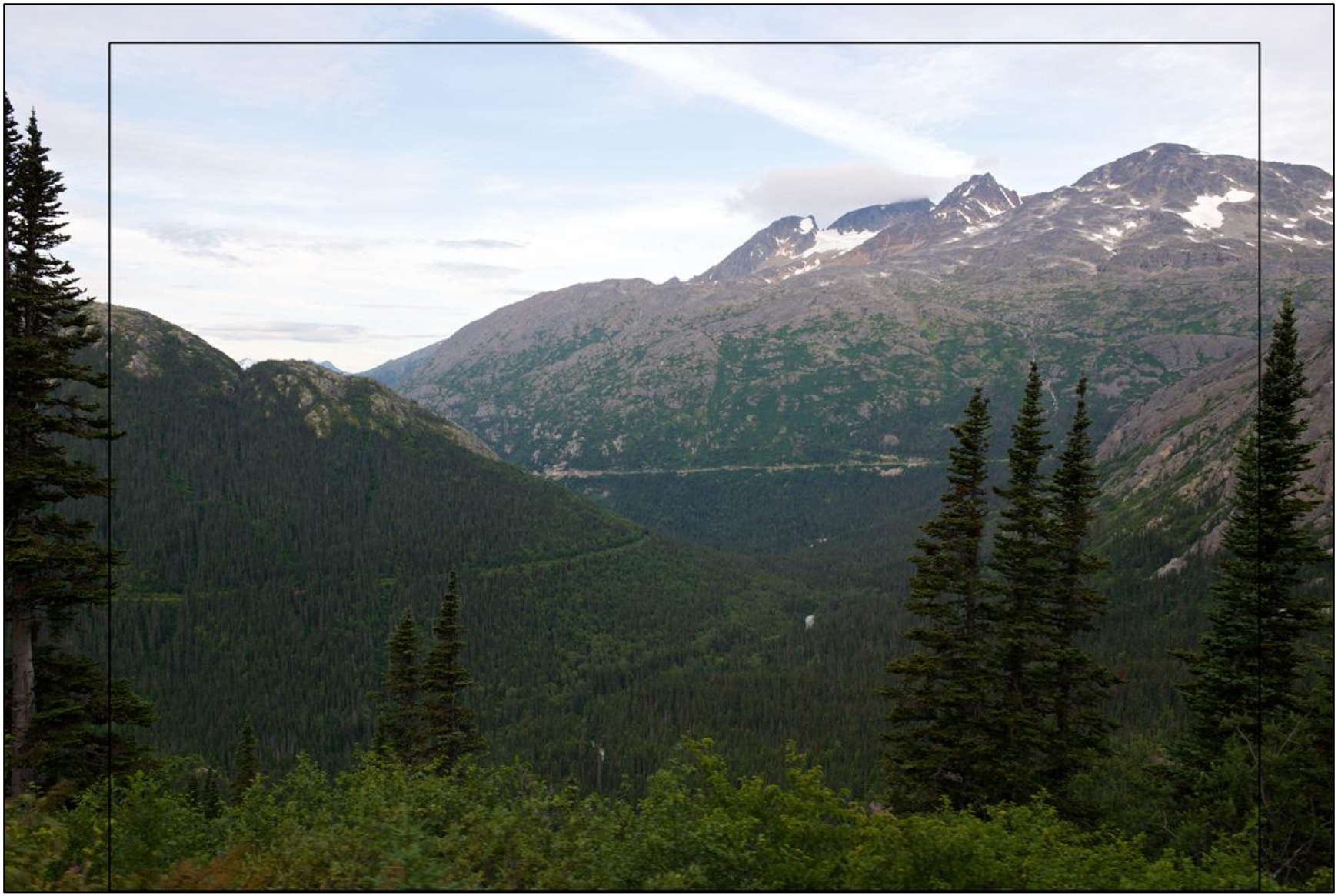

Figure 289. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 290. September 1898 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 47 – Inspiration Point (Photo Station WP-25)

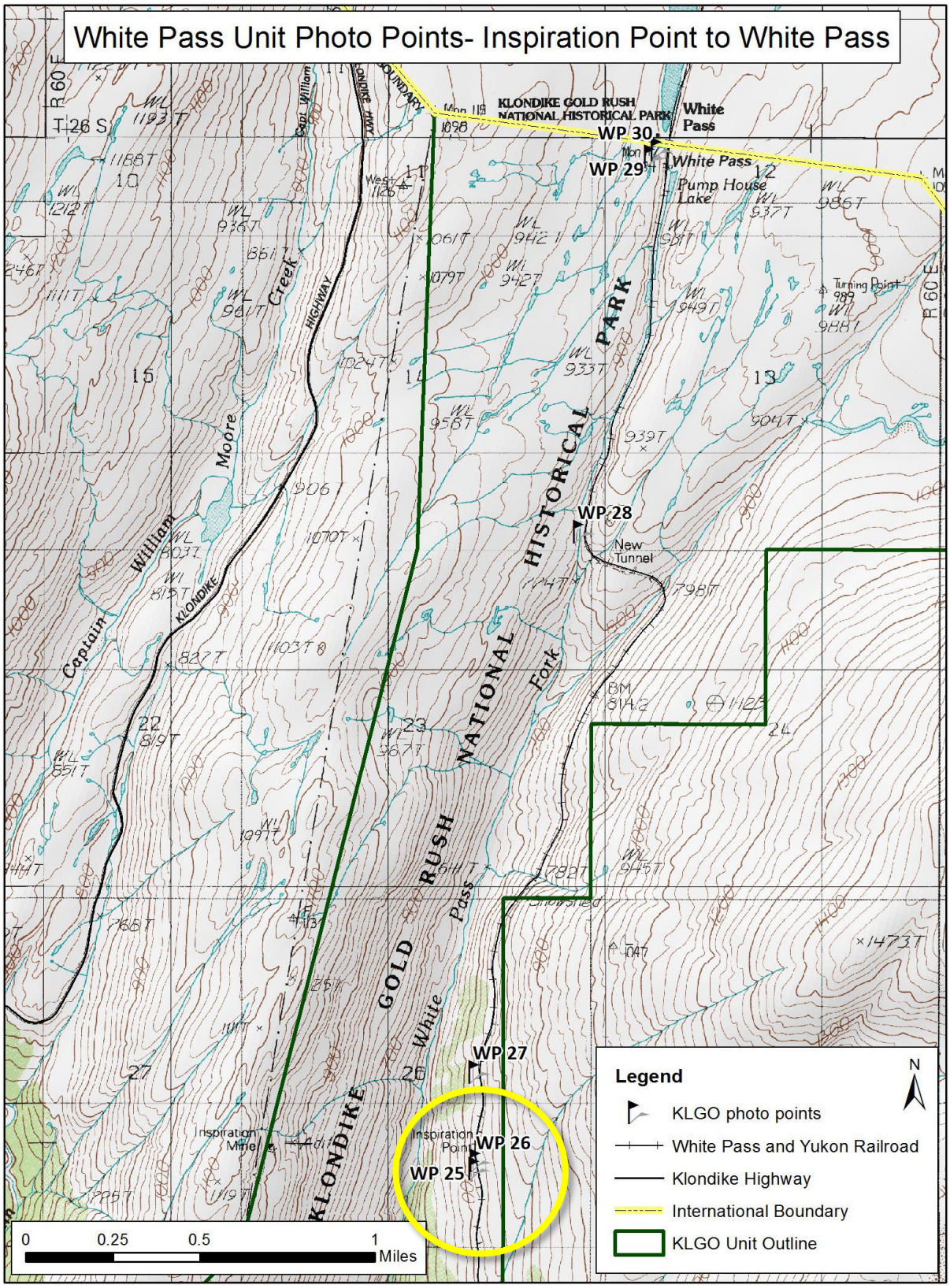

Figure 291. Detail map showing the location of photo station WP-25 at Inspiration Point.

Figure 292. Reference photo looking south showing the location of Photo Station WP-25. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the east side of the train tracks at Inspiration Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 50. Photo Station WP-25 Metadata.

Photo Station WP-25	**Historic Photo**	**Repeat Photo**
Date	1925	August 10, 2014
Time	unknown	7:16:22 AM AKDT
Photographer	Waugh	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140810-00032
Photo Credit	Required Credit: Keystone-Mast Collection, KU 48194, UCR/California Museum of Photography, University of California, Riverside.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 400, f/9, 1/60 second
Direction	south	
Latitude	59.58199° N	
Longitude	-135.15375° W	
Elevation	2,391 feet	
Notable Changes	Visible changes include increase in the density of vegetation along the railroad and adjacent slopes. A few days before the modern image, the railroad vegetation crew cleared the area around the large boulder and photo station. Before the clearing operation, the boulder was not visible and the alder and other vegetation were approximately 6 to 10 feet tall. Spruce trees advanced upslope and colonized the Inspiration Point area. The small unnamed alpine glaciers in the Sawtooth Range in the background have retreated.	

Figure 293. Photo Station WP-25: Inspiration Point, 1925 by Waugh. View to the south of the Sawtooth Range from the WP&YR Railway at Inspiration Point, Alaska. Man and boy are likely members of the 1925 “Buchanan Boys” Alaska trip. Man is possibly Detroit coal merchant and philanthropist George E. Buchanan. Credit: Keystone-Mast Collection, KU 48194, UCR/California Museum of Photography, University of California, Riverside.

Figure 294. Photo Station WP-25: Inspiration Point, August 10, 2014 by R.D. Karpilo Jr. View to the south of the Sawtooth Range from the WP&YR Railway at Inspiration Point, Alaska.

Figure 295. Full uncropped version of the August 10, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 296. 1925 image by Waugh overlaid on the full uncropped version of the August 10, 2014 repeat image by Karpilo.

KLGO Photo Pair 48 – Inspiration Point (Photo Station WP-26)

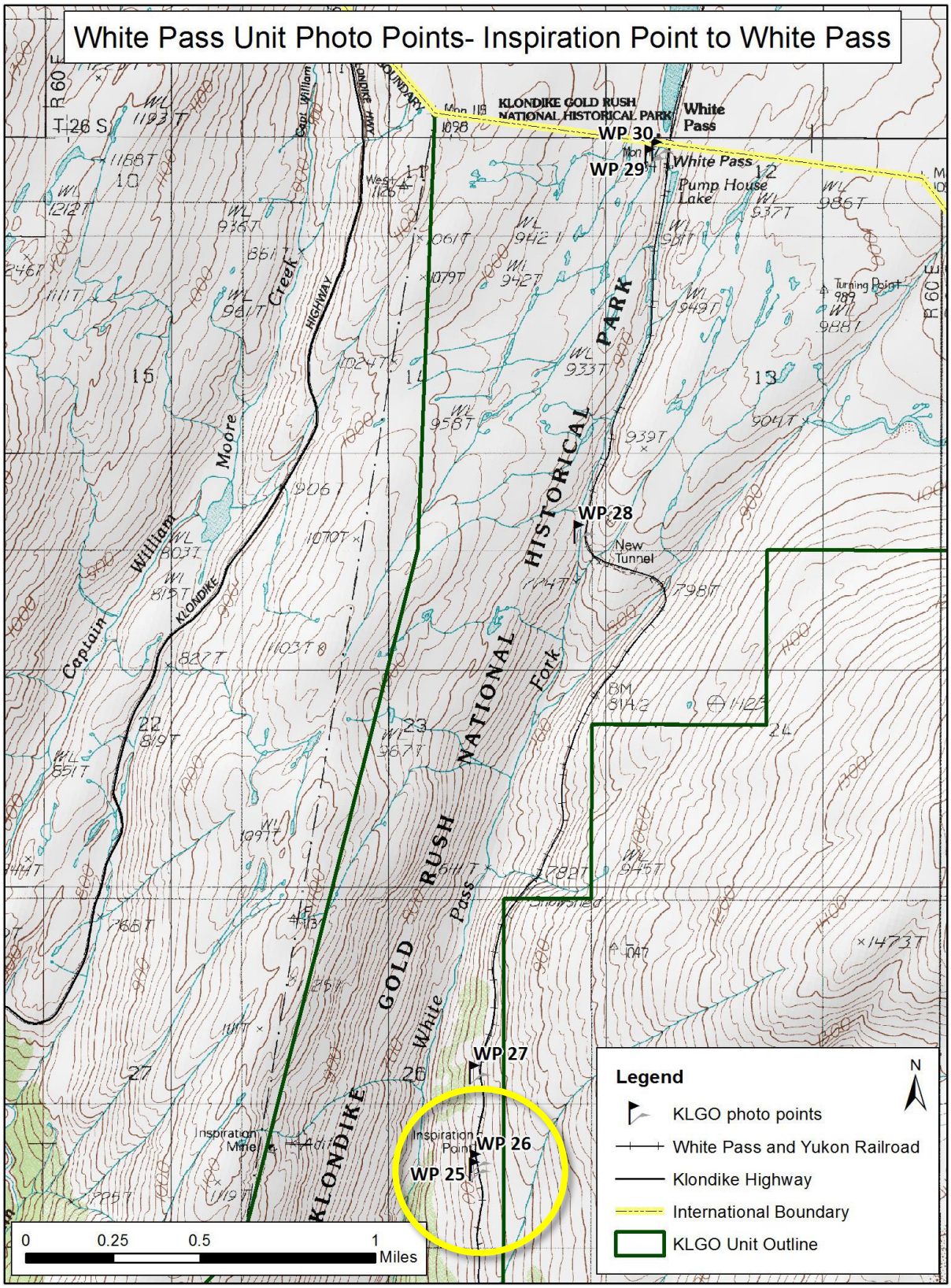

Figure 297. Detail map showing the location of photo station WP-26 at Inspiration Point.

Figure 298. Reference photo looking south showing the location of Photo Station WP-26. The yellow X marks the approximate photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the east side of the train tracks at Inspiration Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 51. Photo Station WP-26 Metadata.

Photo Station WP-26	Historic Photo	Repeat Photo
Date	1925	August 3, 2014
Time	unknown	8:59:28 AM AKDT
Photographer	Waugh	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140803-00746
Photo Credit	Required Credit: Keystone-Mast Collection, KU 48192, UCR/California Museum of Photography, University of California, Riverside.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/8, 1/125 second
Direction	southwest	
Latitude	59.58233° N	
Longitude	-135.15363° W	
Elevation	2,418 feet	
Notable Changes	Visible changes include increase in the density of vegetation along the railroad and adjacent slopes. Spruce trees advanced upslope and colonized the Inspiration Point area. Harding Glacier and the small unnamed alpine glacier in the Sawtooth Range in the background have retreated. The Klondike Highway is visible in the modern image. Deck and railing are no longer present at Inspiration Point.	

Figure 299. Photo Station WP-26: Inspiration Point, 1925 by Waugh. View to the southwest of the Sawtooth Range, lower Skagway River Valley, Harding Glacier, and Taiya Inlet from the WP&YR Railway at Inspiration Point, Alaska. Man and boys are likely members of the 1925 “Buchanan Boys” Alaska trip. Man on right is possibly Detroit coal merchant and philanthropist George E. Buchanan. Credit: Keystone-Mast Collection, KU 48192, UCR/California Museum of Photography, University of California, Riverside.

Figure 300. Photo Station WP-26: Inspiration Point, August 3, 2014 R.D. Karpilo Jr. View to the southwest of the Sawtooth Range, lower Skagway River Valley, Harding Glacier, and Taiya Inlet from the WP&YR Railway at Inspiration Point, Alaska.

Figure 301. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

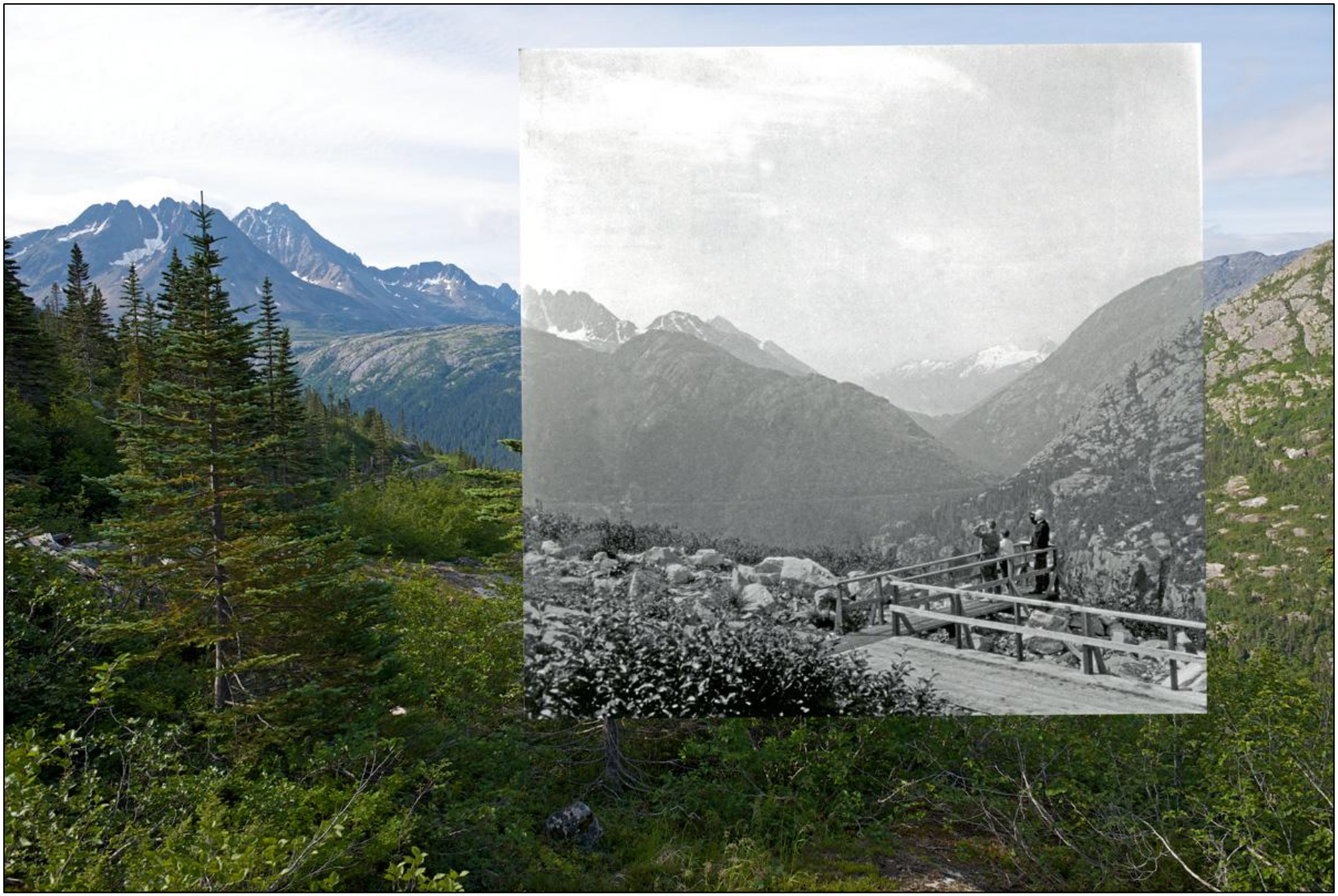

Figure 302. 1925 image by Waugh overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 49 – Inspiration Point (Photo Station WP-27)

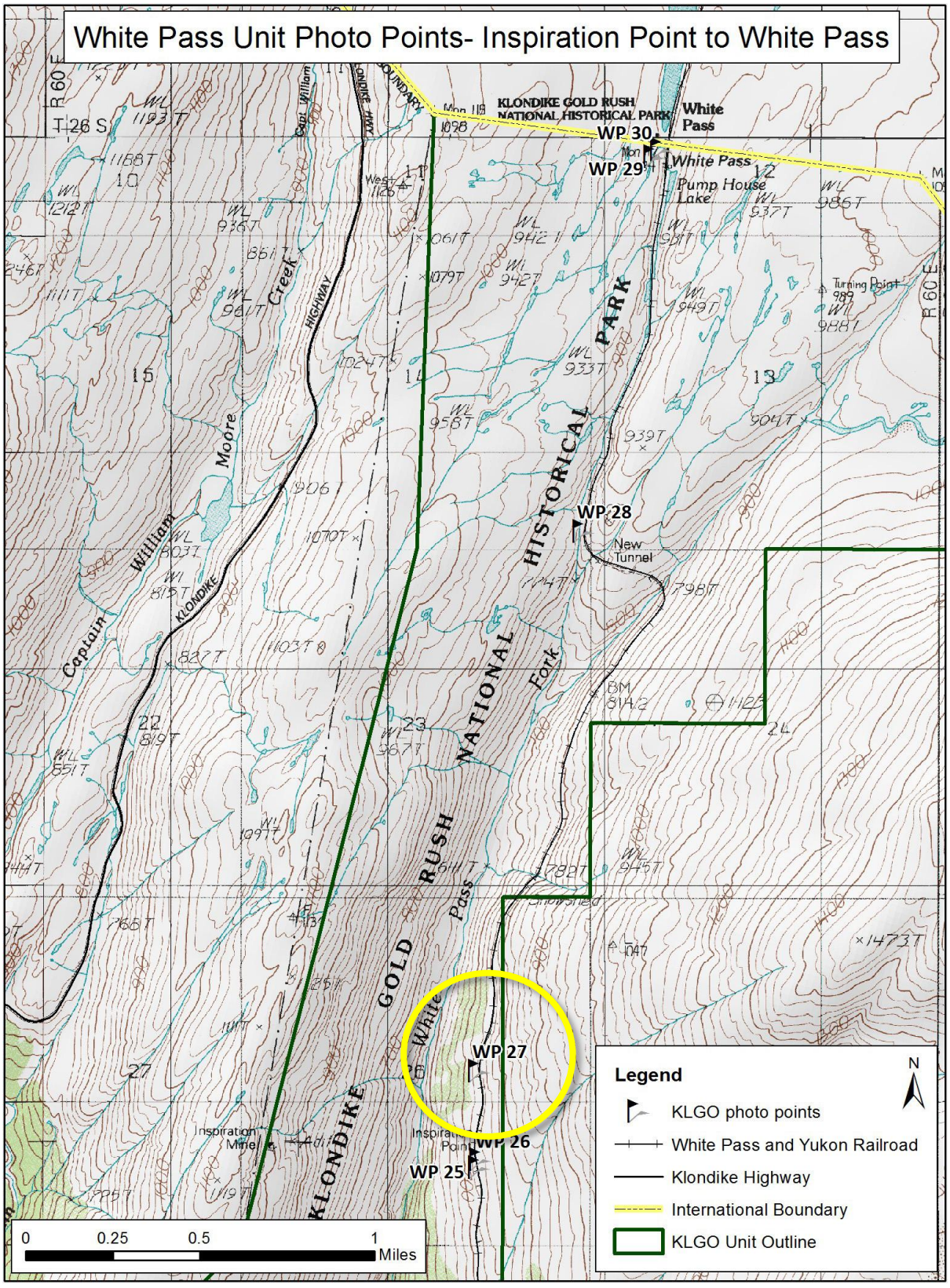

Figure 303. Detail map showing the location of photo station WP-27 near Inspiration Point.

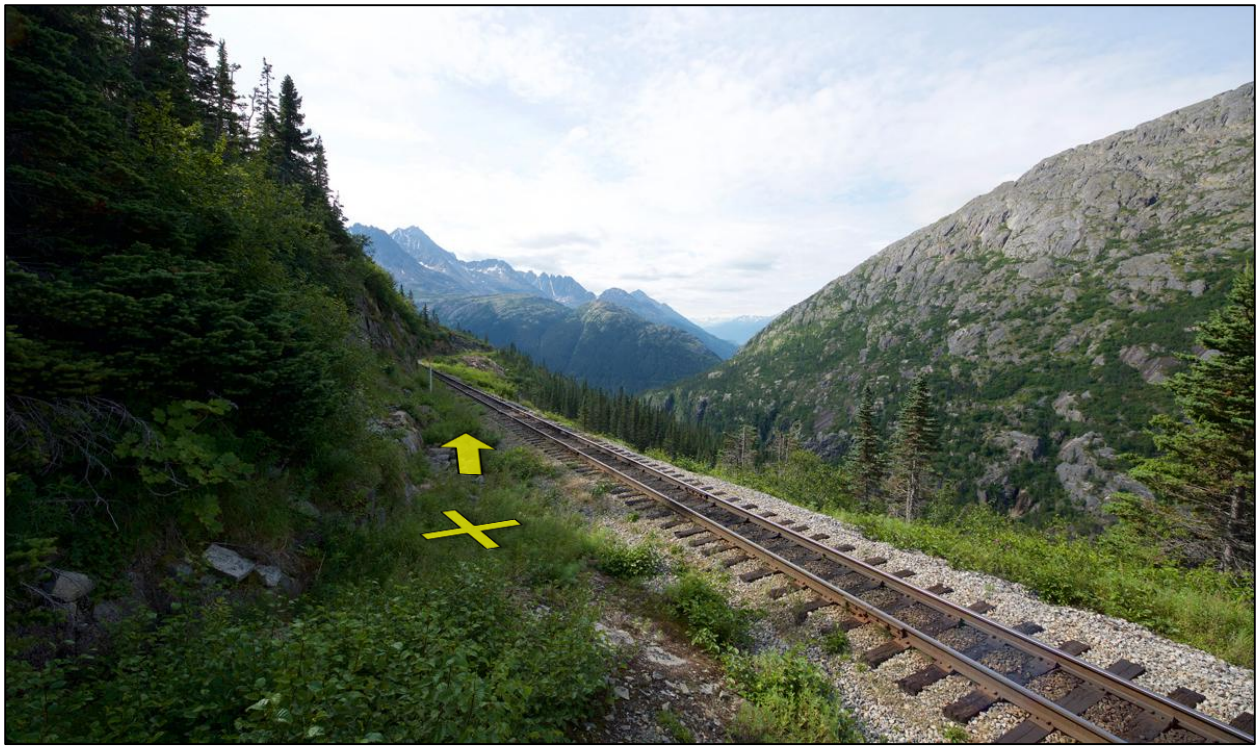

Figure 304. Reference photo looking south showing the location of Photo Station WP-27. The yellow X marks the photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the east side of the train tracks at Inspiration Point on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 52. Photo Station WP-27 Metadata.

Photo Station WP-27	Historic Photo	Repeat Photo
Date	c. 1900	August 3, 2014
Time	unknown	8:33:33 AM AKDT
Photographer	H.C. Barley	R.D. Karpilo Jr.
Photo Number	Barley #688	Karpilo #20140803-00696
Photo Credit	Suggested Credit: Courtesy of Sidney West	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 28mm
Camera Settings	unknown	ISO: 200, f/11, 1/80 second
Direction	south	
Latitude	59.58601° N	
Longitude	-135.15377° W	
Elevation	2,434 feet	
Notable Changes	Visible changes include regrowth of vegetation disturbed by railroad construction and an overall increase in the density of vegetation along the railroad and adjacent slopes. Spruce trees advanced upslope and colonized the Inspiration Point area. The small unnamed alpine cirque glaciers in the Sawtooth Range in the background have retreated.	

Figure 305. Photo Station WP-27: Inspiration Point, c. 1900 by H.C. Barley. View to the south of the Sawtooth Range from the WP&YR Railway north of Inspiration Point, Alaska. Credit: Courtesy of Sidney West.

Figure 306. Photo Station WP-27: Inspiration Point, August 3, 2014 R.D. Karpilo Jr. View to the south of the Sawtooth Range from the WP&YR Railway north of Inspiration Point, Alaska.

Figure 307. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

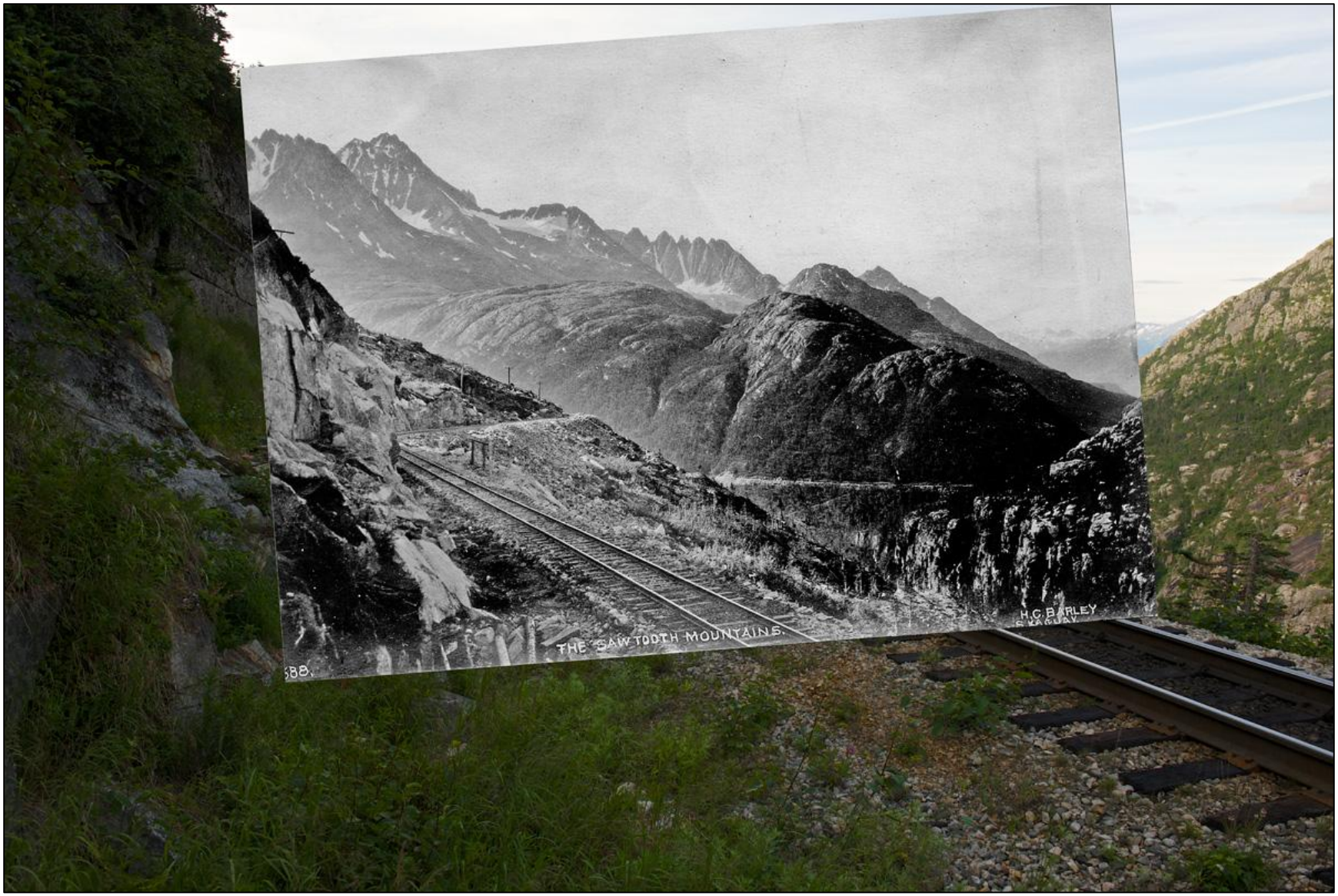

Figure 308. c. 1900 image by Barley overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 50 – Cutoff Canyon (Photo Station WP-28)

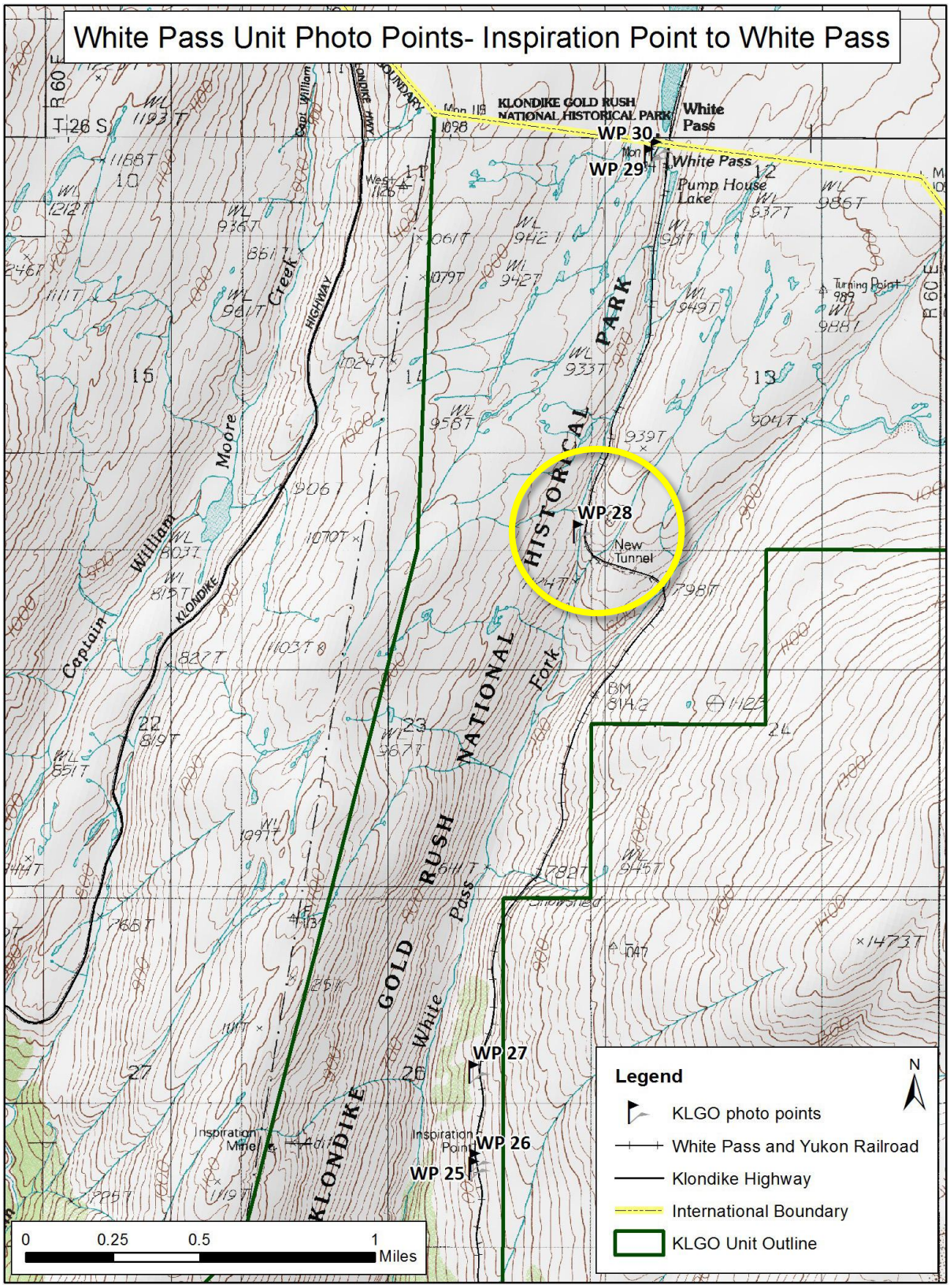

Figure 309. Detail map showing the location of photo station WP-28 at Cutoff Canyon.

Figure 310. Reference photo looking north showing the location of Photo Station WP-28. The yellow X marks the approximate photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks at Cutoff Canyon on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 53. Photo Station WP-28 Metadata.

Photo Station WP-28	Historic Photo	Repeat Photo
Date	c. 1899	August 3, 2014
Time	Unknown	8:04:51 AM AKDT
Photographer	E.A. Hegg	R.D. Karpilo Jr.
Photo Number	Hegg #87	Karpilo #20140803-00350
Photo Credit	Required Credit: University of Washington, Special Collections, E.A. Hegg Collection, Hegg 252A.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	Unknown	handheld @ 6 feet
Camera	Unknown	Nikon D800
Lens	Unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	Unknown	ISO: 200, f/11, 1/100 second
Direction	south	
Latitude	59.60838° N	
Longitude	-135.14529° W	
Elevation	2,759 feet	
Notable Changes	Visible changes include regrowth of vegetation disturbed by railroad construction and an increase in vegetation in Dead Horse Gulch and adjacent slopes. The rock outcrop adjacent to the railroad tracks was blasted to facilitate snow removal from the tracks.	

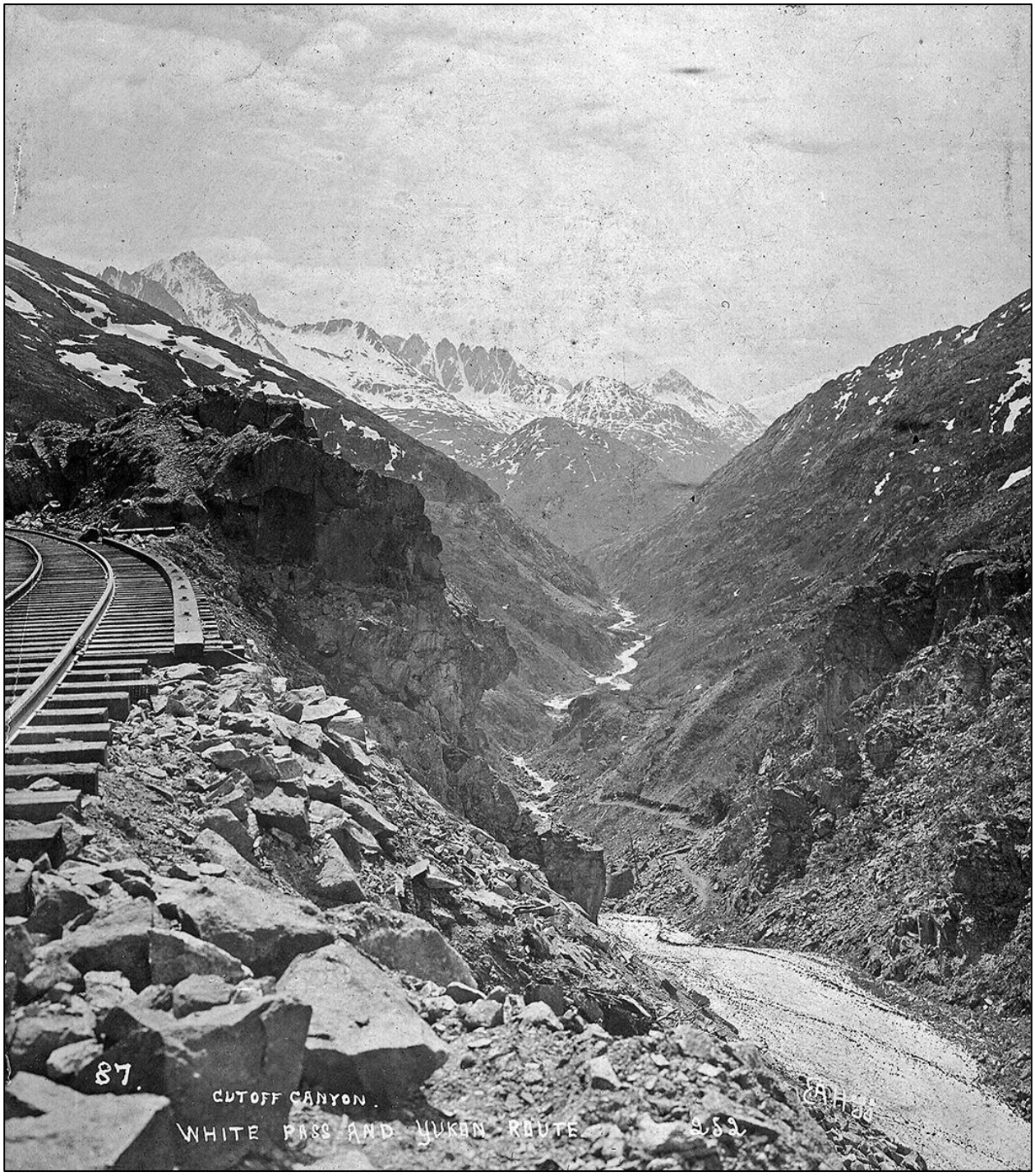

Figure 311. Photo Station WP-28: Cutoff Canyon, c. 1899 by E.A. Hegg. View to the south of Dead Horse Gulch, the Trail of ’98, and the Sawtooth Range from the WP&YR Railway at Cutoff Canyon, Alaska. Credit: University of Washington Special Collections, E.A. Hegg Collection, Hegg 252A.

Figure 312. Photo Station WP-28: Cutoff Canyon, August 3, 2014 R.D. Karpilo Jr. View to the south of Dead Horse Gulch, the Trail of ’98, and the Sawtooth Range from the WP&YR Railway at Cutoff Canyon, Alaska.

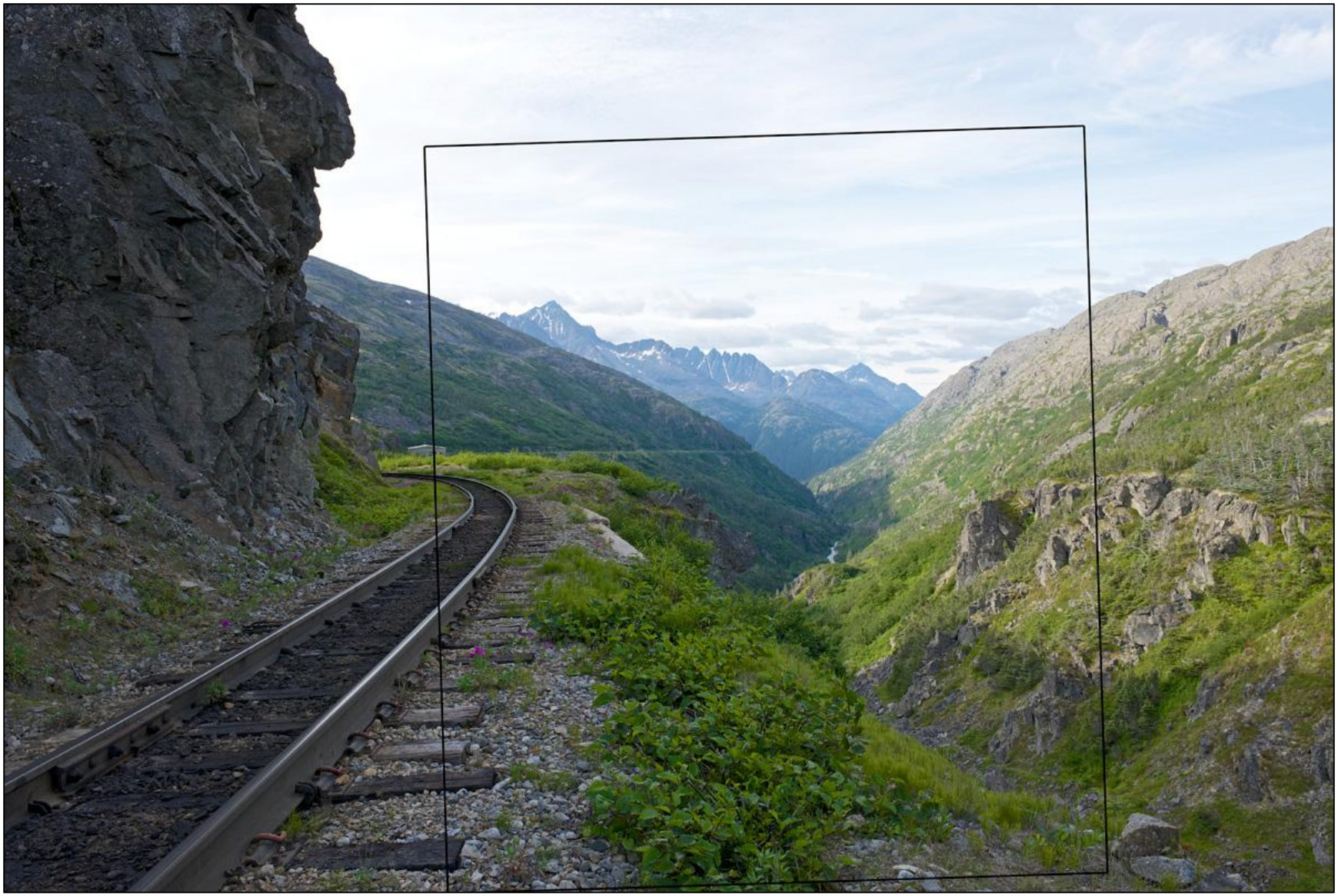

Figure 313. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

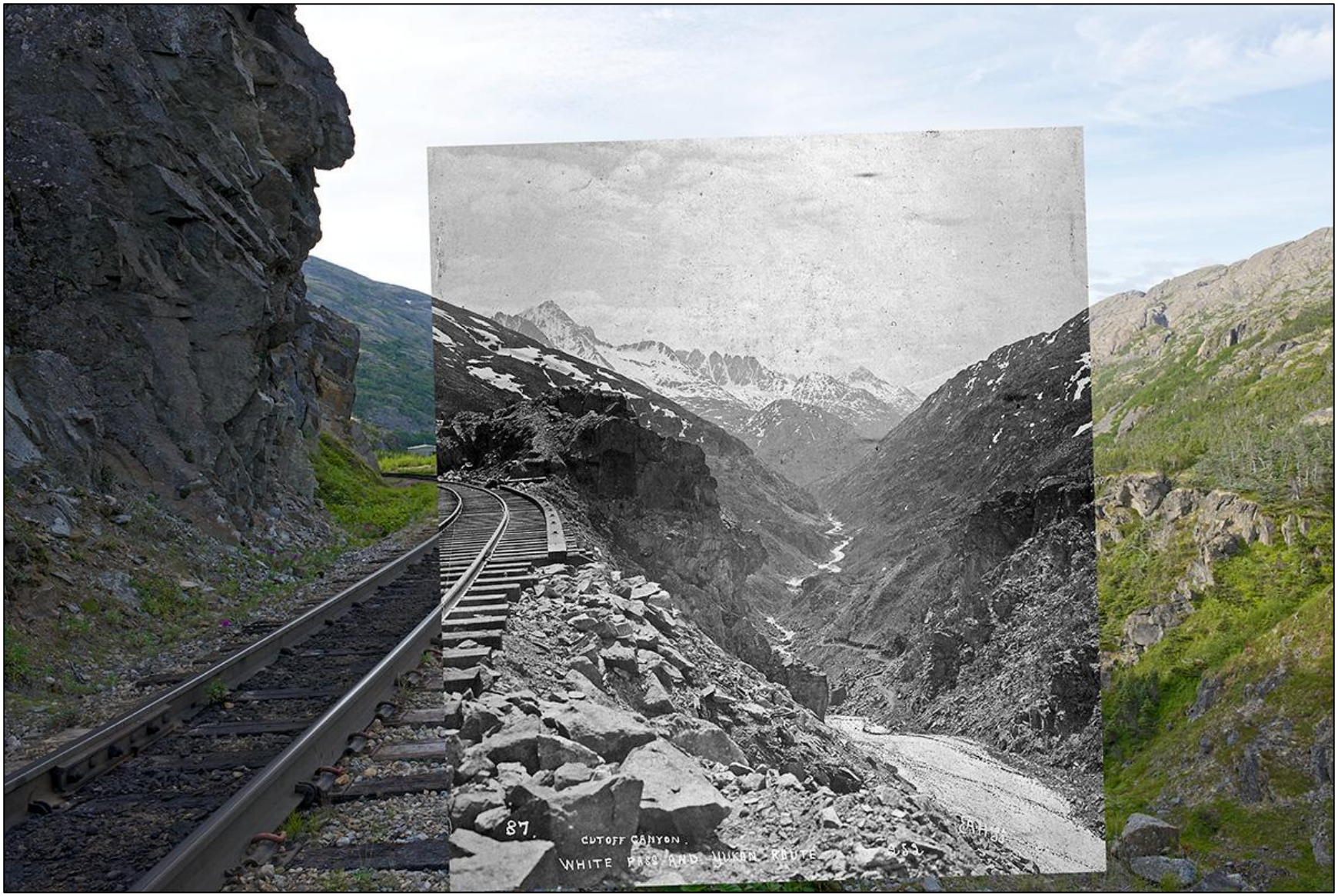

Figure 314. c. 1899 image by Hegg overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 51 – White Pass Summit (Photo Station WP-29)

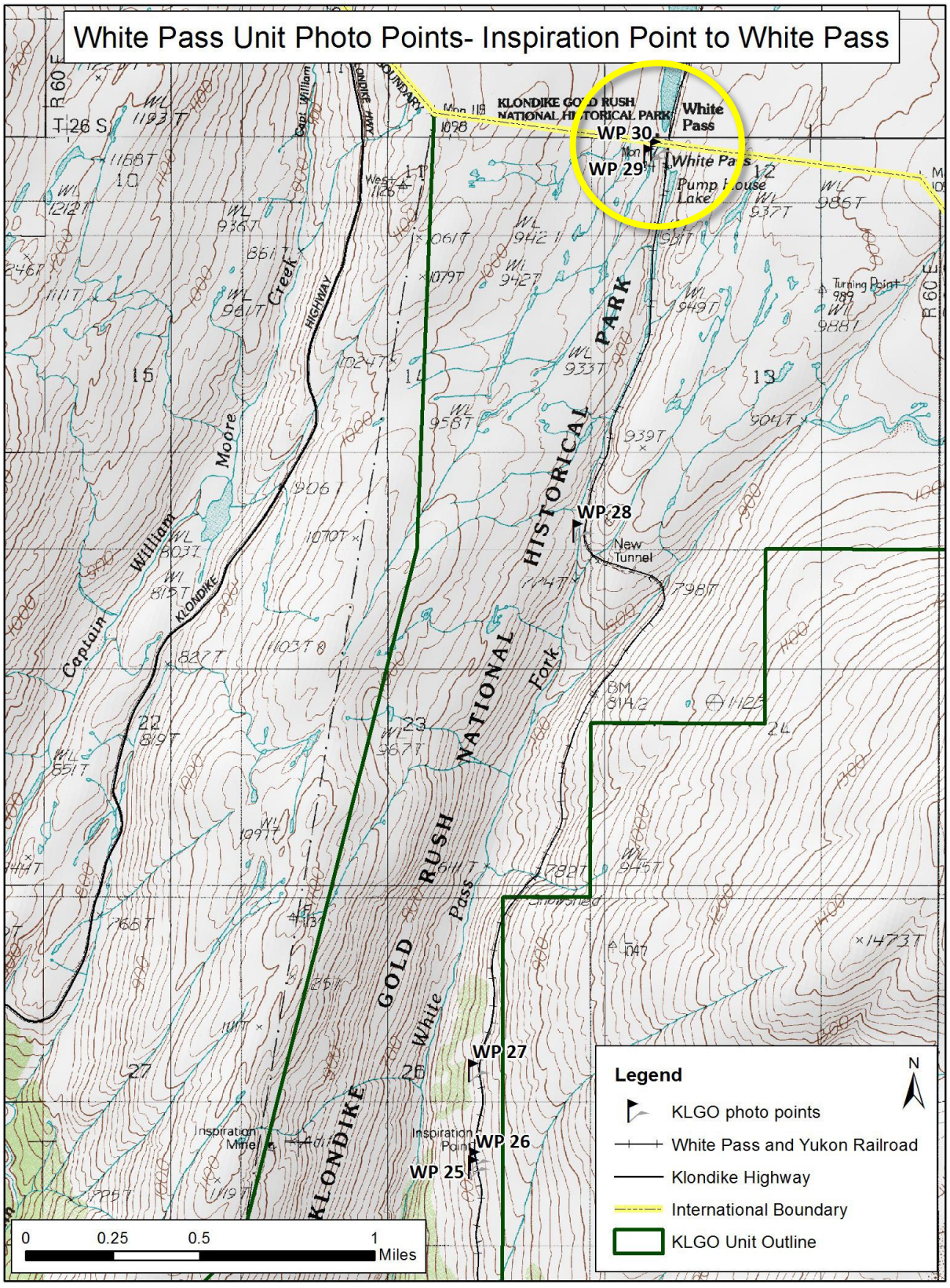

Figure 315. Detail map showing the location of photo station WP-29 at White Pass Summit.

Figure 316. Reference photo looking north showing the location of Photo Station WP-29. The yellow X marks the approximate photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks at the White Pass Summit on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 54. Photo Station WP-29 Metadata.

Photo Station WP-29	Historic Photo	Repeat Photo
Date	c. 1900-1910	August 3, 2014
Time	unknown	7:32:39 AM AKDT
Photographer	unknown	R.D. Karpilo Jr.
Photo Number		Karpilo #20140803-00477
Photo Credit	Suggested Credit: National Park Service, Klondike Gold Rush National Historical Park, KLGO 25820. Gift of Dr. David Wallace.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/11, 1/60 second
Direction	north	
Latitude	59.62392° N	
Longitude	-135.13956° W	
Elevation	2,935 feet	
Notable Changes	Visible changes include a noticeable increase of spruce, alder, and other vegetation along the railroad right of way and surrounding hills. The White Pass Summit historic structures are no longer standing.	

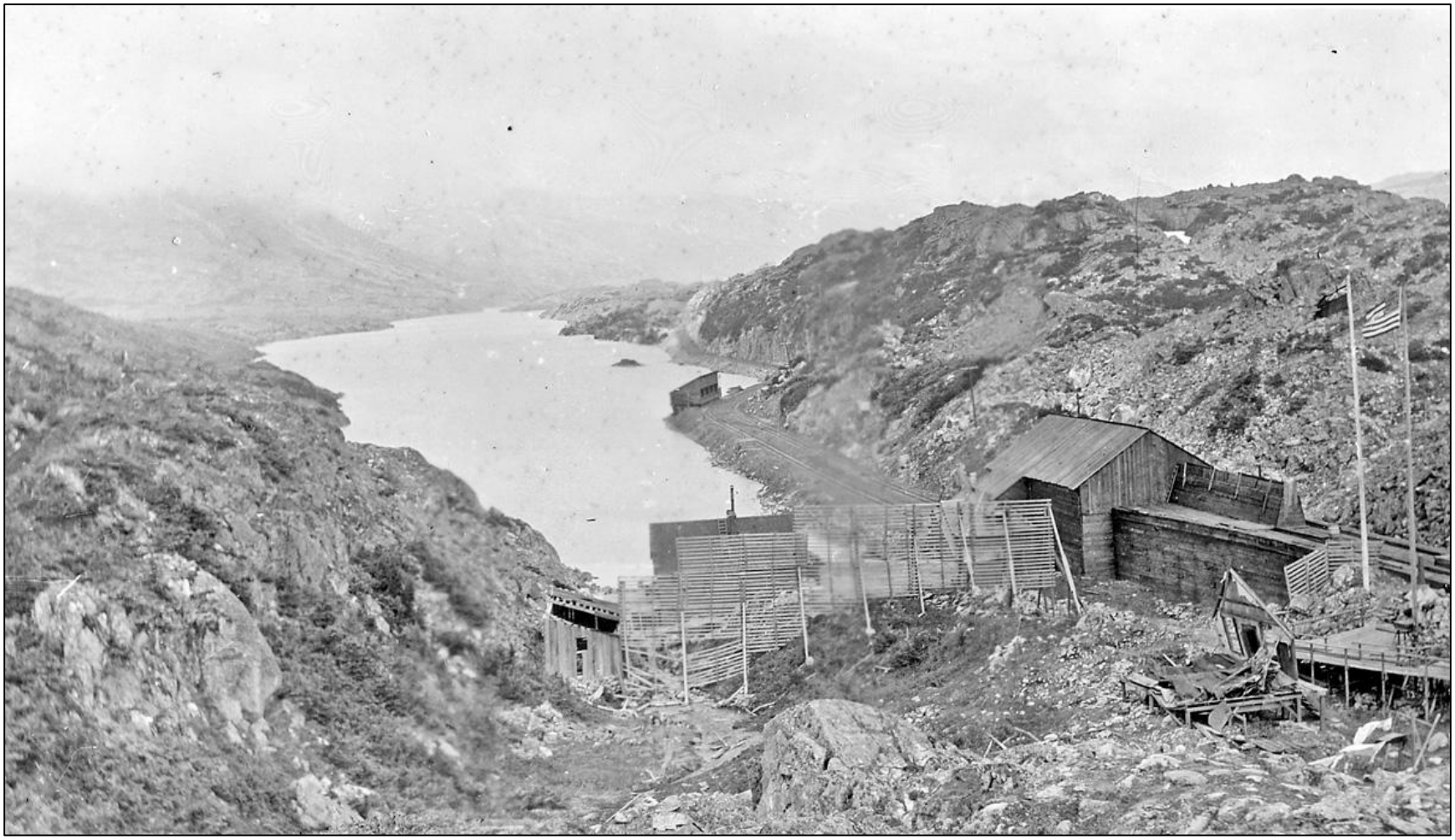

Figure 317. Photo Station WP-29: White Pass Summit, c. 1900-1910 unknown photographer. View to the north across the United States and Canada border of Summit Lake and the WP&YR Railway and structures at White Pass Summit, Alaska. Credit: National Park Service, Klondike Gold Rush National Historical Park, KLGO 25820. Gift of Dr. David Wallace.

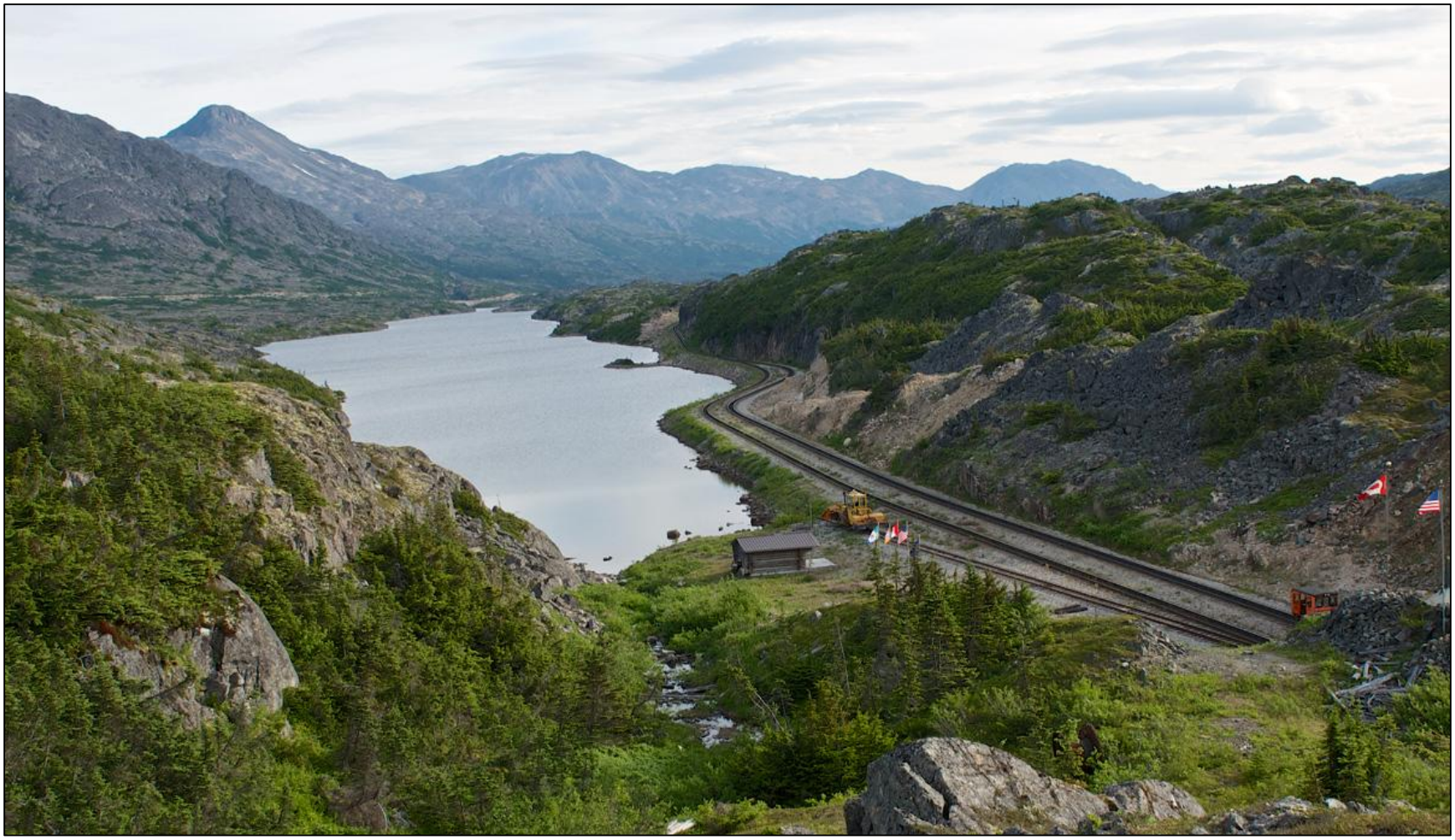

Figure 318. Photo Station WP-29: White Pass Summit, August 3, 2014 R.D. Karpilo Jr. View to the north across the United States and Canada border of Summit Lake and the WP&YR Railway and structures at White Pass Summit, Alaska.

Figure 319. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 320. c. 1900-1910 image overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

KLGO Photo Pair 52 – White Pass Summit (Photo Station WP-30)

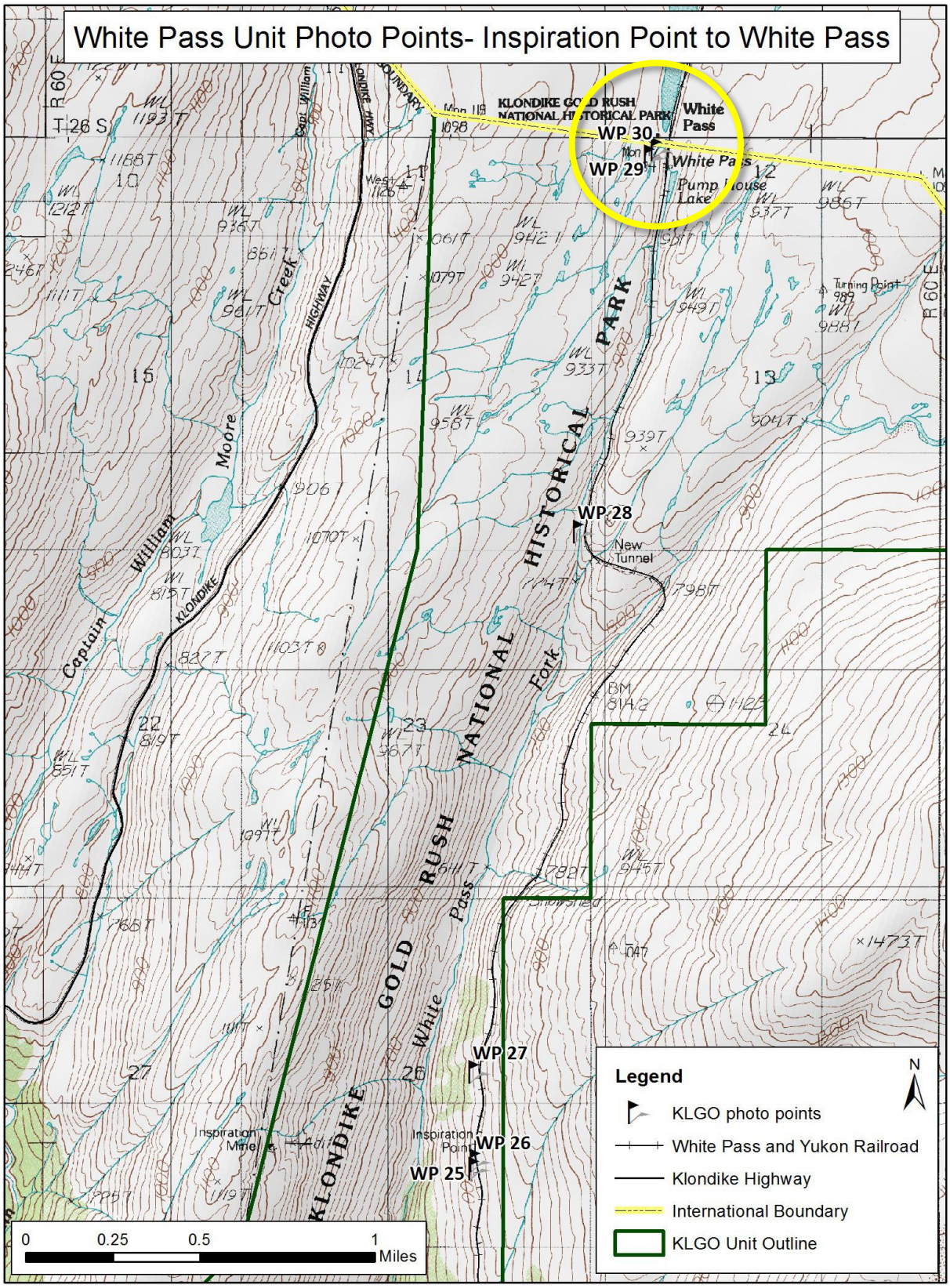

Figure 321. Detail map showing the location of photo station WP-30 at White Pass Summit.

Figure 322. Reference photo looking north showing the location of Photo Station WP-30. The yellow X marks the approximate photo station location and the yellow arrow indicates the approximate direction of the repeat photo. This photo station is located on the west side of the train tracks at the White Pass Summit on the WP&YR Railway, Alaska. The WP&YR Railway provided access to this site via railroad motorcar.

Table 55. Photo Station WP-30 Metadata.

Photo Station WP-30	Historic Photo	Repeat Photo
Date	c. 1900-1910	August 3, 2014
Time	unknown	7:46:17 AM AKDT
Photographer	unknown	R.D. Karpilo Jr.
Photo Number	unknown	Karpilo #20140803-00477
Photo Credit	Suggested Credit: Courtesy of Skagway Museum. I#00804, George and Edna Rapuzzi Collection. Gift of the Rasmuson Foundation.	Suggested Credit: R.D. Karpilo Jr. and S.C. Venator/NPS
Camera Support	unknown	handheld @ 6 feet
Camera	unknown	Nikon D800
Lens	unknown	Nikkor 24-70mm f/2.8 @ 24mm
Camera Settings	unknown	ISO: 100, f/13, 1/80 second
Direction	northeast	
Latitude	59.62422° N	
Longitude	-135.13903° W	
Elevation	2,913 feet	
Notable Changes	Visible changes include a noticeable increase of spruce, alder, and other vegetation in the foreground and surrounding hills. The White Pass Summit historic structures are no longer standing.	

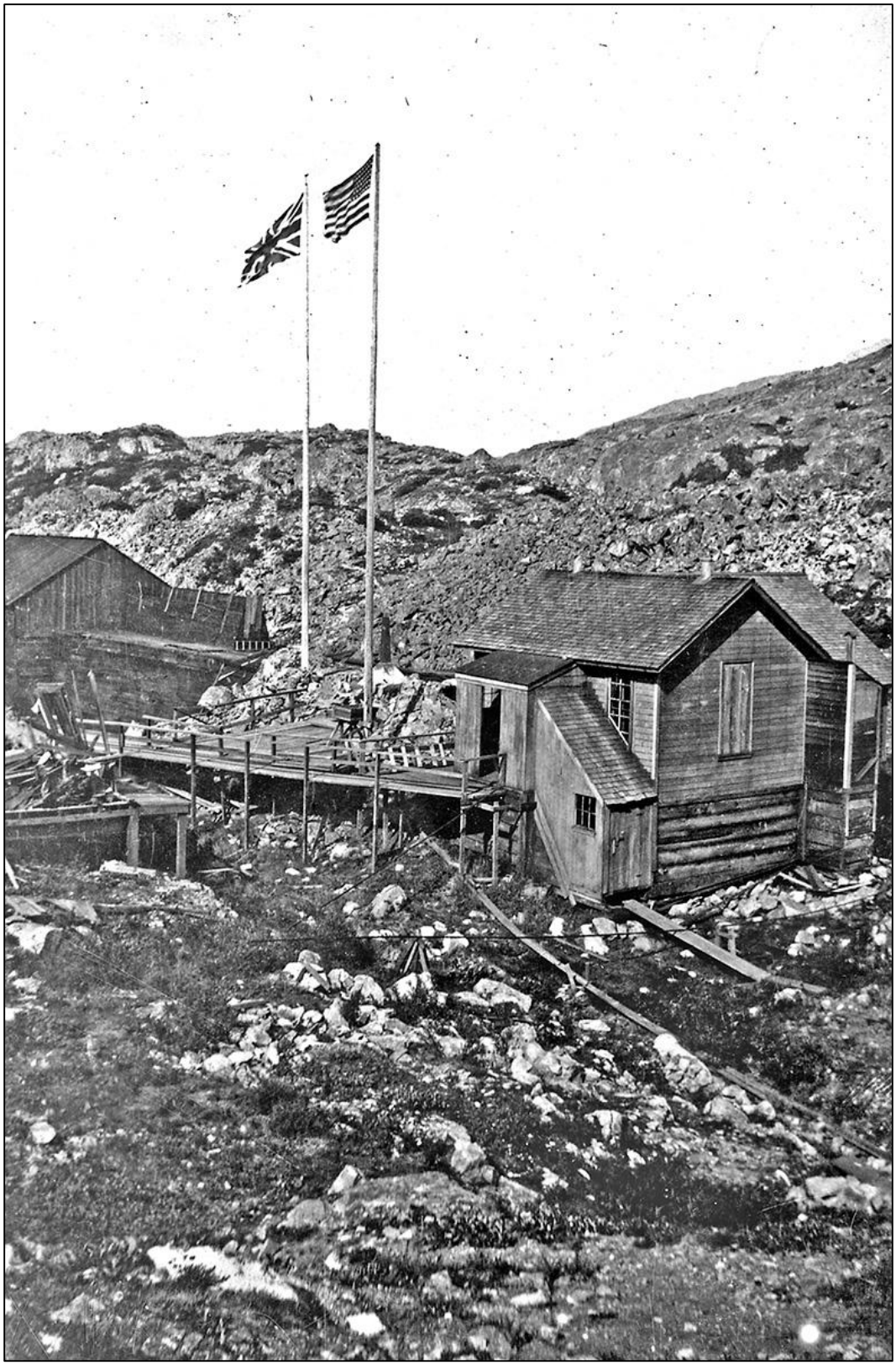

Figure 323. Photo Station WP-30: White Pass Summit, c. 1900-1910 by unknown photographer. View to the northeast of the United States and Canada boundary at White Pass Summit, Alaska. Credit: Courtesy of Skagway Museum I#00804, George and Edna Rapuzzi Collection. Gift of the Rasmuson Foundation.

Figure 324. Photo Station WP-30: White Pass Summit, August 3, 2014 R.D. Karpilo Jr. View to the northeast of the United States and Canada boundary monument and flags on the west side of the WP&YR Railway at White Pass Summit, Alaska.

Figure 325. Full uncropped version of the August 3, 2014 repeat image. Box represents the field of view of the historic photo.

Figure 326. c. 1900-1910 image overlaid on the full uncropped version of the August 3, 2014 repeat image by Karpilo.

Discussion

The 52 photo pairs produced in 2013 and 2014 document the past century of landscape and ecosystem change in the Chilkoot, Skagway, and White Pass units of KLGO. The photo pairs record changes in park resources including: retreating glaciers, vegetative succession, changes in ecosystem composition and connectivity, vertical advance of tree line, increase in vegetation density, changes in fluvial morphology, and anthropogenic changes. The majority of the glaciers photographed in the KLGO area have significantly retreated and thinned during the past century. In many areas of the park, tree line has advanced upslope, vegetation density has increased, and glacial moraines have become vegetated. In Skagway, anthropogenic factors have been a primary driver of change. The photo pairs produced by this project will be useful for identifying specific features or processes that may require more intensive monitoring and research and can be used as a tool for education, outreach, and resource management.

The following section provides a summary by park unit of the specific changes observed in the repeat photo pairs.

Summary of changes observed:

Chilkoot Unit

Lower Chilkoot Trail/Coastal rainforest: Below 1,000' elevation

From Canyon City downriver toward the Taiya Inlet, coastal rainforest dominates the Taiya River Valley bottom. The Taiya River bed was possibly scoured between 1883 and 1894 by a glacial outburst flood from the large lake at that head of the Nourse Valley that was noted by Frederick Schwatka during his 1883 expedition to the area (Schwatka, 1891). The photographs from 1894 indicate forest fire burn scars along the western valley wall. The valley bottom near the Chilkoot Trail was logged during the Gold Rush, particularly near larger camps such as Canyon City.

The Taiya River Valley bottom has been substantially revegetated by cottonwoods and other trees. The Taiya River appears to have generally stabilized into a single primary channel, and the braided gravel beds have grown over with forest. The historic burn scars on the surrounding hillside now appear to support a mixed coniferous-deciduous forest.

Glaciers, including Irene Glacier and Saussure Glacier, have thinned and retreated. Vegetative succession has occurred on their moraines and the recently deglaciated areas.

Mid-Chilkoot Trail/Subalpine: 1,000' to 2,000' elevation

Between Canyon City and Sheep Camp, the vegetation community begins the transition from coastal rainforest to subalpine. Trees along the Taiya River near Sheep Camp have shifted from a coniferous forest to predominantly deciduous. This may be succession following Gold Rush era logging.

From Sheep Camp to the top of Long Hill, the vegetative community is dominated by deciduous trees shrubs along the riparian corridor, and more open forest with mixed deciduous and small coniferous vegetation on the slopes. Talus fields and open tundra become dominate landscape features in the upper reaches of this zone.

The tree line in this zone appears to have advanced several hundred feet up-slope. Once-bare talus slopes and glacial moraines have been colonized with moss, lichen, grass, and brush. Identifiably stands of alder other brush visible in the Gold Rush era photos have expanded in area and density.

Glaciers visible in the historic photographs have retreated and thinned, in many cases retreating out of the field of view of the historic images.

Upper Chilkoot Trail/Alpine: 2,000' to 4,000'
Small patches of vegetation on the mostly rocky slopes have expanded in size since the historic photographs were taken. Glaciers on both sides of Chilkoot Pass have retreated. Historic structures have deteriorated. There is a slight change in the level of Crater Lake, near the summit of Chilkoot Pass, although that change may be seasonal.

Skagway Unit

Skagway Waterfront:
The Skagway waterfront has substantially altered since the 1890s. The shoreline has been anthropogenically changed from a broad, shallow sloping beach to a dredge-and-fill with a small boat harbor, commercial port, and parking lots.

Skagway Valley Bottom:
The coniferous forest visible in early photos has been developed. In its place in the Skagway Valley bottom is the town of Skagway. Deciduous trees line the riparian zone of the creek running through the city. The river has been constrained to the western part of the valley to allow for construction of bridges and an airport.

Gold Rush era buildings have been partially replaced with more modern buildings, although some remain. Historic roads such as Broadway are now paved surfaces.

Surrounding Hillsides:
AB Mountain and the hillside east of Skagway near the Dewey Lakes appeared to have suffered forest fires in the late 1800s. The historic coniferous forests have regrown or been replaced with a mixed coniferous/deciduous forest. Tree line has advanced up the alpine slopes of nearby mountains such as AB Mountain and Face Mountain.

Glaciers:
The Harding Glacier has thinned significantly and retreated. The exposed moraines and the recently deglaciated areas are becoming vegetated.

White Pass Unit

Lower White Pass route- Rocky Point to Clifton, Below 1,000' elevation
At Rocky Point, the East Fork Skagway River and floodplain has changed from an open braided and sparsely vegetated riparian system to a more channelized and densely vegetated system. The similarity of this to the changes in the lower Taiya River suggest the possibility of a late 1800s glacial outburst flood, possibly from the Denver Glacier, although the authors know of no other studies supporting this hypothesis.

Anthropogenic changes include blasting of the hillside at Rocky Point. Burn scars from a forest fire which occurred no later than 1899 may also be anthropogenic in origin. Both the blasted areas and the burned areas have become revegetated with deciduous trees, rather than the mature coniferous forest that originally grew in the area.

From Rocky Point to Clifton, vegetation has visibly grown and covered exposed bedrock on the hillside west and north of the railroad.

Middle White Pass Route: Heney to Tunnel Mountain/subalpine, 1,000' to 2,200' elevation
Vegetation has visibly grown and covered exposed bedrock on the hillside above the railroad tracks, and increased in density where it previously existed. The tree line appears to have advanced upslope several hundred vertical feet.

The lateral moraine of Laughton Glacier has become vegetated. Small alpine glaciers visible on mountains in the background have thinned and retreated.

Anthropogenic changes include the construction of the Klondike Highway on the mountainside on the west side of the Skagway River Valley. The anthropogenically-disturbed cut-and-fill slope below the railroad grade has regrown with alder and other pioneer species. The railroad keeps the grade clear of vegetation.

In some places, coniferous trees have regrown. At the confluence of the Skagway River and the White Pass Fork, the once-clearcut White Pass City site has become reforested. Coniferous trees have grown up on the banks of the Skagway River. This is notable because at lower elevations, regrowth in disturbed areas appears to have been dominated by deciduous trees.

Upper White Pass Route: Tunnel Mountain to White Pass/subalpine to alpine, 2,200' to 3,000'
At Inspiration Point on Tunnel Mountain, visible changes include an increase in the density of vegetation along the railroad and adjacent slopes. Spruce trees advanced upslope and colonized the Inspiration Point area. Harding Glacier, visible across the inlet from Skagway, and the small unnamed alpine cirque glaciers in the Sawtooth Range have retreated.

Alder and other vegetation have also regrown in the cut-and-fill area outside of the area in the railroad right-of-way where vegetation is managed by the railroad.

At the summit, there is a noticeable increase in spruce, alder and other vegetation along the railroad right-of-way and surrounding hills. Historic stands of low trees or brush have grown in extent.

Anthropogenic changes include the construction of the Klondike Highway. Some rock outcrops have been blasted to improve track alignment and snow removal. Historic structures outside of the track have mostly deteriorated or been removed, including the viewing platform at Inspiration Point, and the historic structures at the White Pass summit.

Future work

The focus of this project and report is the production and delivery of a collection of photo pairs documenting the past century of changes that show a representative sample of the natural resources present in the diverse landscapes and ecosystems of the KLGO area. As a result, only cursory analyses of the pairs were conducted. Future studies should conduct a comprehensive analysis of the photo pairs, including: identification of individual species present, delineation of vegetative communities, and further analysis of the changes observed. Despite the fact that this project concentrated on natural resources changes in the park, many of the photo pairs contain cultural resources that will be of interest to cultural resource managers and scientists.

Approximately a dozen additional historic photos were opportunistically repeated on the Canadian portion of the Chilkoot Trail as the authors hiked to Bennett to catch the train back to Skagway. If funding and support becomes available for postproduction, the authors could assemble these pairs and extend the utility of this study and complement the KLGO pairs presented in this report.

There were many additional historic photos sites that the authors could not successfully locate and repeat in their limited field time because of thick vegetation, difficult access, or other factors. In some of these locations with thick vegetation, such as the Canyon City area, it may be possible to find the photo sites with archeological survey information and assistance in the field by KLGO archeologists and historians. Several of the modern repeats by the authors are general approximations of the historic photo, not exact repeats. Future visits to the sites could more precisely location the photo site.

The authors examined only a very small subset of Klondike Gold Rush era photography. There are thousands of additional historic photos that should be evaluated for their potential repeat value. Future repeat photography work could expand to other portions of the KLGO area, such as the Denver and Laughton Glacier area, and include more cultural resources of the park.

The photo stations established by this project will be useful for monitoring future changes in the natural and cultural resources in the KLGO area. The detailed location information provided by this report will facilitate reoccupying the photo stations in the future. The photo stations should be visited and repeated at least every 5 to 10 years. Several of the easily accessible photo stations, such as the stations located on the helipads at the Canyon City Trail Crew Cabin and Sheep Camp Ranger Station could be repeated annually.

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