GOLD CREEK DELTA HISTORIC SERIES

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HISTORIC SERIES FOR GOLD CREEK DELTA PROJECT AREA

To evaluate change along the shoreline proposed for a seawalk, I georeferenced a series of historical maps and vertical air photography spanning about a century. All 5 images are shown together on this page for easy comparison. Following pages show each of the vertical scenes in more detail, along with supporting ground photos and aerial obliques.

Ten-foot lidar contours and outlines showing “final” alignment of Willoughby and Egan are superimposed on all 5 verticals for reference. Obviously, contours changed, for example as a fill platform was built outward and ultimately armored near the Taku Twins building.

The area proposed for Seawalk construction is all outside of the Egan Drive riprap (outer pink lines). The series documents glacial rebound, steady advance of fill, and development spreading over former tideland.

More historical background for downtown Juneau is found in my 72-page Natural history of Juneau trails: a watershed approach, in preparation at time of this Seawalk scoping report. That study was done in cooperation with CBJ-Parks & Recreation, resulting in the array of 10 trailhead triptych sign clusters.

Below, for context of the project area, I’ve overlaid RD Miller’s 1975 surficial geology map onto a B&W version of the 2006 imagery. This indicates the entire Seawalk development would occur either on placed fill or active tideland. The 1887 yellow arrow shows the first of many ground-based photos in pages following. Aak’w Village backs against steep bluffs of an ancient delta (coded dark brown), formed at higher sea level. Eastward, this grades into alluvial fan (tan), no longer active since channelization of Gold Creek.
Late 1800s

Position of the 1887 photo for Áak’w Village is marked on the preceding surficial geology map. Along with the next undated “wading” photo from the village, it shows how gently shoaling the flats were. It was suitable for cedar canoes but difficult to bring larger boats in here—probably one reason the villagers retained rights to this waterfront.

At bottom, I stitched together 2 GK Gilbert photos into a panorama showing the full sweep of Gold Creek delta. It was taken from Mt Maria (also marked on preceding geology map, yellow arrow) looking over Evergreen Bowl. “A” shows future Federal Building. “B” is future Cemetery plateau. That section of the Gold Creek Delta is raised slightly above the Casey-Shattuck flats, freshly logged in 1899. Dzantik’i Héeni, flounder’s little creek (Gold Creek) drains a flashy, flood-prone basin, so it probably migrated between A & B on a regular basis in pre-contact times. My visualization, next page, shows what the fan forest might have looked like at a time when the channel exited at position C.
1879

This retouched photograph is a visualization for 1879, the year before gold discovery. More background on my reconstruction is in Carstensen (2013). The left-side shoreline assumes all construction outboard of Willoughby was on placed fill (Miller, 1975). Also, land has risen around 6 to 8 feet over 130 years (Larsen et al, 2005).

Pre-contact Dzantik’i Heeni was the finest salmon stream in Gastineau Channel, but firehose climate precluded winter residence. I placed 2 small smokehouses in the seasonally trampled meadow next to the shifting stream outlet. (Goldschmidt & Haas, 1998)

This alluvial fan was dynamic. Responding to headwater landslides and gully-washers, the channel snaked back and forth across the lower fan-delta, toppling trees and rejuvenating the alluvium. So the fan forest wasn’t densely stocked, but open, probably with a mix of cottonwoods (yellowing here) and exceptionally tall spruce.

Early 1900s

Un-dated images in this report have my best guess for the year or decade, followed by the symbol ~. A white house appearing in both of these photos is marked with yellow arrow. Trevor Davis estimated the lower boardwalk scene at about 1910. So the upper Winter & Pond image, lacking the boardwalk, probably preceded it. These early Áak’w Village coastal homes were all on piling, indicating highest tides reached to the back edge of the buildings. The 1910~ boardwalk was curving and too narrow for automobiles. This is probably the feature I highlighted in yellow on the following Wettrick & Wilhelm map of 1914. It was inboard (north) of the future Willoughby Avenue boardwalk by about 200 feet.
1914

On this 1914 street map, Dzantik’i Héeni (Gold Creek) followed a more natural, meandering route through town. I highlighted it in blue, and also indicated the original Áak’w Village pedestrian boardwalk in yellow. Comparing the dense, conceptual grid on this map with dispersed residential development in preceding photos, and 1918 map of existing buildings, below right, shows how ambitious early city planners were. In this case, unlike most other Alaskan gold towns, ambitions were justified; almost all of these blocks and parcels did sprout homes, stores and offices.

Even today, only 12% of Gold Creek watershed supports conifer forest. (For comparison, 80% of Fish Creek watershed has conifer forest.) Valley headwalls are steep and avalanche prone, and this was exacerbated by mining era earth-moving and deforestation. Down on the fan-delta, these avalanches caused overbank floods, heavy sedimentation, and channel migration. One of many violent floods was in 1918 (Davis, 1979), damaging homes on the parcels fringing the blue-coded channel on the 1914 map.

Confinement of Gold Creek to a steep-walled channel was inevitable. Field surveys for Alfred Brooks’ USGS map, below, published in 1918, were probably completed prior to the flood. That map showed considerable change from the channel position of 1914. By 1929 (next aerial) Gold Creek was locked into the channel where it still runs today.

1918
By 1929, Gold Creek flowed next to a bare, pale triangular ballfield that was to become the Federal Building. The Dauenhauers’ *Haa Kusteeyi* (1994) gives history for Willoughby Avenue construction:

“Cecilia Kunz . . . relates the time (possibly around 1916) when her father, Jake Yaakwaan, stopped construction of Willoughby Avenue for 2 weeks, preventing it from going through the Indian village until the residents could decide if they wanted it. . . At that time, the tide came up to [her] house, and boats could be tied up there. On the other hand, the Tlingit residents of the village had to go by boat for supplies such as coal. There were benefits with and without the road. Seward Kunz and Jake Williams . . . debated the issue, and the community voted to let the road go through. Part of the concern of the residents was that in some deeds the boundary is defined as “property to low tide.”

Piers jutted into the flats. One, on the left, would become the Juneau-Douglas bridge, opened in 1935. In center were the first stages of the fuel dock. On the right, a growing, dog-leg pier would remain known to 21st century residents as The Wharf.

Even as late as 1938, mounds of jettisoned sewage piled level with the top of the docks. It looks as though a large portion of the Juneau population dumped their garbage into the tide flats.

Original annotation to this 1938 photo by Ray Dame reads: “Indian Village, old Federal Building in background — from tide flats, showing sewage disposal.”

Old Federal Building was on Telephone Hill, where the SOB stands today. This low bedrock ridge encloses the commercial district’s sloping ancient delta. It’s easier to make out relief of these features in the following stereopairs.
1948

The Navy photographed Juneau on August 8th, 1948, during a summer-long photogrammetry mission in Southeast Alaska. Today’s 1:63,000 topographic maps are still based on this vertical imagery. Earlier, they shot the oblique view below (cropped from a very high elevation photo) on August 16th, 1941, only 3 months before Pearl Harbor. First cars had passed over Juneau-Douglas bridge in 1935.

Comparing the dated 1941 photo at bottom to the USFS oblique, left, suggests the latter was taken a few years later; the fuel dock in center distance wasn’t complete in 1941. Between these early 1940s photos and 1948, fill was placed behind the wharf, and subport construction proceeded rapidly.

On the left side of the 1948 vertical is a curving spit, carrying sediment away from a constructed berm near J-D Bridge. It had not yet begun to form in the 1944~ image. This may indicate ongoing placement of fill from dredging and mine waste, and that current was stronger on an exiting tide. A spit is still found here, of similar conformation, arching southeastward from the corner of the Taku Twins riprap.
1962

Comparing development in 1962 with the preceding 1948 vertical aerial, there was relatively little change along the waterfront, or even inboard from the subport pad, where tides still penetrated until Egan Drive was built in the 1970s. Was this delayed closure due in part to resistance against closing off small-boat access to Aak’w Village?

The shoreline in the 1960s was indented by boat-access fingers. Apparently these were dredged to allow small-boat entry, even as surroundings were built up by placed fill. One can be seen on the left side of the 1965 oblique, since filled in by the Taku Twins parking lot. The pad had not yet been armored by riprap, so loose fill was vulnerable to tidal “robbery.” Taku Glacier ice bergs still stranded on the spit in the 1960s. By the time I arrived in Juneau in the 1970s, this was a rare occurrence.

In contrast to fairly static coastal development, residential construction boomed. Almost every lot had a building by 1962, probably double the 1948 density. Closure of AJ Mine in 1944 did little to dampen growth of a city now burgeoning with State and Federal bureaucracies.

The most visible expression of this was the Federal Building, nearly complete in this 1965 oblique.
CBJ commissioned imagery for the entire road system in 2006. This is a mosaic at 4-foot pixel resolution, captured at a fairly low tide. In the same year, USFS commissioned aerials for much of the northern Tongass. Although these were processed into orthophotography, I prefer to georeference the raw original imagery myself, for better color balance, and preparation of stereo pairs from the overlapping images. Compare this CBJ photomosaic to the 2006 USFS views, at end of the following stereo gram series.

To a naturalist, one conclusion that leaps out from study of a century of change through ground- and aerial imagery is that in our haste to serve humans, we left little room for trees. Between the 1962 and 2006 imagery, Juneau began to show a little more green, but in such a tree-friendly environment, we could certainly do better.

To make the Seawalk a destination that inspires Alaskans to reconnect with their urban coastline, even a 20-foot wide belt of brush and small trees would be an important statement. For a thousand feet along the outlet of imprisoned Dzantik’i Héeni, the beach could be given back to warblers and mustelids and flounders.

This May, from the slopes of Mount Juneau, I caught the delta at low tide. There’s been speculation about origins of the lagoon on right. Studying the preceding verticals, it seems to have appeared between 1948 and 1962. Even in early stages it did not resemble the transitional boat-access slots, so was probably just dredged for fill, needed somewhere nearby.
AERIAL OBLIQUES

Only the first photo in this series—cropped from a 1902 WJ Peters image—is land-based, taken from a mountain on Douglas Island. The rest are from Navy and Forest Service planes, and a recent shot I took in 2011. I’ve given detailed annotation for the 1926 Navy oblique in the forthcoming *Natural history of Juneau trails* (Carstensen, in preparation).

Several of these photos are of unknown date, indicated by “~”. The 1946~ image appears transitional between the 1944~ oblique and 1948 vertical views. Compare the 1964~ Federal Building (pre-window-installation) to the preceding oblique from 1965~.
STEROGRAM SERIES

The following 6 stereo pairs can be viewed in 3D with a pocket stereoscope, or by “free-viewing.”

Either print out these concluding pages, or view them on a computer monitor.

The limitation of the latter approach is that through the 2x lenses on a stereoscope, pixels can be seen on a normal computer screen, resulting in an unsatisfactory image. Lately, I’ve solved that problem by loading stereograms to my tablet, which has higher resolution, and is more suitable to lying flat on a table surface beneath the stereoscope.
REFERENCES


