

ALASKA DISTRICT TRIP REPORT

Project: Napakiak Mooring Points Evaluation for the Denali Commission

Description: Napakiak Trip Report

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Background Information: Jason Norris and Nathan Epps of the U.S. Army Corps of Engineers, Alaska District traveled to the Kuskokwim River community of Napakiak, Alaska on 14 and 15 June 2011. The purpose of the trip was to conduct a site visit and scoping meeting related to potential installation of barge mooring points in the community. Two barge landing sites were investigated during the site visit for the mooring points investigation. An overview of the community, barge landing sites, possible mooring point locations, and advancing erosion is included as figure 1.



Figure 1. Overview of Napakiak proposed mooring point locations. The Kuskokwim River flows top to bottom. GPS points (numbered yellow dots) are at the top of the current river bank. Underlying imagery is from 2005. Riverbank erosion has shifted the top of bank approximately 225 feet to the west since the photo was taken. Red line: top of bank. Blue line: low tide line. Boxed number 1: Upstream Landing. Boxed number 2: Downstream landing. White arrow indicates flow.

Prior to visiting the community, we spoke with Crowley Marine who delivers fuel to the community. They stated that regardless of mooring point installation, they would continue to push the bank at Napakiak due to the need to adjust to tides. They were also skeptical about the

success of mooring points at Napakiak due to erosion and the possible community relocation plans.

Following is a summary of the information learned during the public meeting and site visit.

Public Meeting: A public meeting was conducted at the community bingo hall on June 14 at 1400 hours with a follow-up meeting at 1600 hours on the June 15. A number of residents were present as well as representatives from the city, tribe, and corporation.

Site Description: Napakiak is on the west bank of the Kuskokwim River approximately 14 river miles downstream of Bethel. Johnson Slough forms the northern extent of the community. Since the last site visit in 2007, it was observed that the top of bank of the Kuskokwim River has shifted approximately 160 feet from its previously measured position at an average of 40 feet per year. The banks of the Kuskokwim River are composed of fine sand and silt, which is highly erodible. Erosion of the top of the bank is episodic, typically occurring during the fall storm season when waves in the river can reach as high as 8 feet under special conditions. The main channel of the Kuskokwim appears to be eroding due to tractive forces of the current against the bank. The river makes a sharp turn to the south at Johnson Slough and the thalweg is hard against the west bank of the river throughout this reach.

Johnson Slough provides boat storage for the community. The slough is very shallow and goes completely dry at low tide. At high tide, there is sufficient water to navigate the slough (figure 2). The primary boat launch is south of Johnson Slough's outlet (figure 3).

The community manages the erosion issue by moving structures at risk to the far west side of the community, currently around 4,500 feet from the top of the bank. Two structures used as reference points to monitor erosion in 2007 were relocated in the last 4 years. The community owns a large trailer for moving structures and future moves are planned (figure 4).

Those in attendance at the public meeting were not aware of any potential conflicts with archaeological or cultural resources as those resources were likely lost to the ongoing erosion. They did not foresee any construction problems due to permafrost.

According to the community, the BIA has plans to install a sheetpile dock face at the community. Upon return to Anchorage, we contacted the BIA who referred us to AVCP (Association of Village Council Presidents) due to all BIA funds for construction at Napakiak taking the form of grants to AVCP. We spoke to Julie Stoneking, project manager (PM), at AVCP. She is the PM for all AVCP construction projects at Napakiak. She had no knowledge of a dock project at Napakiak. We followed up with the city.



Figure 2. Looking downstream near the outlet of Johnson Slough at high tide (top) and looking upstream from the outlet at low Tide (bottom)



Figure 3: Boat trailers staged at the boat launch site. River is off frame to the left.



Figure 4: Trailer used to relocate structures threatened by erosion.

Upstream Landing Site: The upstream landing site (figure 5) is approximately 375 feet east of the upstream corner of the Napakiak School's fuel tanks. The school's fuel header is near this site (figure 7). This site has a fair amount of uplands (figure 8) for staging freight; however, like the rest of the riverbank at Napakiak, this site is experiencing active erosion (figure 9). GPS readings were taken 75 feet upstream and downstream of the center of the landing and approximately 10 to 20 feet inland. Due to bank conditions including brush, elevation changes, and bank profile, it would be difficult to install mooring points at this site.



Figure 5. Upstream Landing



Figure 6. Upstream Landing, Upstream Point (left) and Downstream Point (right)



Figure 7. School Fuel Header



Figure 8. Fuel Tank Staged on Uplands at Upstream Landing



Figure 9. Erosion at Upstream Landing

Downstream Landing Site: The downstream landing site (figure 10) is approximately 250 feet downriver of the upstream landing. View of the downstream landing from the proposed location of the upstream point (left photo) and downstream point (right photo) is shown in figure 11. A fuel header (figure 12) for the Bulk Fuel Storage Facility is approximately 650 feet inland from the landing site. A stockpile of gravel (figure 13) is used to reshape this landing as it is eroded.

While on site we were able to witness a hovercraft delivering goods to this landing (figure 14). The main building at the Napakiak School (figure 15) is approximately 450 feet inland of the landing. GPS readings were taken 75 feet upstream and downstream of the center of the landing and approximately 10 to 20 feet inland. The bulk fuel storage facility is shown figure 16. Due to bank conditions including brush, elevation changes, and bank profile, it would be difficult to install an effective mooring point more than 75 feet upstream of this landing. A mooring point could possibly be installed more than 75 feet downstream of this landing; however, it appears that property ownership could become an issue.



Figure 10. Downstream Landing Site



Figure 11. Downstream Landing View from Proposed Location of Upstream Point (left) and Downstream Point (right)



Figure 12. Fuel Header for Bulk Fuel Storage Facility near Downstream Landing



Figure 13. Gravel Stockpile at Downstream Landing



Figure 14. Hovercraft on Kuskokwim River



Figure 15. Napakiak School, side facing river



Figure 16. Bulk Fuel Storage Facility

Recommendations: Based on community input and barge operator comments, installation of mooring points at the locations examined in this report are not recommended due to continued erosion of the riverbank and tidal fluctuations.