

How far will the river go?

ADAPT YK MEETING AUGUST 6-7, 2019

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Alaska Division of Geological & Geophysical Surveys Coastal Hazards Program



Kotlik, Alaska

State of Alaska

Our mission: Determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources, the locations and supplies of groundwater and construction material, and the potential **geologic hazards to buildings, roads, bridges, and other installations and structures** (AS 41.08.020).

Erosion and Flooding on the coast are caused by:

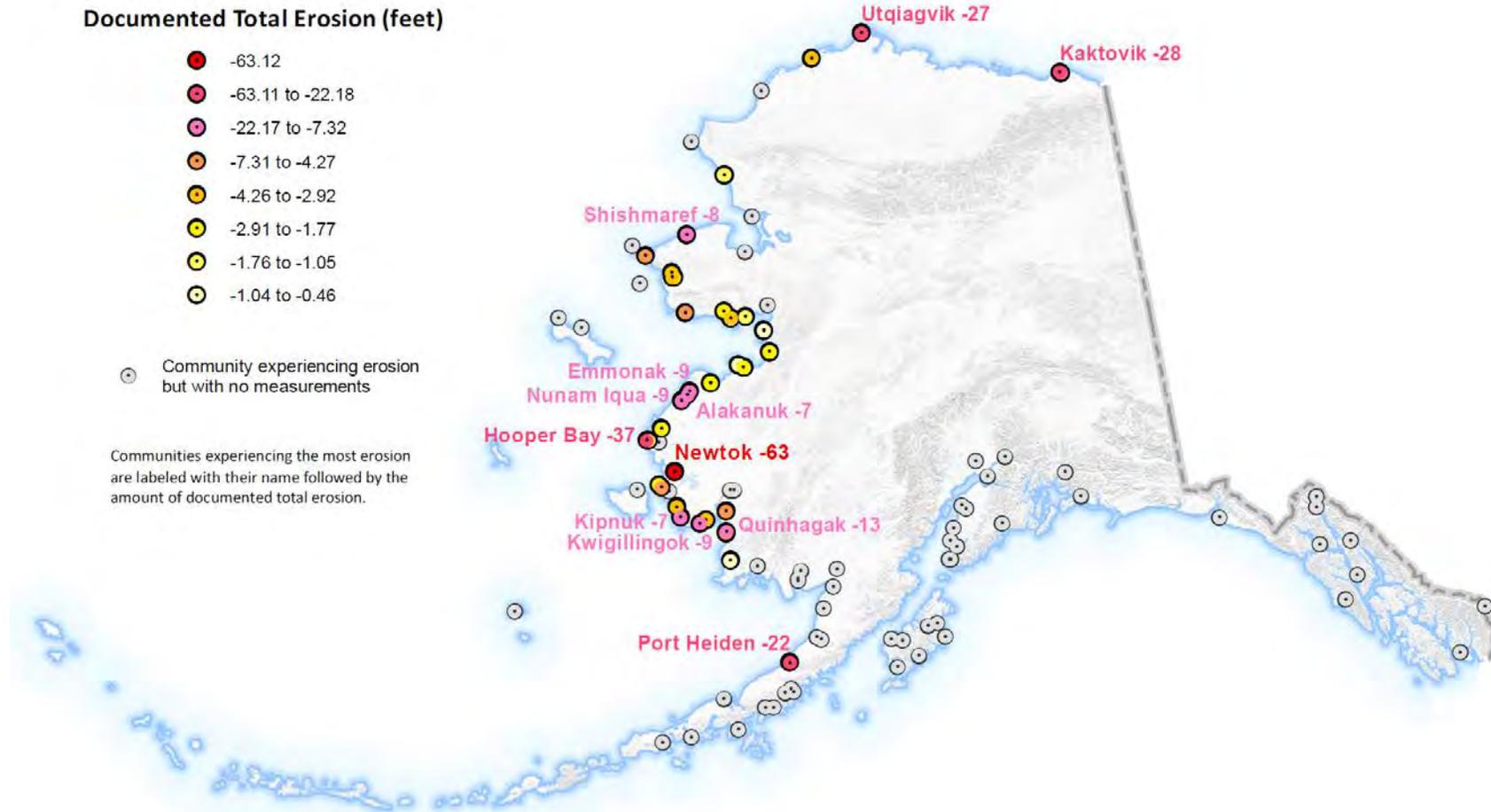
- Permafrost thaw
- Coastal storms occurring in an ice-free ocean
- Relative Sea level rise
- Changes to ocean conditions

Additional considerations for River communities:

- Changes in precipitation
- Ice Jam flooding

87% of all Alaska Native communities experience flooding and/or erosion

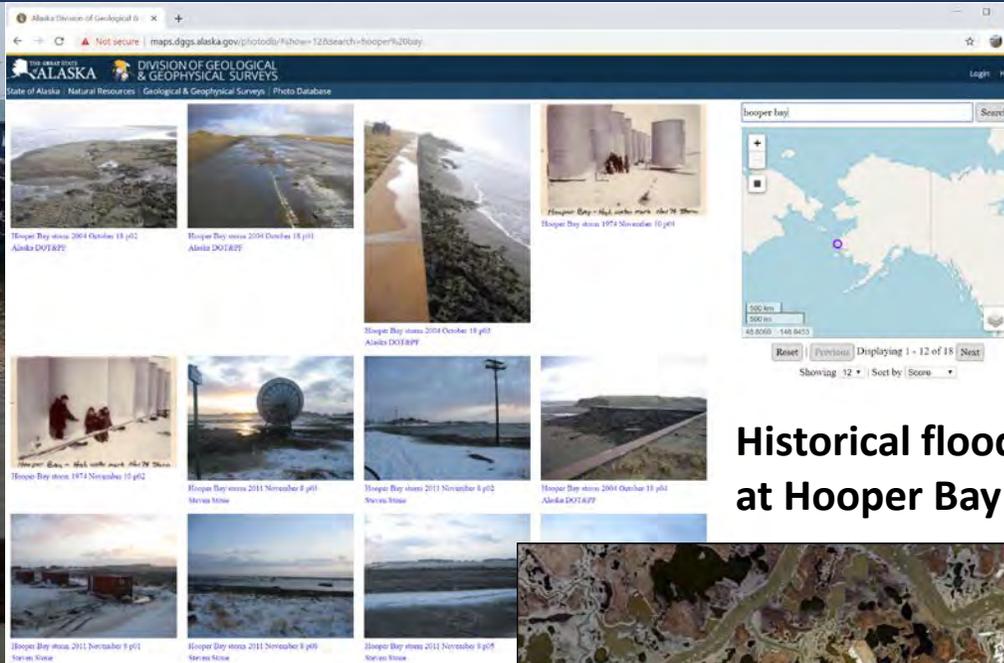
Coastal Communities Experiencing Erosion



IMPACTS ON COMMUNITIES



Flooding at Kwigillingok



Historical flood events at Hooper Bay



Community-based monitoring of erosion at Kotlik riverfront



Community-based monitoring of erosion at Quinhagak Sewage Lagoon



Newtok, Alaska 2015

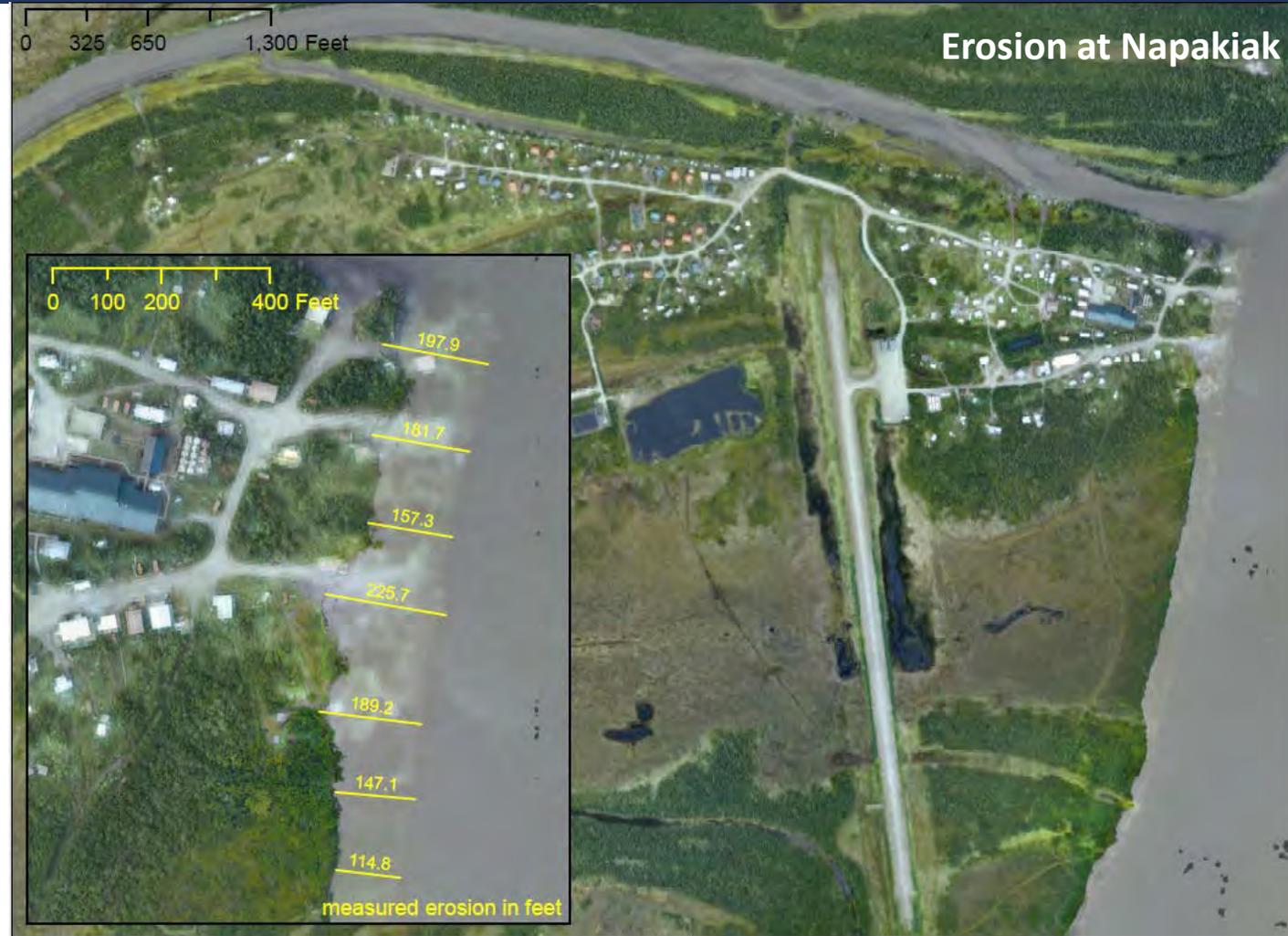


Damage to boardwalks at Kotlik from small storm

Erosion event at Akiak, source KYUK



<https://www.adn.com/alaska-news/rural-alaska/2019/05/23/erosion-in-akiak-swallows-up-to-100-feet-of-riverbank-along-the-village/>

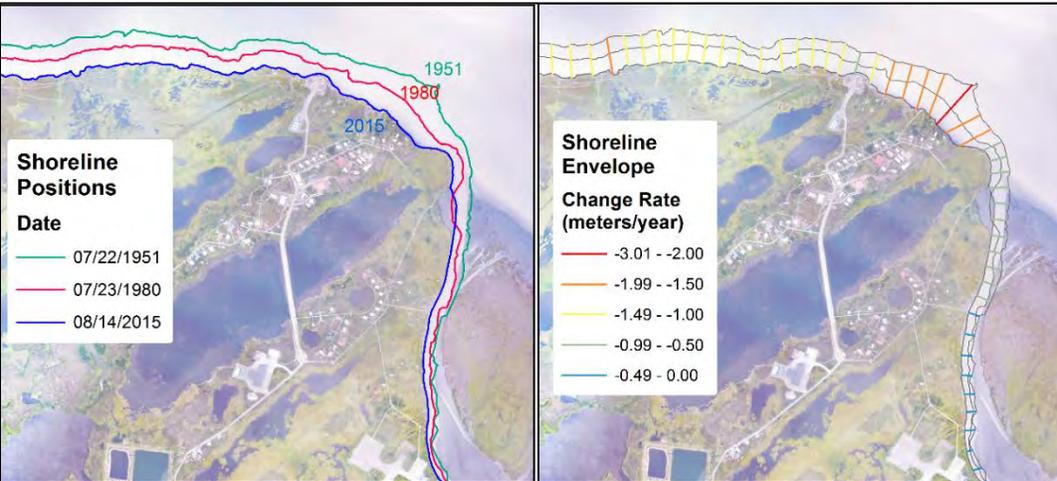


Riverine Erosion at Napakiak, Alaska

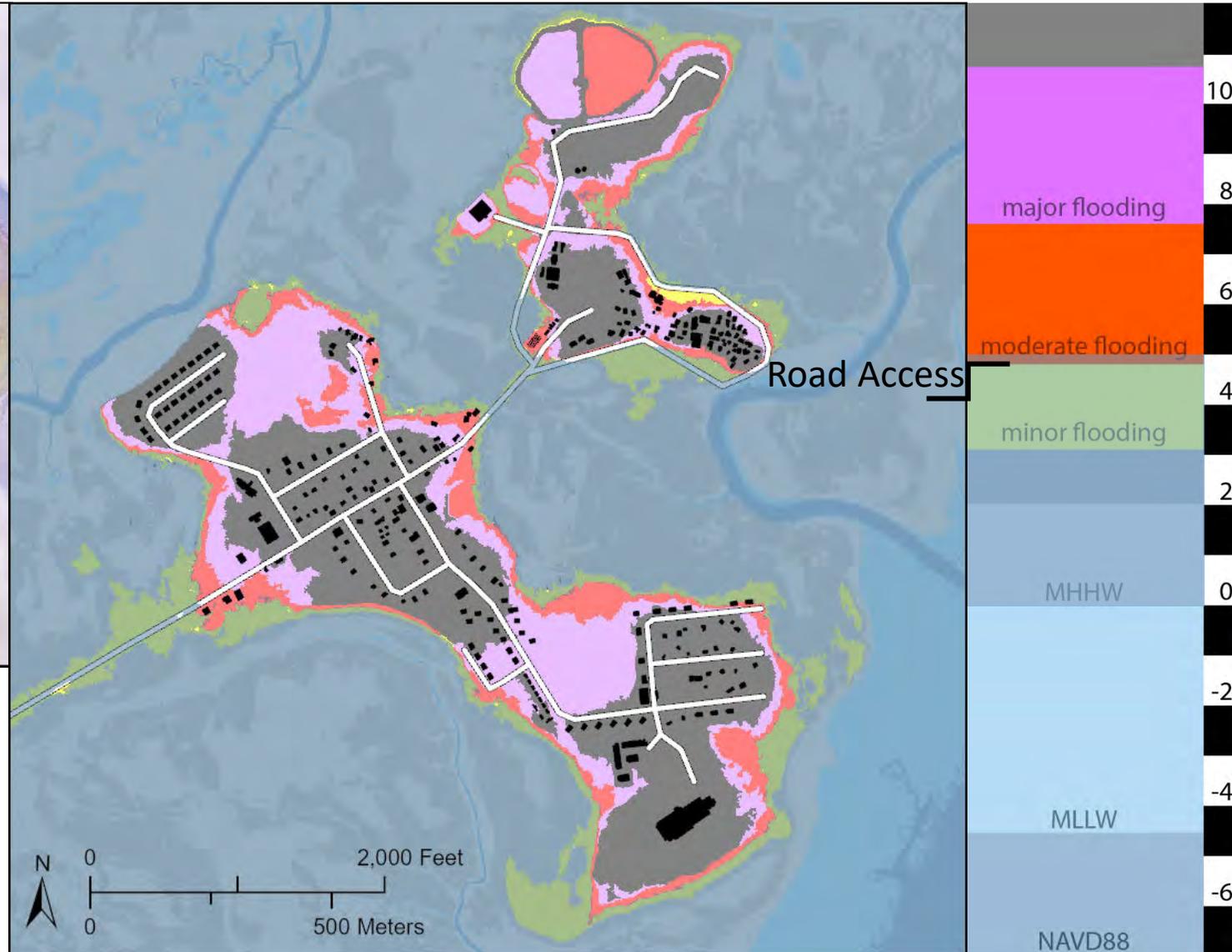
Erosion at Napakiak, Alaska is shown between orthoimagery collected circa 2010's and August, 2015. Recent data are shown overtop the historical imagery and are made transparent, 2015 imagery are available at <https://elevation.alaska.gov/>. Cross shore profiles have been drawn between riverbanks in each photo and changes measured along profiles. Data were prepared by the Alaska Division of Geological & Geophysical Surveys Coastal Hazards Program, Jacquelyn Overbeck November 13, 2018



Shoreline Change Analysis of Nunam Iqua

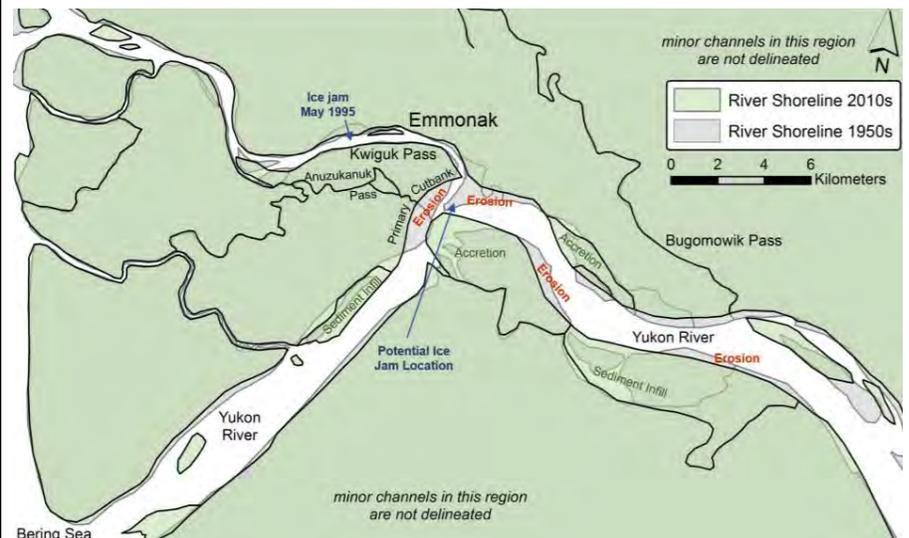


Preliminary Flood Impact Level Mapping at Hooper Bay

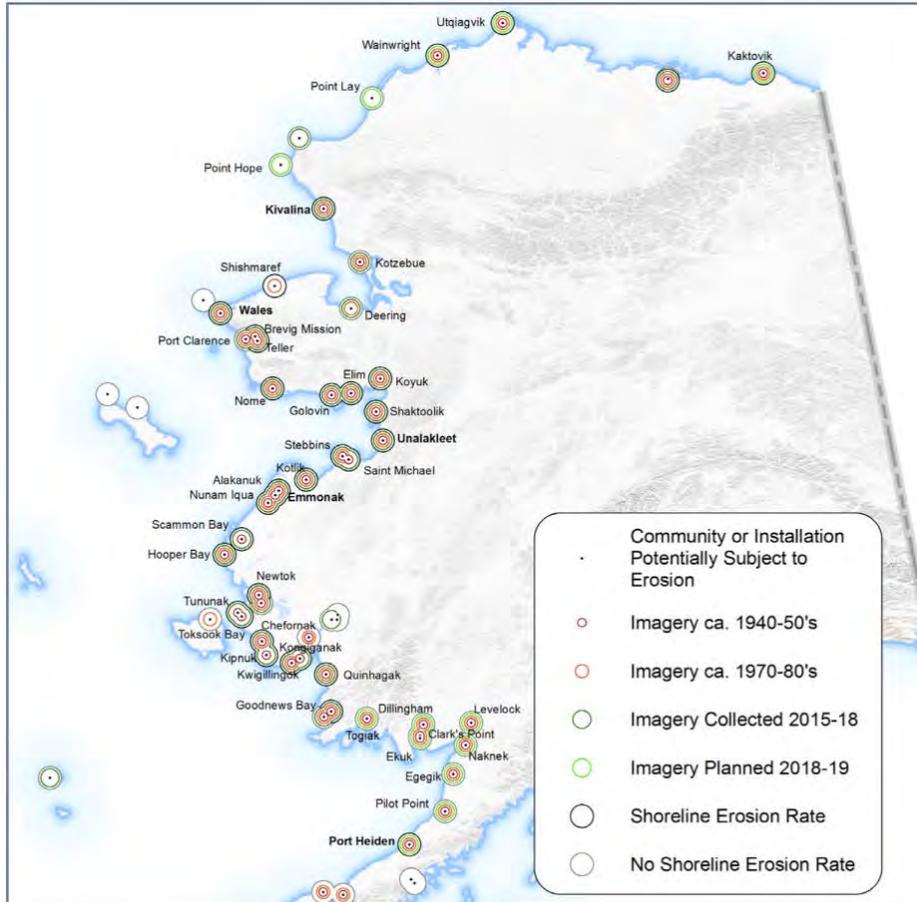


Channel migration study of Emmonak, Alaska

<http://dggs.alaska.gov/pubs/id/30114>

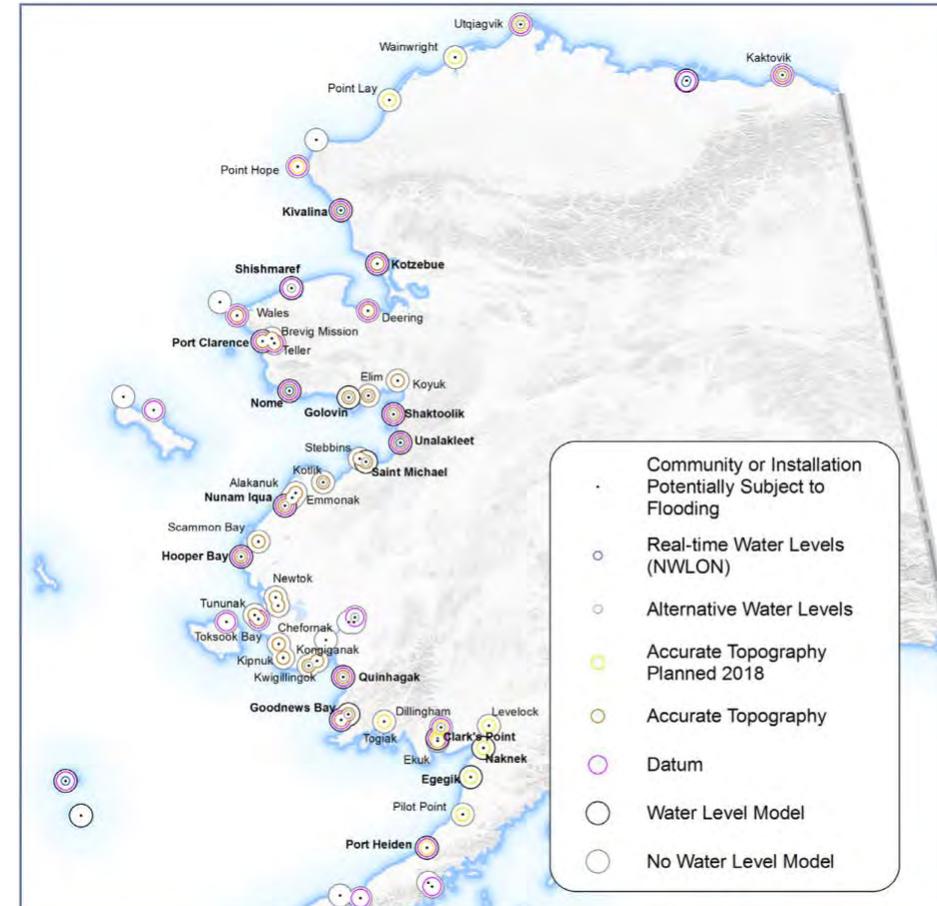


Coastal Erosion Data Gaps



Baseline data layers currently available for shoreline change mapping and forecasting in northern and western Alaska communities.

Coastal Flood Data Gaps



Baseline data layers currently available for flood mapping and forecasting in northern and western Alaska communities.

**Data gaps have not been quantified for riverine communities, only tidally influenced riverine communities.*

<http://dggs.alaska.gov/webpubs/dggs/ic/text/ic072.pdf>

Action Items

Quantify the Risk

- Collect additional baseline data and conduct modeling
 - **Employ community monitoring such as through Facebook** www.facebook.com/AlaskaWaterLevelWatch
 - **Continued state and regional partner coordination:**
 - Calista & AVCP provided feedback to the Alaska Coastal Mapping Strategic Plan survey to represent regional needs for the Yukon-Kuskokwim Delta.
 - By providing a voice for what is needed, oftentimes federal or state investment can be justified.

- Join datasets with local knowledge and modeling
 - **Partnership between the state and local/regional governing bodies for grants**, common grants:
 - BIA Tribal Resilience
 - FEMA Cooperative Technical Partner Grants
 - Foreseeable management outcome.

Quinhagak, Alaska



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