Report of Investigation 2021-3 Nome

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EROSION EXPOSURE ASSESSMENT—NOME

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NOME EROSION EXPOSURE ASSESSMENT

This is a summary of results from an erosion forecast near infrastructure at Nome, Alaska. We conduct a shoreline change analysis, forecast 60 years of erosion, and estimate the replacement cost of infrastructure in the forecast area. Buzard and others (2021) describe the method and guidance for interpreting tables and maps.

Source data for this summary include the following:

- Shoreline change assessment ArcGIS shapefiles from Overbeck and others (2020) updated to the vegetation line if appropriate.
- Infrastructure GIS shapefiles and metadata from the City of Nome (2021) Nome GeoHUB website.
- Added infrastructure such as roads and outbuildings, delineated if visible in the most up-to-date high resolution (≤ 0.66 ft [20 cm] ground sample distance) aerial orthoimagery (OCM Partners, 2021).

Nome is located on the southern coast of the Seward Peninsula along the Bering Sea facing Norton Sound. From 1951 to 2015, the shoreline remained mostly stable with erosion rates reaching up to 2.3 feet per year east of town (Overbeck and others, 2020). Erosion in Nome is primarily caused by storm surge flooding and wave action. Several major storms have impacted Nome (U.S. Army Corps of Engineers [USACE], 2008; City of Nome, 2017), but the beaches appear to have recovered to their original extent, resulting in relatively stable or slow long-term erosion trends.

A rock revetment was built east of the Snake River to just beyond Nome Bypass Road that mitigates erosion in front of the main town site. The revetment extends three miles to the Nome River and has resisted erosion from major storms but requires upkeep (USACE, 2008). Due to the relatively stable erosion trends and the extensive protection structures in place, we cannot forecast erosion at Nome. Beach erosion can be measured from repeated beach elevation surveys using GPS or digital elevation models. DGGS collected beach elevations in 2012 and 2019. Continued monitoring and a longer record of beach elevation data can help identify whether and when infrastructure may become exposed to erosion.

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REFERENCES


