Report of Investigation 2021-3 Goodnews Bay

EROSION EXPOSURE ASSESSMENT—GOODNEWS BAY

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Goodnews Bay, Alaska, in 2014. Photo: ShoreZone, shorezone.org.

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EROSION EXPOSURE ASSESSMENT—GOODNEWS BAY

Richard M. Buzard[1], Mark M. Turner[1], Katie Y. Miller[1], Donald C. Antrobus[2], and Jacquelyn R. Overbeck[1]

GOODNEWS BAY EROSION EXPOSURE ASSESSMENT

This is a summary of results from an erosion forecast near infrastructure at Goodnews Bay, 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 AutoCAD outlines and metadata from Division of Community & Regional Affairs (2004) Community Profile Map series.
- Added infrastructure such as roads, water and sanitation facilities, and outbuildings, delineated if visible in the most up-to-date high resolution (≤ 0.66 ft [20 cm] ground sample distance) aerial orthoimagery (Overbeck and others, 2016).

Goodnews Bay is in southwest Alaska where the Goodnews River exits into Goodnews Bay and the Bering Sea. The community experiences erosion due to storm surge flooding, but most of the shoreline fronting infrastructure is protected by riprap. Buzard and others (2020) discuss the history of

erosion and mitigation and provide erosion forecasts to 2050 showing no structures are exposed. Flooding during storm surge causes erosion and scouring. Eroded sections of the bluff shoreline are repaired with locally sourced gravel and rock. Given existing studies and the armored shoreline fronting community infrastructure, we do not forecast erosion in Goodnews Bay. Beach erosion can be measured from repeated beach elevation surveys using GPS or digital elevation models. The University of Alaska Fairbanks Arctic Coastal Geosciences Lab collected beach elevations in 2016, 2017, and 2018. 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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[1] Alaska Division of Geological & Geophysical Surveys, 3354 College Rd., Fairbanks, Alaska 99709-3707
[2] Alaska Native Tribal Health Consortium, 4000 Ambassador Drive, Anchorage, Alaska 99508

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