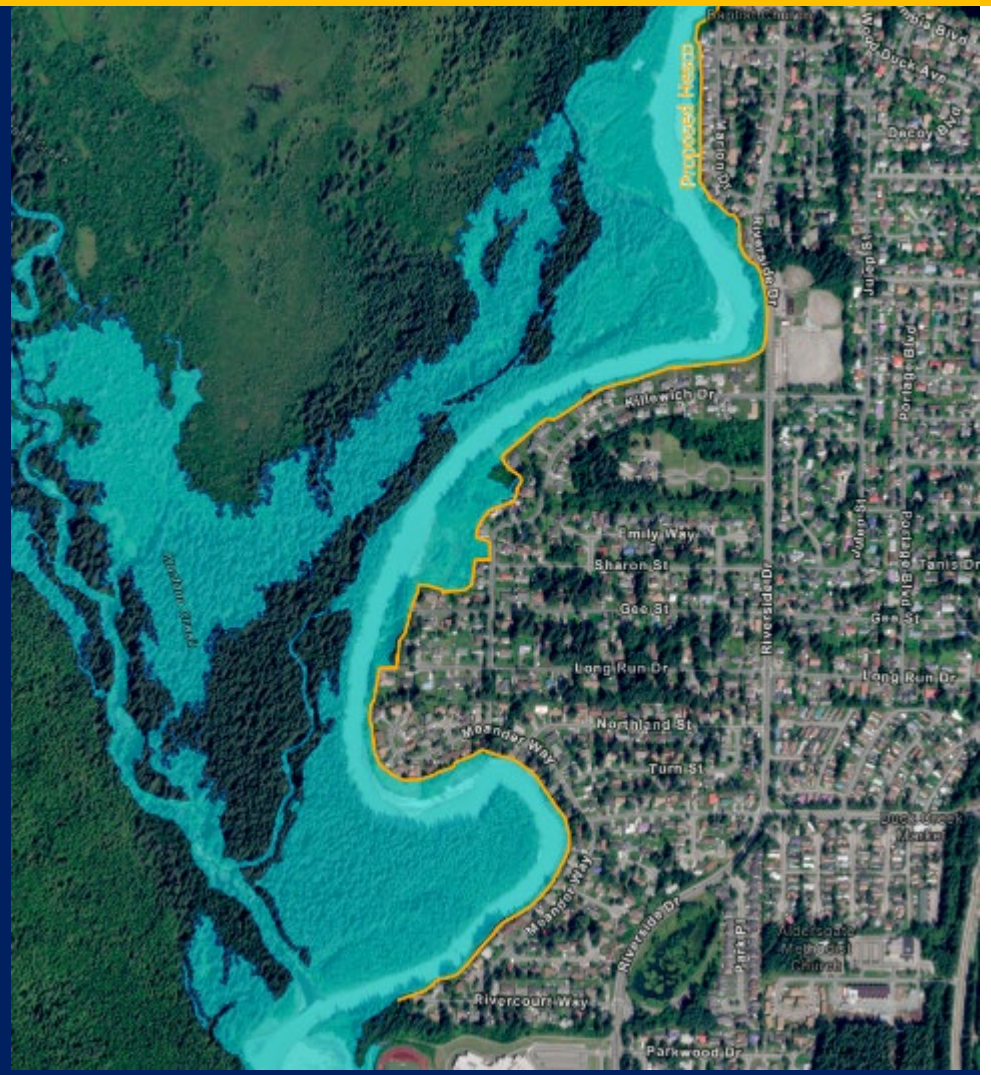
MENDENHALL FLOOD FIGHTING INUNDATION MAPS

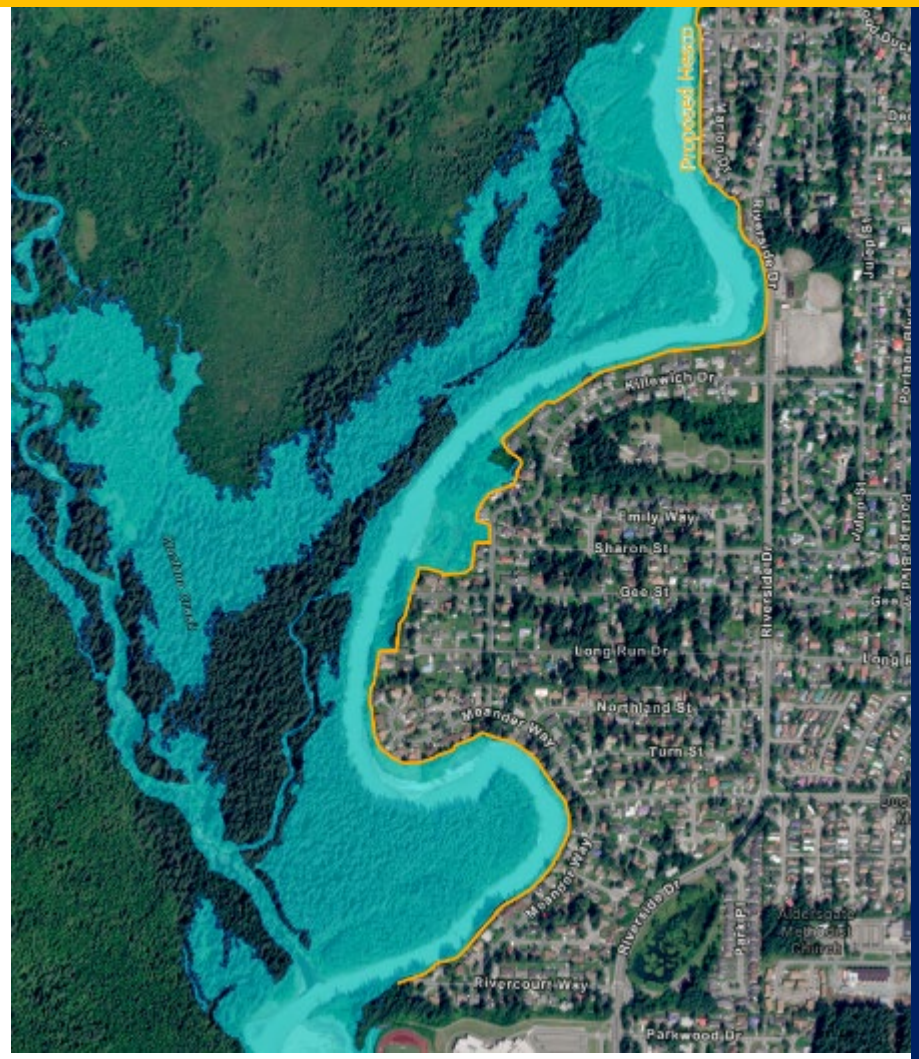


MAY 2025

CITY AND BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

Michael Baker
INTERNATIONAL

MENDENHALL FLOOD FIGHTING INUNDATION MAPS



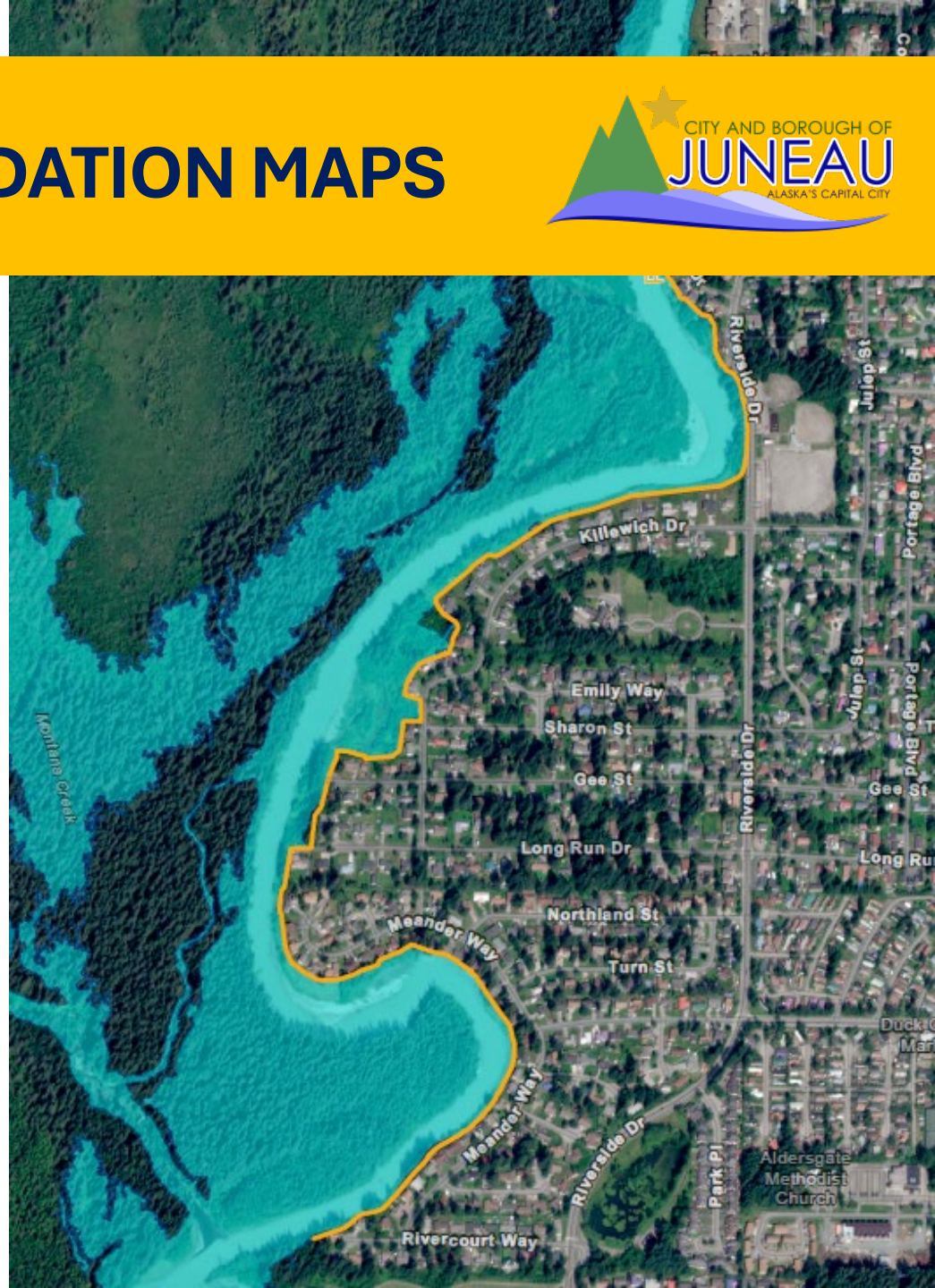
AGENDA

- BACKGROUND
- BOTTOM LINE
- MODEL AND MAP OVERVIEW – MICHAEL BAKER, INT
- WHAT'S NEXT?
  CBJ Emergency Operations & Tlingit & Haida Office of Emergency Management

MENDENHALL FLOOD FIGHTING INUNDATION MAPS

Bottom Line:

- The HESCO Barriers (Phase 1) work as intended.
- HESCO Barriers (Phase 1) do *not* cause downstream or upstream impacts to homes or developed properties at flood levels similar to the 2024 GLOF.
- Interagency collaboration & review provides confidence in the maps
  - Maps will support emergency preparedness, progress on a long-term solution
- *Modeling for flood stages higher than the 2024 GLOF shows more near-term flood fighting work is needed*.



Mendenhall Valley Flood Fighting Inundation Maps

Garrett Yager - Surface Water Manager
Michael Baker, International

Project Scope:

- 2D surface water model to simulate increasing flood stages
  - Captures complex distribution of water, detailed elevation data
  - Used HEC-RAS 2D modeling program, developed & managed by USACE
- Develop associated flood inundation maps
  - Identify areas of high risk, improve infrastructure to mitigate risk, help in planning and response to extreme flooding

Michael Baker
INTERNATIONAL

Mendenhall Valley Flood Fighting Inundation Maps

Modeling Process

Data Acquisition & Review + Agency Consultation

NOAA, NWS, USFS, USGS, AKDOT&PF, USACE, CBJ, more

Simulate Flooding with Latest Agency Data

USGS Rating Curve & Peak Discharge Updates (Spring 2025)

NWS GLOF Discharge Hydrographs & USGS Flood Frequency Data

Tidal Influences

Model for Existing Conditions & HESCO Barrier Alignment

Identify impacts and efficacy of barriers to mitigate flood risk

Michael Baker INTERNATIONAL

Assumptions & Limitations

Model Calibrated to 2024 GLOF

Used highwater marks, aerial images, local input; model may include slight variations.

Fixed Terrain

Does not capture changes in channel geometry during flooding.

Fixed Tidal Backwater

Assumes high fixed tidal backwater that may not be present during flood event.

Runoff Volume Assumptions

Events with equivalent peak stage/discharge may yield varied flood extents based on hydrograph shape and total runoff volume.

Michael Baker INTERNATIONAL

Mendenhall Valley Flood Fighting Inundation Maps

Assumptions & Limitations

Storm Water Conveyance

Does not map floodwater conveyed via stormwater pipes; Recent CBJ drainage improvements.

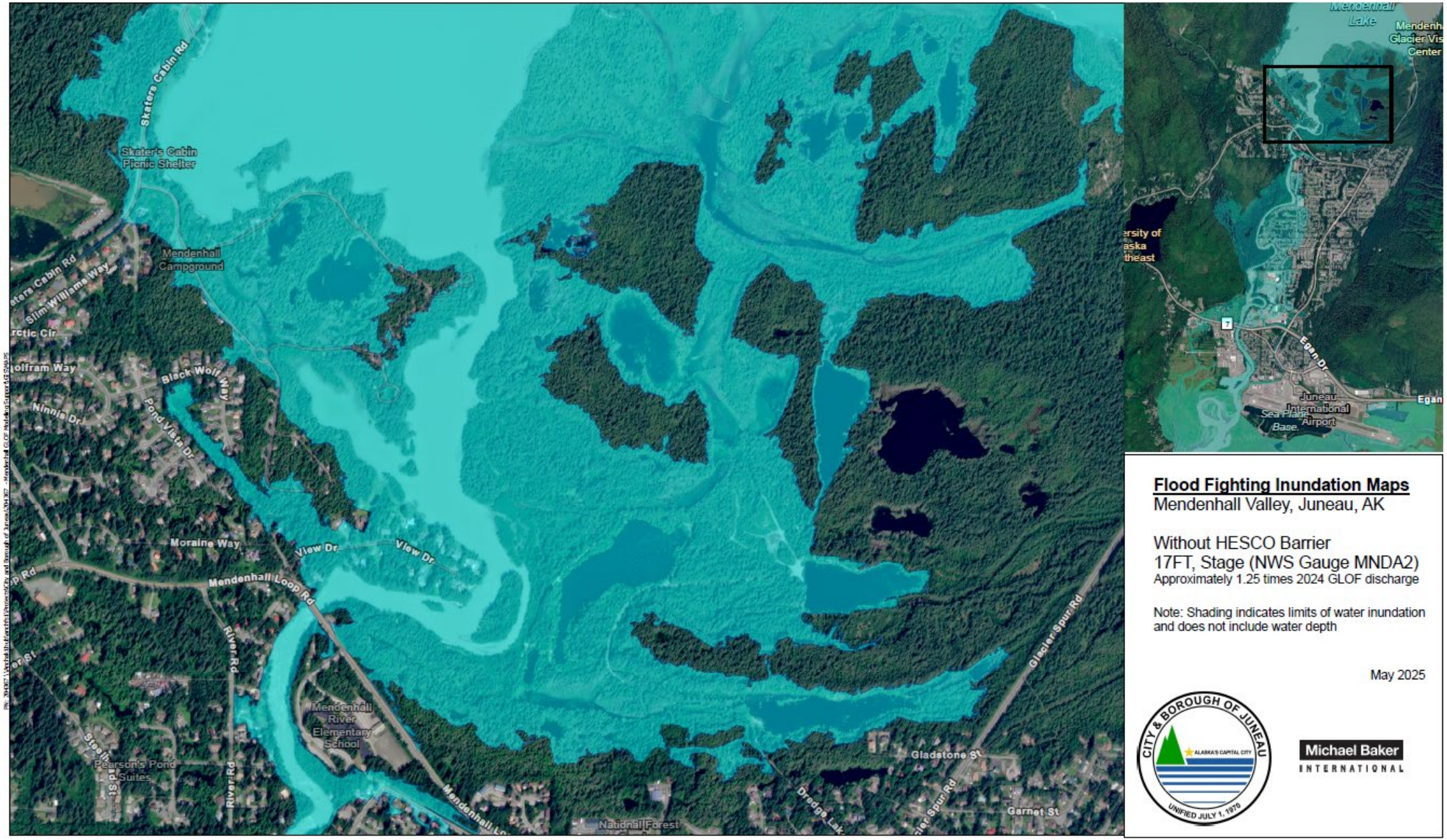
19FT & 20FT Stage Events Beyond Upper End of USGS Rating Curve

Extrapolated well beyond any historical flood event 20FT discharge is just over 2 times 2024 GLOF, adds uncertainty at higher stage maps.

Mapping Simplification

Islands of 1 acre or less removed from mapping, including buildings.
Bridge footprints also removed where impacted by floodwater

Michael Baker
INTERNATIONAL



Flood Fighting Inundation Maps
Mendenhall Valley, Juneau, AK

Without HESCO Barrier
17FT, Stage (NWS Gauge MNDA2)
Approximately 1.25 times 2024 GLOF discharge

Note: Shading indicates limits of water inundation and does not include water depth

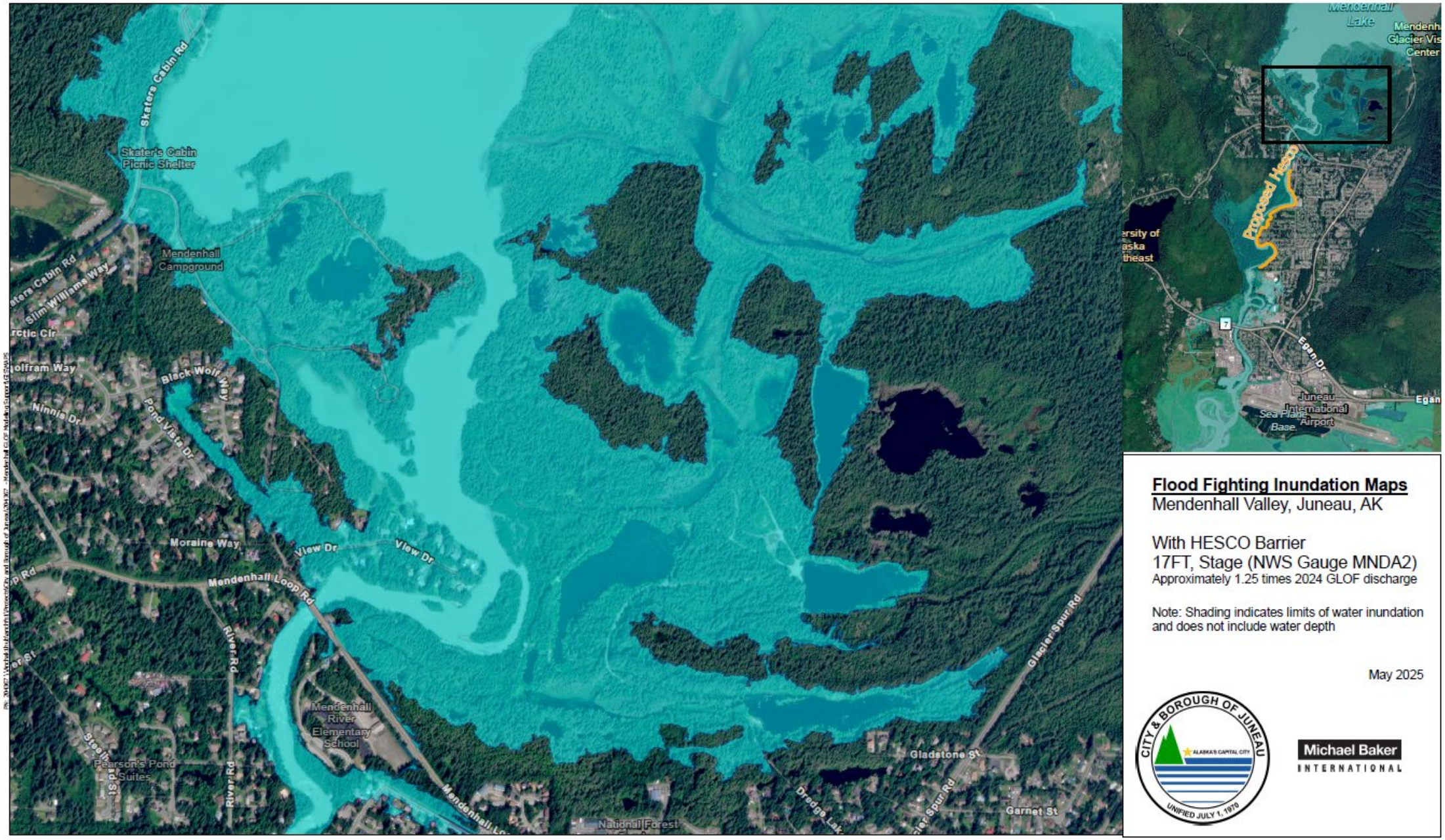
May 2025

CITY & BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
UNIFIED JULY 1, 1970

Michael Baker INTERNATIONAL

0 500 1,000
US Feet

Source: State of Alaska, © OpenStreetMap, Microsoft, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, State of Alaska, Esri Canada, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS, NRCan, Parks Canada



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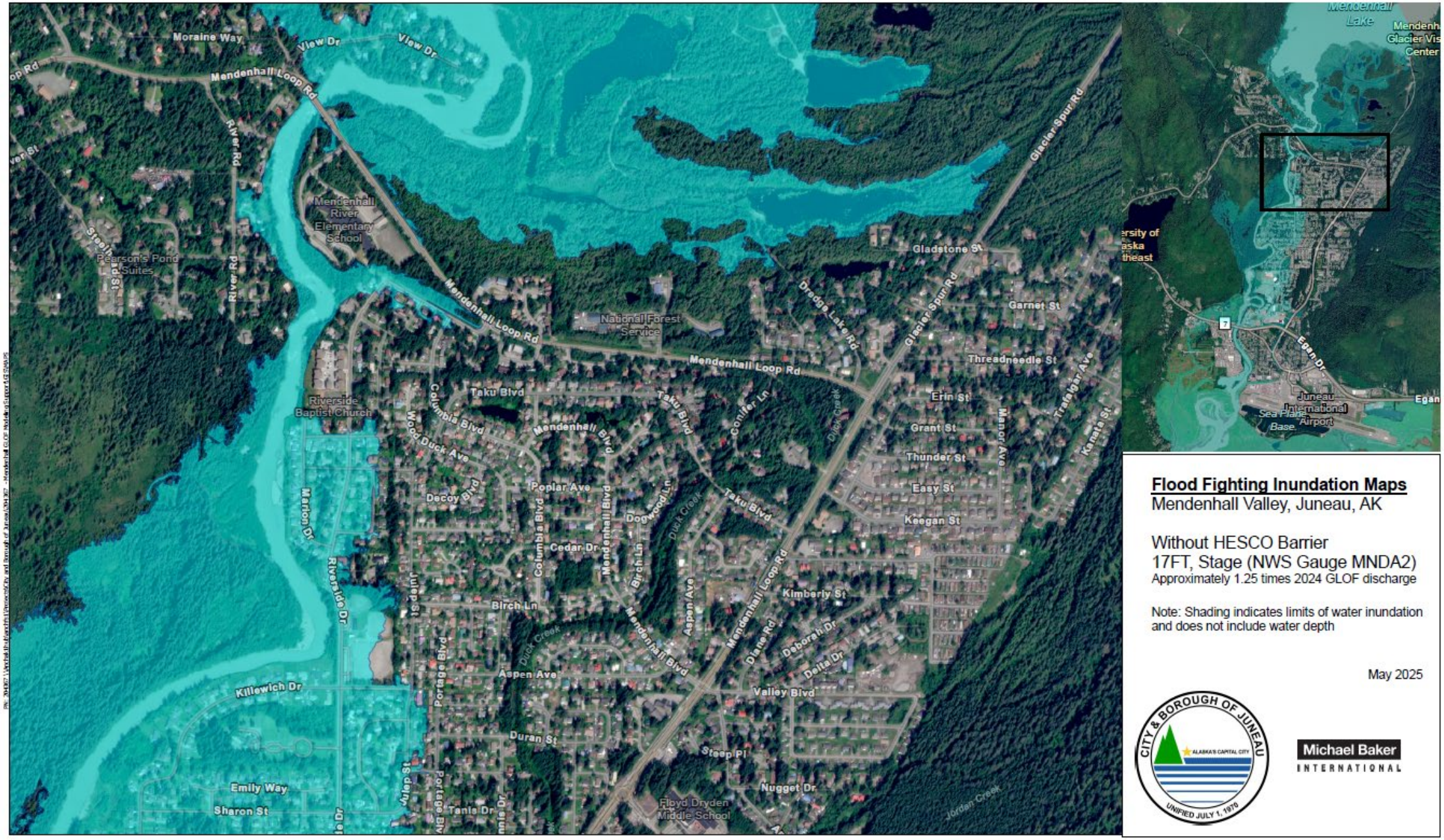

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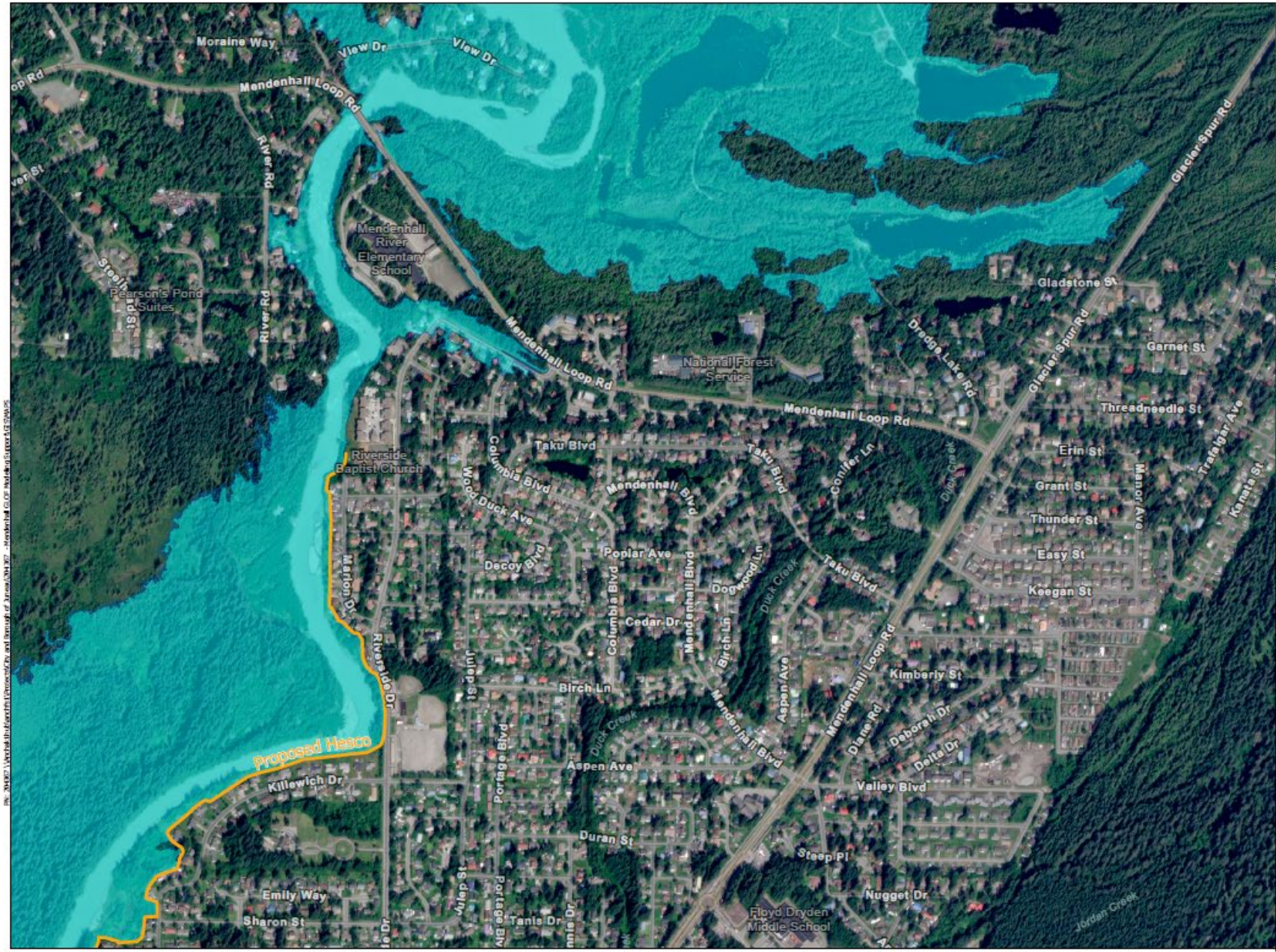

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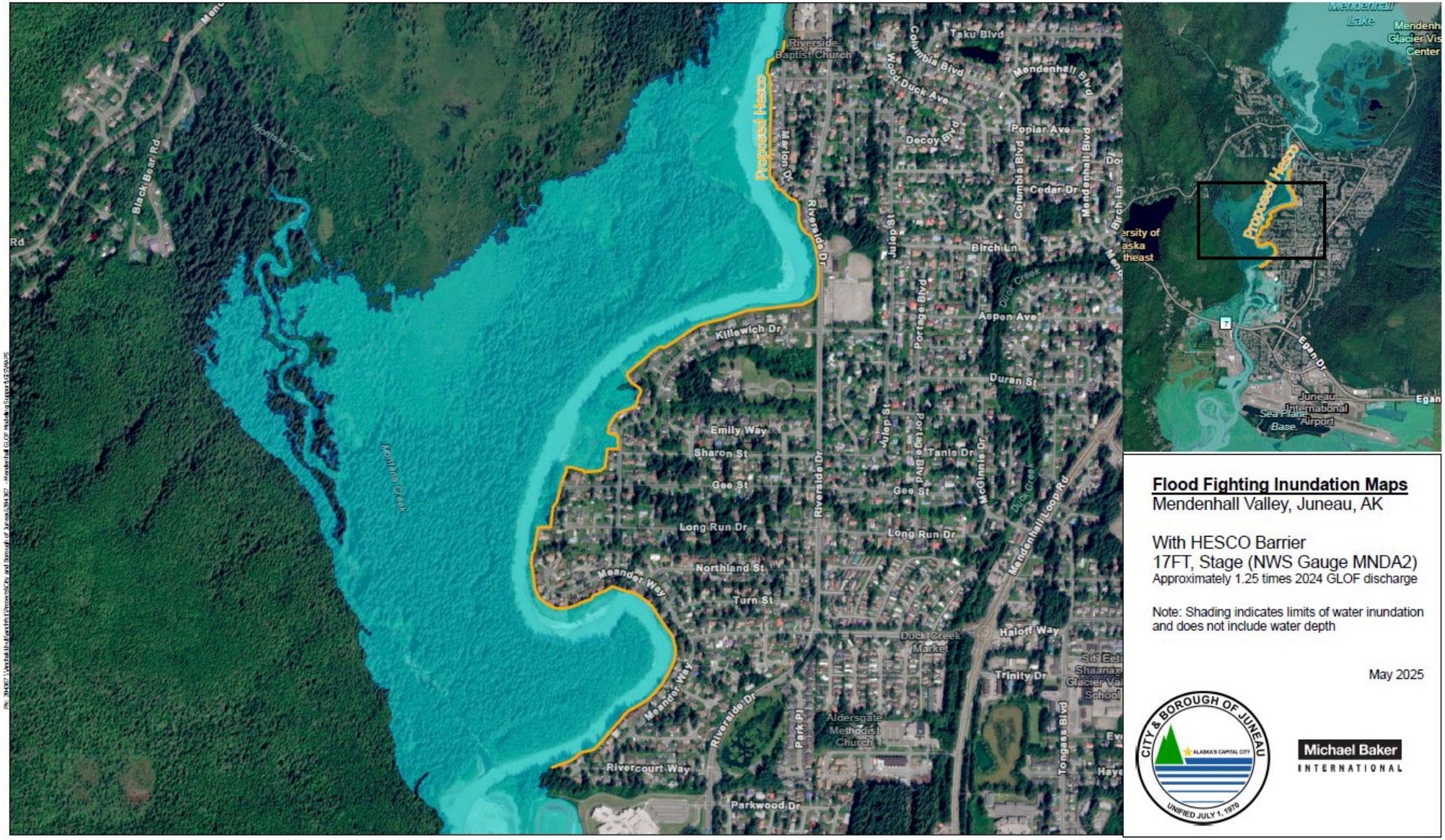

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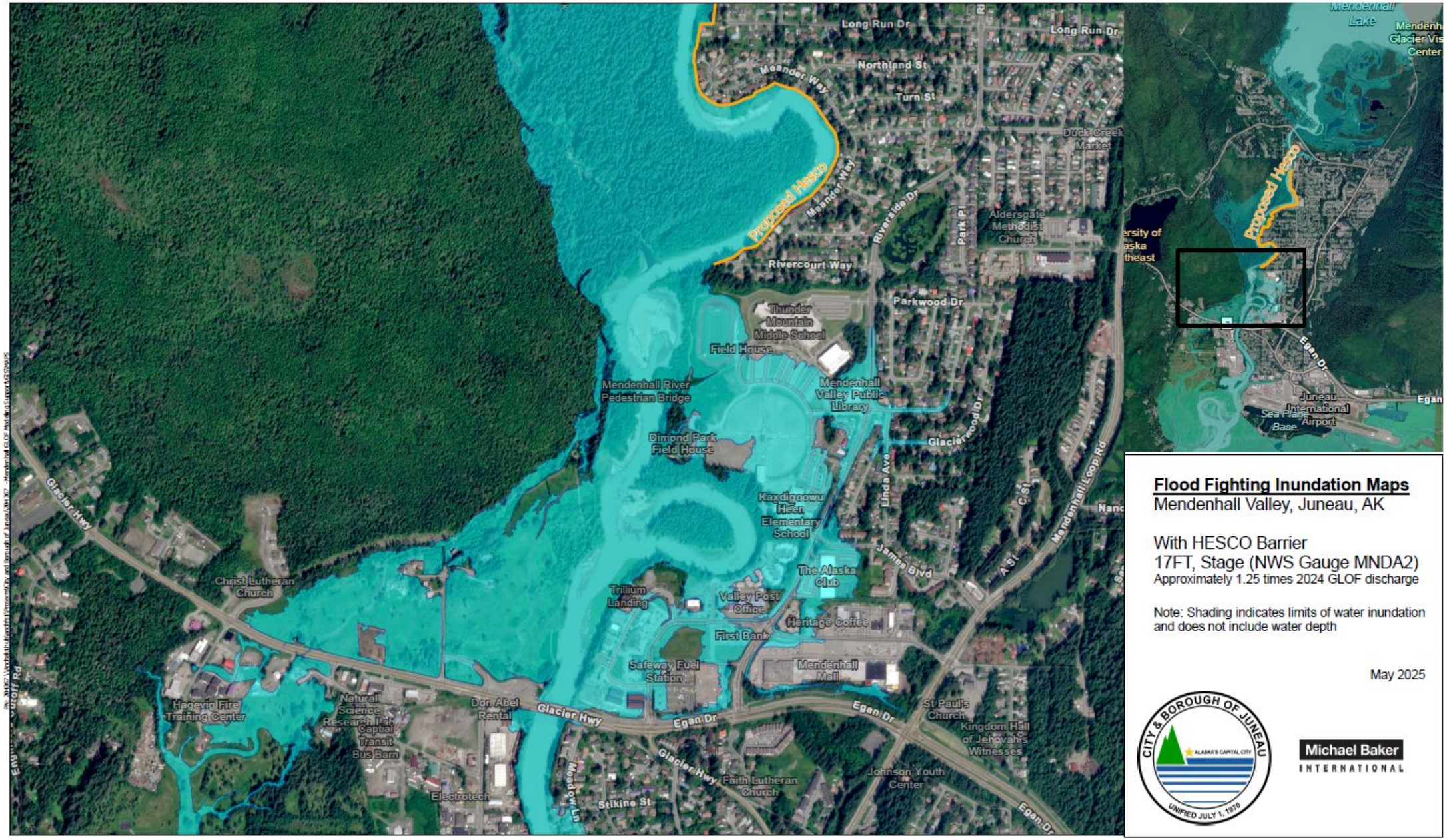

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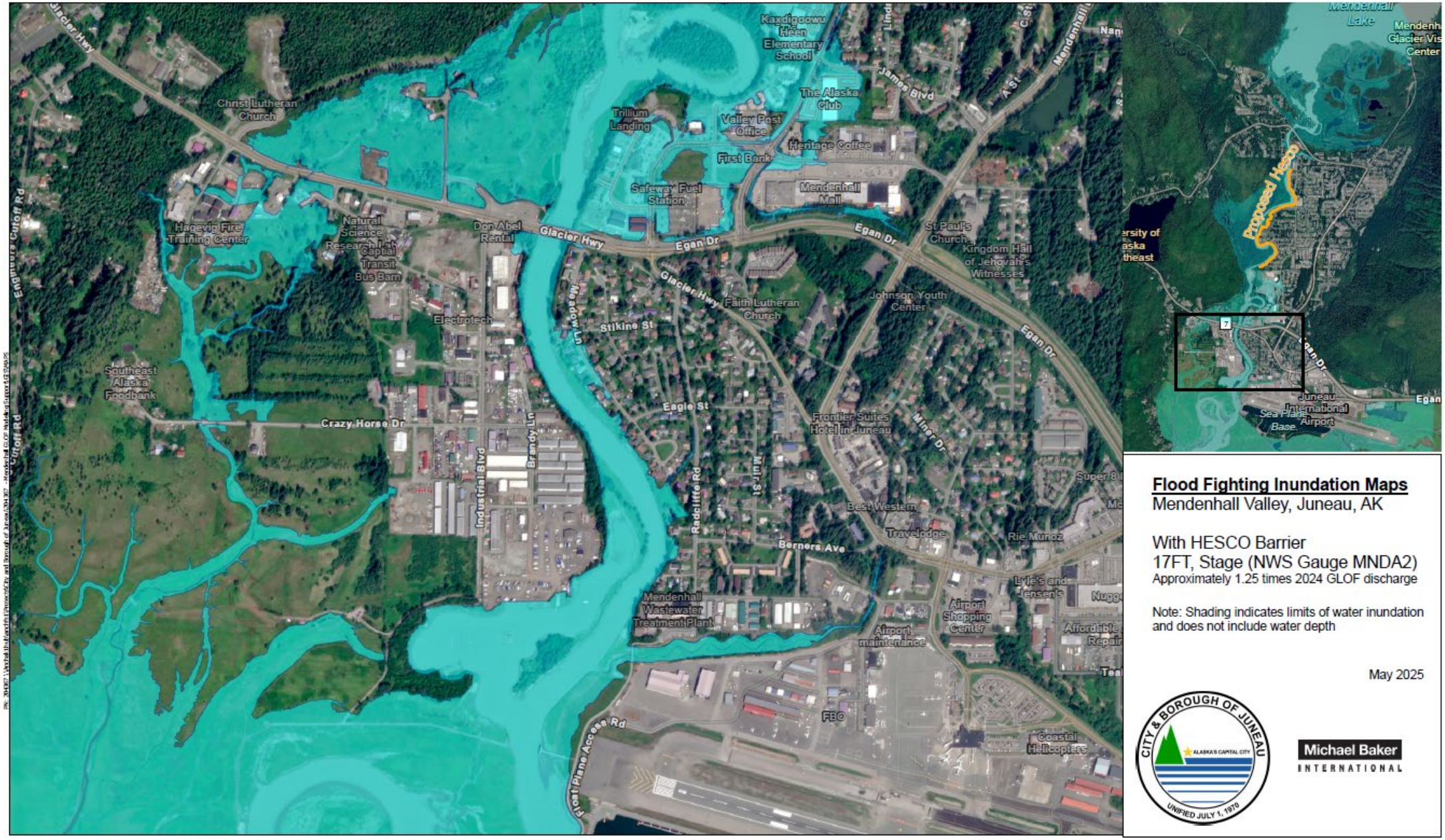

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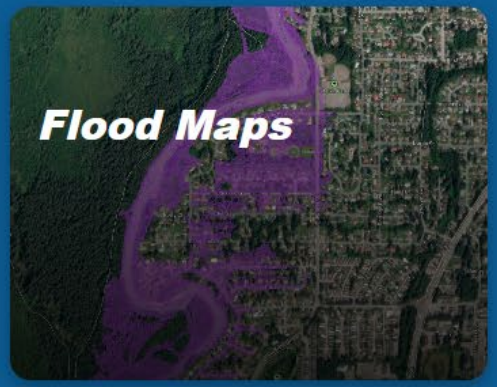
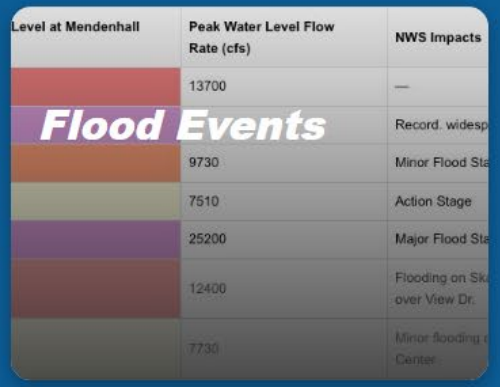
Alaska Climate Adaptation Science Center

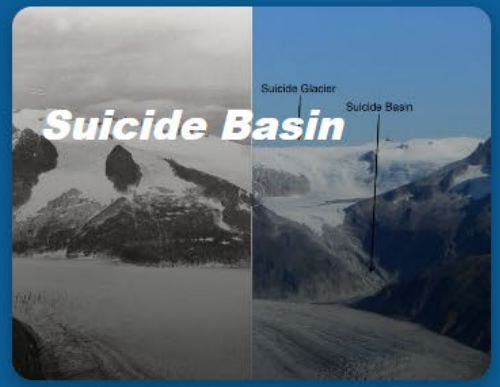
Juneau Glacial Flood Dashboard BETA

NWS: No Active Alerts

Home | Flood Maps | Flood Forecasting | Flood Events | Suicide Basin



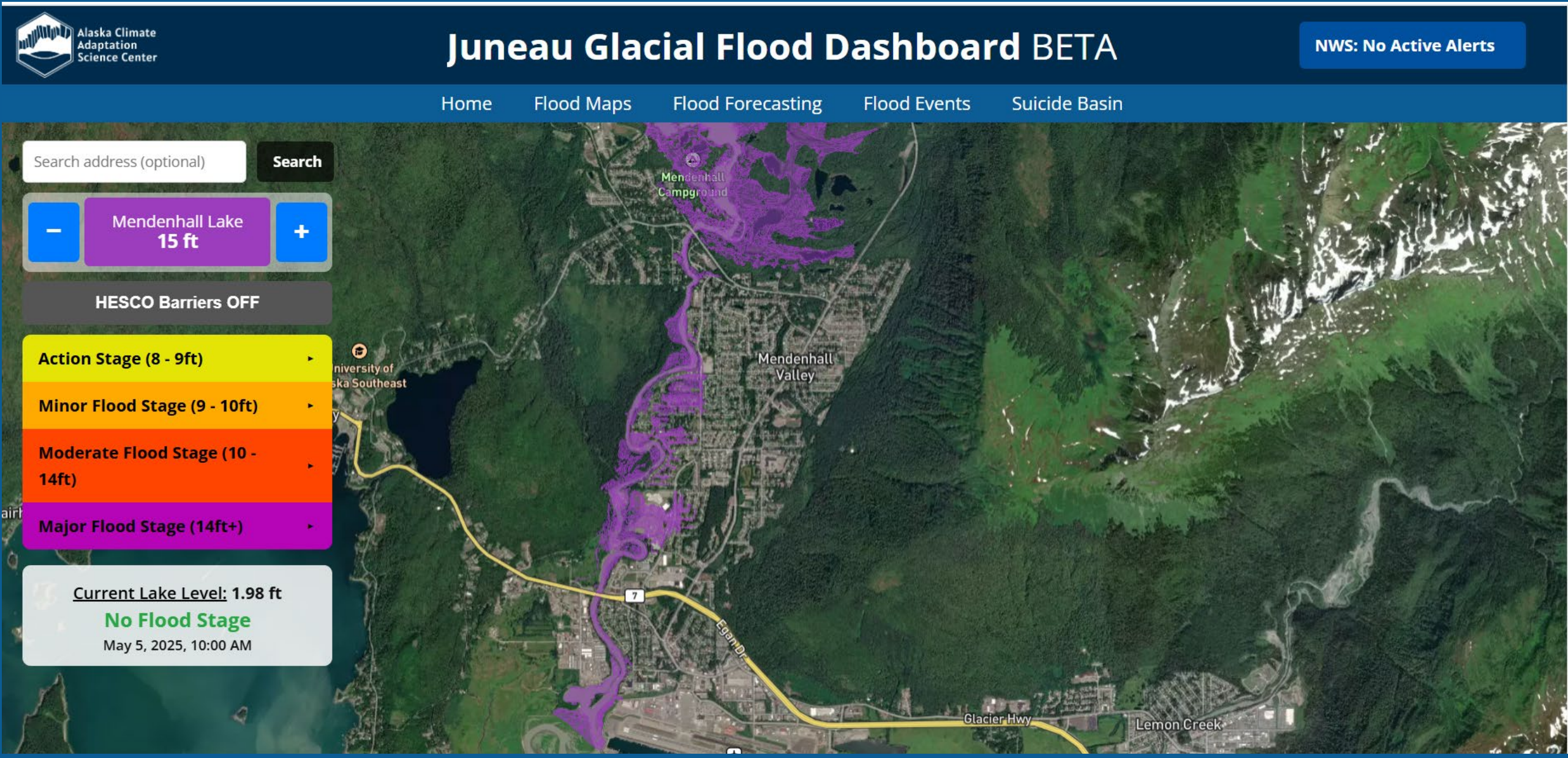




About

This tool provides mapping of flood impacts, real-time visuals of water levels, and insights about glacial lake outburst floods (GLOFs) from Suicide Basin. Use the cards above to explore live flood maps, forecasts, past events, and context on how these floods happen and impact the Juneau area. For the National Weather Service Suicide Basin monitoring page click below.

NWS Monitoring Page


Alaska Climate Adaptation Science Center
Juneau Glacial Flood Dashboard BETA
NWS: No Active Alerts
Home
Flood Maps
Flood Forecasting
Flood Events
Suicide Basin
Search address (optional)
Search
−
Mendenhall Lake
15 ft
+
HESCO Barriers OFF
Action Stage (8 - 9ft)
Minor Flood Stage (9 - 10ft)
Moderate Flood Stage (10 - 14ft)
Major Flood Stage (14ft+)
Current Lake Level: 1.98 ft
No Flood Stage
May 5, 2025, 10:00 AM
Mendenhall Campground
Mendenhall Valley
Egan Dr
Glacier Hwy
Lemon Creek

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Local forecast by "City, St" or ZIP code
Enter location ... Go
Location Help

News Headlines
- On May 25th, 2025 there will be changes to the river forecast services for the Alsek River near Yakutat, Salmon River near Gustavus, and Falls Creek near Petersburg. Click here to see the Public Info Statement regarding these changes.
- A gale force front is moving through the panhandle, bringing more wind and rain to SE AK Monday. Click here for the latest Forecast Discussion...

Suicide Basin

Juneau, AK
Weather Forecast Office

Suicide Basin Monitoring and Current Conditions

Suicide Basin is a side basin of the Mendenhall Glacier above Juneau, Alaska. Since 2011, Suicide Basin has released glacier lake outburst floods that cause inundation along Mendenhall Lake and River annually with a record major flood event taking place on August 6, 2024. The latest release took place on October 20, 2024.

Current Status: Thursday, 4/10/2025 at 3pm.

Monitoring Equipment Status:

The USGS monitoring equipment, the cameras and laser data, will be fully up and running by the beginning of May or sooner. The USGS laser sensor is working at this time but data is coming in intermittently. The current value is 1054.56 feet. For reference when the laser was installed last year, May 24, the surface elevation was 1119 feet. Check back in the coming weeks for updates on when all of the equipment will get turned back on and how the conditions within the basin has changed.

Images from the entire 2024 season can be viewed here.

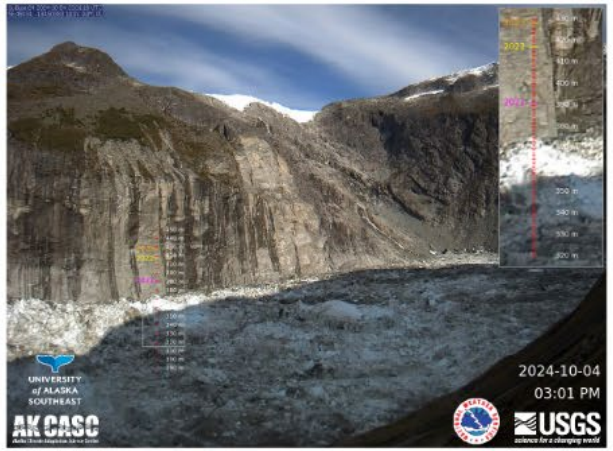
Here is the NWS summary report from the major flooding event from the Suicide Basin glacier lake outburst flood in August 2024.

Additional Information available:

- Mendenhall River Inundation Maps (**Follow the link, then scroll down to Gauge Location, select Activate MNDA2 FIM Gauge)**
- Flood Safety Tips and Resources
- Historical release data from Suicide Basin
- Alaska Climate Adaptation Science Center (AK CASC) Story Map "Hidden Water: The Suicide Basin Outburst Flood"
- The Suicide Basin glacier outburst flood: 2023 and beyond (Recording of the Oct 27 2023 Evening at Egan)
- 2023 Season Time-Lapse Animations (Image and Vector)
- 2022 Season Time-Lapse Animations (Image and Vector)

Latest Basin Image - Scales

Most recent image from the basin, updated at daily to sub-daily intervals (see time-stamp bottom right). The camera is placed at the basin entrance and faces northeast, into the basin. Click on image to enlarge and read basin levels.



Full Season Viewer

Recent Timelapse (Last 15 Images)

Latest Basin Image - Vectors

Most recent image from the basin (same as on the left) with vectors indicating ice motion direction and magnitude. Click on image to enlarge.

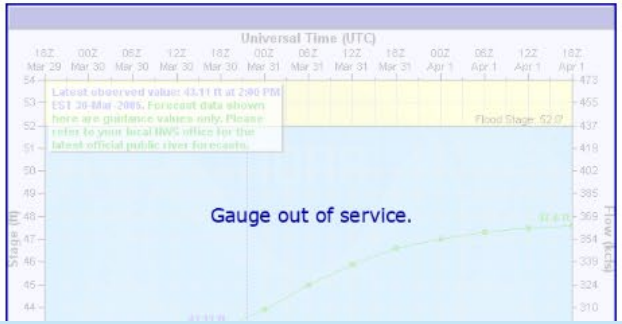
Full Season Viewer

Recent Timelapse (Last 15 images)

Suicide Basin Level (Pool Height)

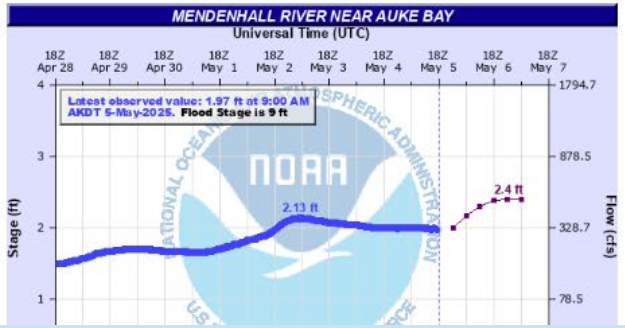
Graph showing the current (blue) pool height of Suicide Basin.

At this time (7/10), values are from the laser detection system.



Mendenhall Lake Stage Level

Graph showing the current (blue) and predicted (purple) stage level at Mendenhall Lake. Stage levels are annotated on the left y-axis on the graph. The graph also shows the Mendenhall River discharge (right y-axis), which is derived from the Mendenhall Lake stage level via rating curve.



Resources

CBJ Inundation Map Website:
https://bit.ly/MendenhallFloodMaps

UAS Juneau Flood Website:
COMING SOON

NWS Mendenhall River Monitoring and Forecast:
https://www.weather.gov/ajk/suicidebasin

CBJ Flood Response Website:
https://juneau.org/manager/flood-response

Community Emergency Response Team Training (CERT)
June 14, 21 & 28th 9PM-4PM: https:// www.GenerationsSoutheast.org

Scan to sign up for
CBJ Emergency Alerts
(bit.ly/CBJAlerts)

CITY AND BOROUGH OF JUNEAU