



# Streamflow

*Glacier Bay National Park and Preserve  
Klondike Gold Rush National Historical Park  
Sitka National Historical Park*

## Importance

Streamflow refers to the volume of water flowing through a stream or river at a particular location at any given time. It is the pulse of the damp and productive landscape of Southeast Alaska. The annual discharge of freshwater entering the Gulf of Alaska exceeds that of the Mississippi River and is four times greater than the Yukon. Across the Southeast Alaska Network (SEAN), streamflow is influenced by surface runoff from rain and snow, glacial meltwater, and groundwater input from wetlands and other aquifers. In turn, streamflow influences water quality, nutrient loads, stream-dwelling organisms, and coastal marine ecosystems. In a 2012 climate change scenario planning workshop conducted for Southeast Alaska national parks, long-term changes to the timing and magnitude of streamflow emerged as a top environmental concern for NPS staff, external agency partners, and community leaders. As such, the primary objective of this program is to monitor current streamflow in all three SEAN parks and to quantify long-term trends in annual and seasonal streamflow patterns.

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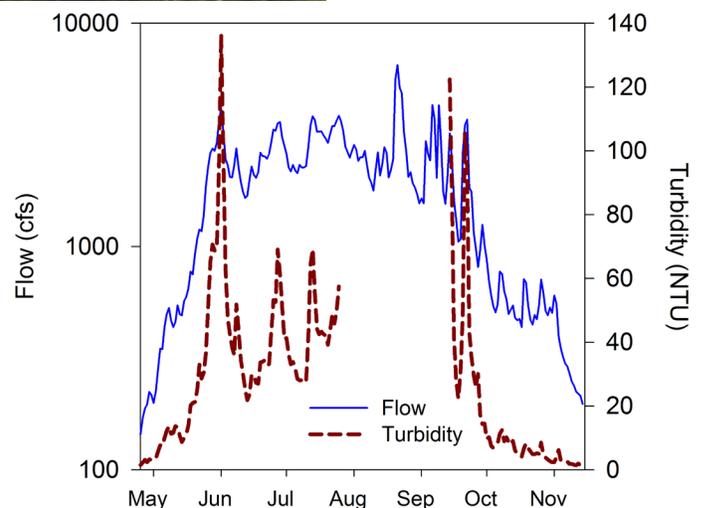


Photo: NPS

A chum salmon digs an egg pocket, also called a redd, in the Indian River in Sitka. Along with many other effects on aquatic organisms, variations in streamflow affect the availability of clean substrates needed for salmon spawning and the survival of salmon eggs.

## Program Design and Status

Streamflow gages continuously measure the stage, or height, of a stream's water surface. Measurements of stream discharge, or flow, are taken at various stages to create a stage-discharge relationship. This relationship is then used to report flow in real-time based on stage measurement. A collaborative funding effort between the United States Geological Survey (USGS), National Park Service (NPS), and the city of Skagway maintains the streamflow gage in the Taiya River, which flows through Klondike Gold Rush National Historical Park (KLG0). Since 2007, NPS has operated two streamflow gages on the Indian River in Sitka National Historical Park in cooperation with the city. USGS operates gages on the Alsek River along the outer coast of Glacier Bay National Park and Preserve. At this time, the SEAN has adopted USGS protocols for national streamflow monitoring and plans to continue its existing streamflow monitoring partnerships into the future.



Streamflow is tightly linked to many commonly measured water quality parameters. In this graph of 2011 data, decreased water clarity (turbidity) in the glacially-influenced Taiya River corresponds to increases in streamflow. Glacial runoff during high-flow events carries sediments that reduce water clarity, and the timing and frequency of these events are likely to be influenced in the future by climate change.