



# Water Quality Program Category 2 Summary

## Draft 2026 Integrated Report

### Little Susitna River

#### *Abstract*

The lower Little Susitna River was listed as Category 5 for persistent turbidity exceedances in the 2014/16 Integrated Report. The impairment listing was based on 2009 – 2010 datasets and correlated to motorized boat use during peak salmon fishing seasons in May and August. Since that time, there has been a significant decline in both fishery activity and the use of motorized boats.

Turbidity data collected in August 2020<sup>1</sup> showed that turbidity levels were no longer exceeding water quality criteria. In 2022 - 2023, DEC collected continuous turbidity readings at an upstream background site and two downstream sites used in the original 2009 -2010 studies. Results indicate turbidity follows natural variations with storm events, higher flows, and increased turbidity that returns to normal levels shortly after high flows. There is no indication that turbidity stirred up from motorized boats continues to impair a designated use.

DEC recommends moving the Little Susitna River from Category 5 to Category 2n<sup>2</sup> for attainment of the turbidity criteria.

*Table 1. Current assessment unit status and applicable water quality standard*

<b>Assessment Unit Name</b>	Little Susitna River
<b>Assessment Unit ID</b>	AK_R_2050512_016_003
<b>Parameter</b>	Turbidity
<b>Location Description</b>	Little Susitna River from 1 km upstream of the Public Use Facility (PUF) to 8 km downstream of the Public Use Facility
<b>Category Change</b>	5 to 2n
<b>Water Quality Standard</b>	Turbidity for freshwater uses
<b>Designated Uses Affected</b>	(A) Water Supply (i) drinking, culinary, and food processing (B) Water Recreation (i) contact recreation (B) Water Recreation (ii) secondary recreation
<b>Criteria</b>	May not exceed 5 nephelometric turbidity units (NTU) above natural conditions when the natural turbidity is 50 NTU or less, and may not have more than 10% increase in turbidity when the natural turbidity is more than 50 NTU, not to exceed a maximum increase of 25 NTU.

<sup>1</sup> Aquatic Restoration and Research Institute. 2021. *Little Susitna River: Total Aromatic Hydrocarbon Monitoring, Summary Report 2019-2020*. For DEC through an Alaska Clean Water Actions Grant #19-03.

<sup>2</sup> Category 2n indicates assessment units for which there are some excursions of water quality criteria, but they are determined to be naturally occurring.

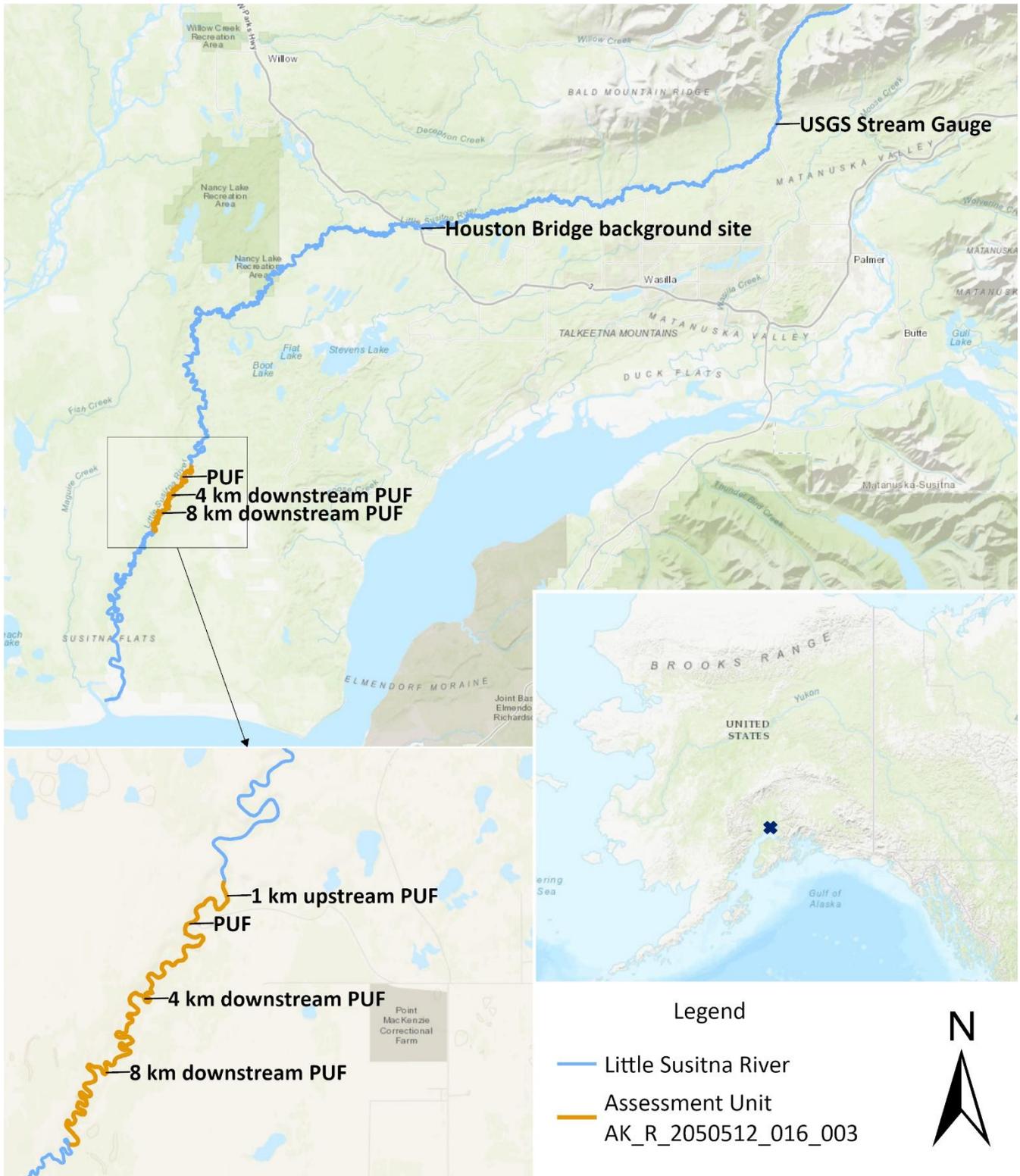


Figure 1. Map of Little Susitna River and relevant monitoring sites. "PUF" is Public Use Facility.

## Results

The Little Susitna River is a dynamic semi-glacial river system with complex hydrology and geomorphic conditions. The U.S. Geological Survey (USGS) operates a stream gauge in Hatcher Pass (Station ID: 15290000) several river miles upstream of the turbidity background site located near Houston. No motorized boating is permitted upstream of the bridge crossing the Parks Highway at Houston, therefore this site is considered the background site. As seen in Figure 2, the water level measured at Hatcher Pass corresponds to turbidity levels at downstream sites, suggesting that turbidity is following natural variations due to storm events or higher flows.

In 2020, no samples were collected at the background site. However, turbidity levels were low at the 4 km downstream PUF site (average 5.9 NTU) and they met the most stringent water quality criteria for the month of August. In Figure 3, turbidity at all three monitoring locations followed similar patterns throughout the monitoring period in 2022. In 2023, the background site, for part of the season, had higher turbidity levels than the downstream sport fishery sites in the motorized boat reaches (Figure 4).

Between 2022 and 2025, the Alaska Department of Fish and Game (ADF&G) recorded fewer than 4,000 coho salmon passing through the fish-count weir each year, with only 964 fish counted in 2024. This is well below the lower escapement goal of 9,200 fish (Figure 5). Low escapements of both Chinook and coho salmon have led to numerous fishing restrictions, closures, and reduced motorized boat traffic for the past several years. DEC's past studies on the Little Susitna River show that motorized boat traffic increases with higher fish counts. When fish counts are low, boat use declines, reducing wakes, sediment resuspension, and turbidity. Natural recovery of the fishery is not expected to reach the escapement levels experienced in the early 2000's, when the original turbidity data was collected (Figure 6).

Based on overwhelming evidence, DEC concludes that the turbidity in the Little Susitna River is attaining WQS and excursions to the turbidity criteria follow natural patterns.

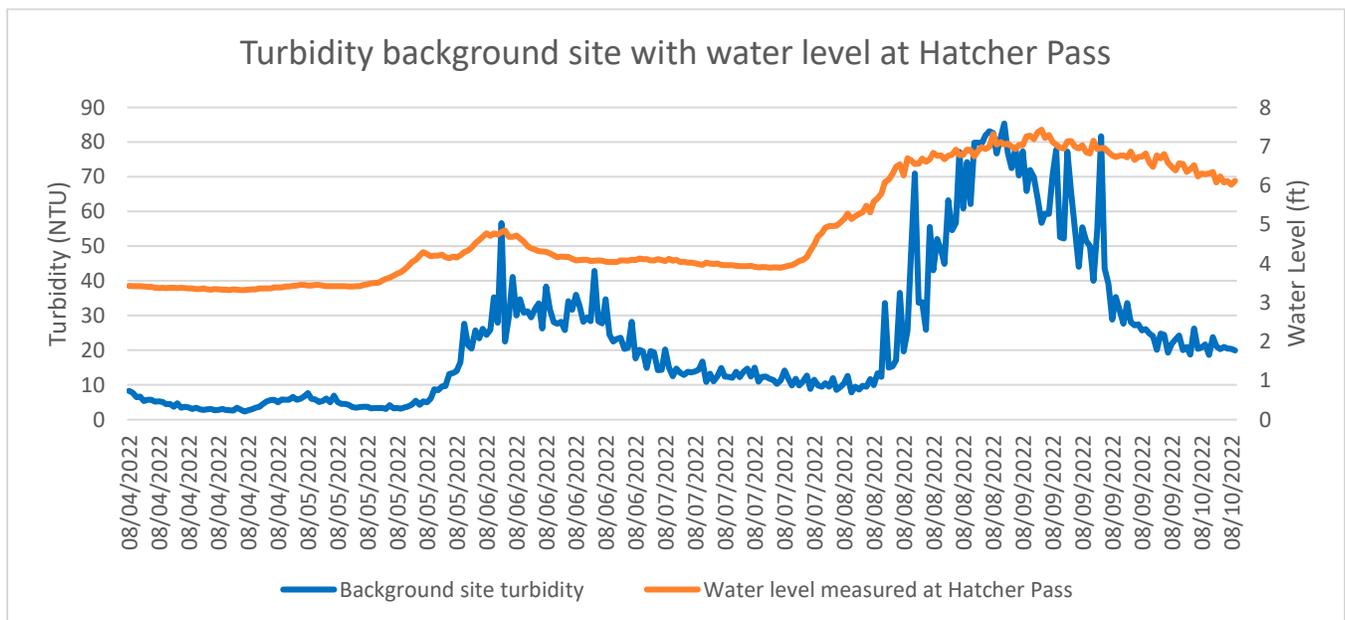


Figure 2. Turbidity patterns at the background site (blue line) are closely tied to the water level at upstream USGS Hatcher Pass station (orange line).

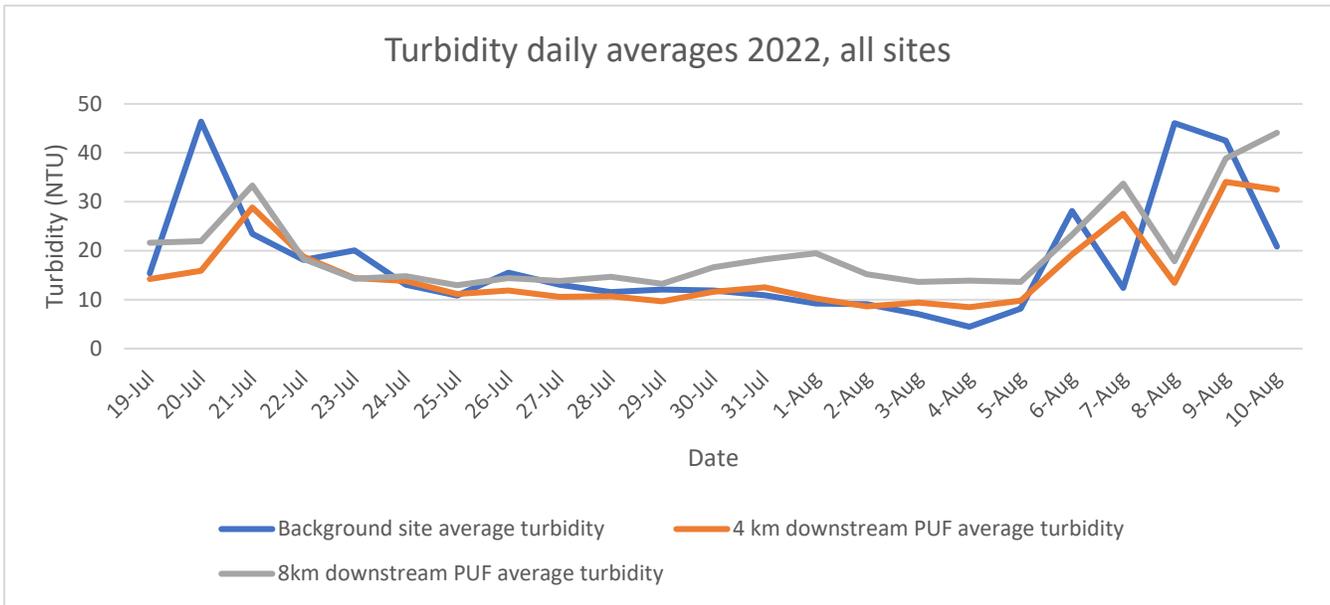


Figure 3. 2022 daily average turbidity at all sites. Effects of high flows can be observed at the background site (blue line) and then 24 hours later at the two downstream sites in the motorized boat reaches due to water travel time. After August 10, the monitoring equipment at the background site was buried in a newly formed gravel bar and data was discarded.

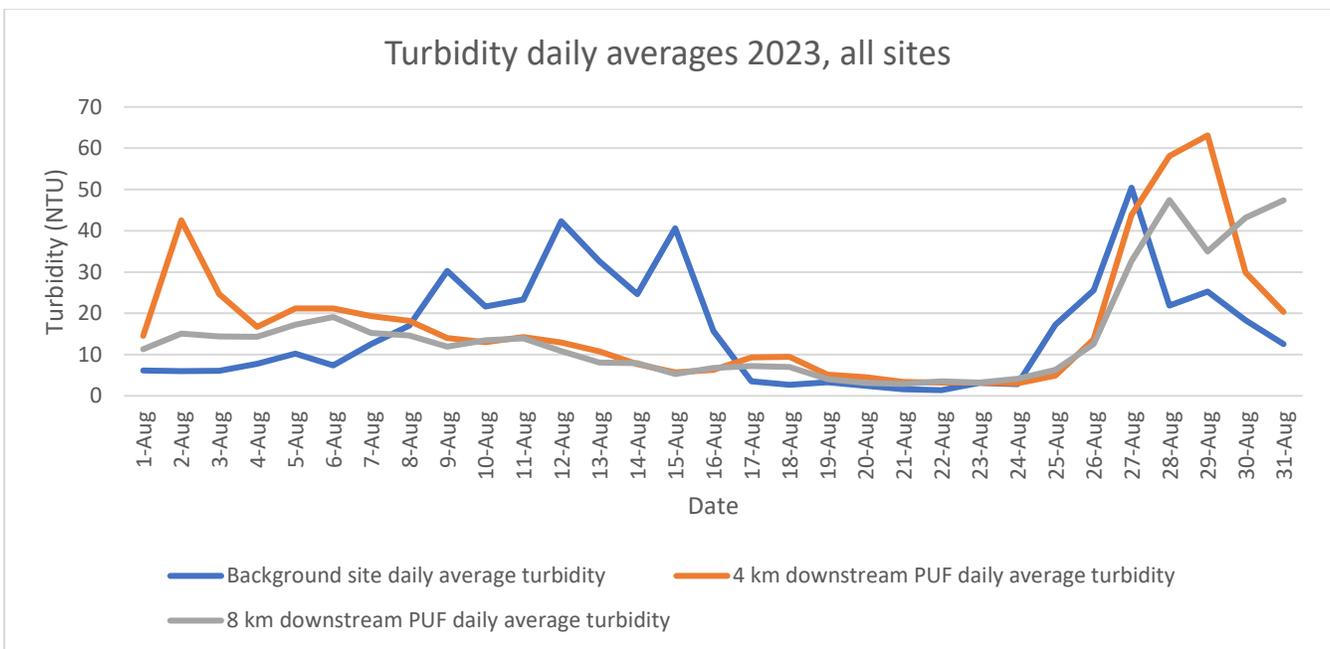


Figure 4. August 2023 daily average turbidity at all sites. The background site (blue line), with no motorized boats, had higher turbidity on several days than the sites in the motorized boat reaches (4 km downstream and 8 km downstream).

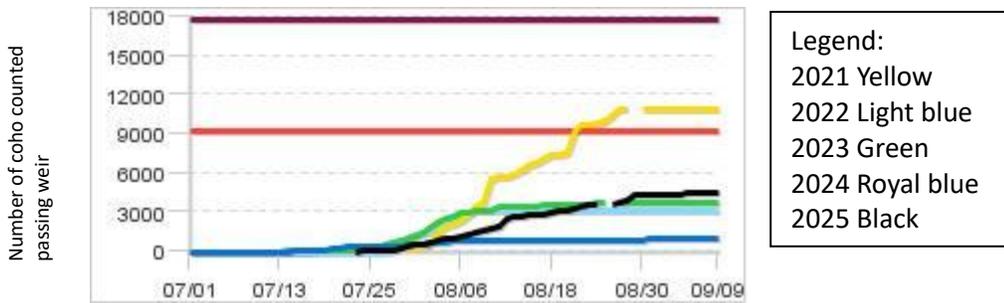


Figure 5. ADF&G Little Susitna River cumulative coho salmon counts for 2021 – 2025. The red line is the minimum escapement goal and the purple line is the upper escapement goal.

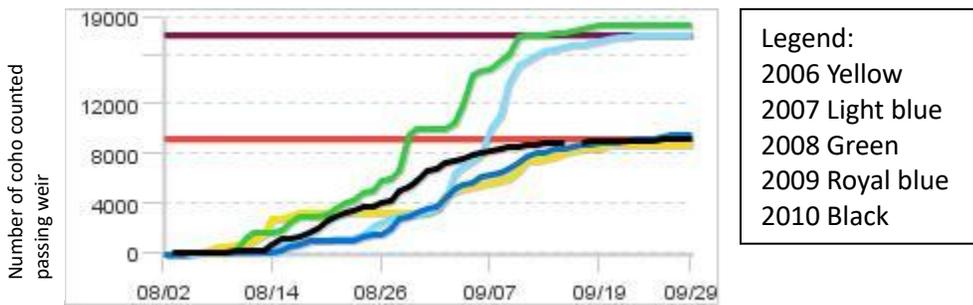


Figure 6. ADF&G Little Susitna River cumulative coho salmon counts for 2006 – 2010. The red line is the minimum escapement goal, and the purple line is the upper escapement goal.