

WASHINGTON DEPARTMENT OF ECOLOGY
ENVIRONMENTAL ASSESSMENT PROGRAM
FRESHWATER MONITORING UNIT
STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 05A105
STATION NAME: S.F. Stillaguamish at Jordan Rd Bridge
WATER YEAR: 2018
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Introduction

Watershed Description

The basin above this gage covers 181 square miles of steep forested terrain in the North Cascade Mountains. The mean elevation for the basin is 2,450 feet. Elevations range from about 196 feet at the gage to 6,690 feet at the highest point of the headwaters. The mean slope in the basin is over 43 percent. The forest canopy cover was computed in 2001 as 74 percent of the basin. Mean annual precipitation for the basin is 95.5 inches. Basin statistics are provided by the USGS.

Gage Location

The gage house is on the left bank of the South Fork Stillaguamish River at the south end of the Jordan Road Bridge near Granite Falls. The primary gage index is a wire weight gage mounted on the downstream bridge rail.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	181
Latitude (degrees, minutes, seconds)	48.095249° N
Longitude (degrees, minutes, seconds)	-121.974555° W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	1800
Median Annual Discharge (cfs)	1070
Maximum Daily Mean Discharge (cfs)	20900
Minimum Daily Mean Discharge (cfs)	142
Maximum Instantaneous Discharge (cfs)	38800
Minimum Instantaneous Discharge (cfs)	134
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	3680
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	222
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	0
Number of Un-Reported Days	4
Number of Days Qualified as Estimates	112
Number of Modeled Days	0

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Table 2 Discussion (Discharge Statistics)

Discharge at South Fork Stillaguamish River at Jordan Road bridge gaging station reached its lowest point September 7, 2018. Discharge in South Fork Stillaguamish peaked November 22, 2017.

Four days were un-reported due to data being qualified as an unreliable estimate due to instrument drift as explained below.

One hundred twelve days were qualified as estimated during water year 2018. Of those 112 days, 77 were the result of a gaps in the stage record caused by a failing stage measurement device. These days were filled with estimated data using a similar station. The remaining 35 days were qualified as estimates due to instrument drift as explained below.

Data downloaded from the data collection platform for the time period of 7/12/2018 to 8/16/2018 was missing 12 data points and had a 2 hour time shift. Instead of using this data as the primary data source, telemetry data was used to backfill time period.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	10.1
Potential Weighted Rating Error (% of discharge)	9.8
Total Potential Error (% of discharge)	19.9

Table 3 Discussion (Error Analysis)

Logger Drift Error is based on a statistical analysis comparing continuous automated gage height readings with quality assurance gage height observations made during periodic stations visits.

Similarly, the Weighted Rating Error is calculated using a composite analysis of the level of quality assigned to each discharge measurement used to define each rating table.

Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	4.76
Maximum Recorded Stage (feet)	17.11
Range of Recorded Stage (feet)	12.35

Table 4 Discussion (Stage Record)

Minimum stage occurred during a low flow period in early September 2018. Maximum stage occurred during high flow conditions caused by a storm event in mid November of 2017.

Table 5. Rating Table Summary

Rating Table No.	201	3	
Period of Ratings	10/1/17-8/16/18	7/12/18-9/30/18	
Range of Ratings (cfs)	45-42,800	45-42,800	
No. of Defining Measurements	64	26	
Rating Error (%)	9.8	10.2	

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

Table 5 Discussion (Rating Tables)

Rating 201 is a carry over due to stable control conditions from WY 2017. Rating 201 makes a shift for fill to rating 3.
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Table 6. Model Summary

Model Type (Slope conveyance, other, none)	none
Range of Modeled Stage (feet)	none
Range of Modeled Discharge (cfs)	none
Valid Period for Model	none
Model Confidence	none

Table 6 Discussion (Modeled Data)

none

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
None.	None.

Table 7 Discussion (Surveys)

None.

Activities Completed

Nine streamflow measurements were conducted during water year 2018. A site visit was conducted to replace the radar gage used for stage measurement.
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Appendix

None.