

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

STATION ID: 05A105
STATION NAME: S.F. Stillaguamsih at Jordan Rd Bridge
WATER YEAR: 2017
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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)	1870
Median Annual Discharge (cfs)	1250
Maximum Daily Mean Discharge (cfs)	12100
Minimum Daily Mean Discharge (cfs)	110
Maximum Instantaneous Discharge (cfs)	20900
Minimum Instantaneous Discharge (cfs)	96
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	4150
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	142
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	0
Number of Days Qualified as Estimates	136
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 15, 2017. Discharge in South Fork Stillaguamish peaked October 20, 2016.

One hundred thirty-six days were qualified as estimated during WY 2017. Of those 136 days, 47 were the result of a gap in the stage record, caused by a failing stage measurement device, that was filled with estimated data using a similar station. The remaining 89 days were qualified as estimates due to instrument drift as explained below.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	13.1
Potential Weighted Rating Error (% of discharge)	9.8
Total Potential Error (% of discharge)	22.9

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)	13.93
Range of Recorded Stage (feet)	9.17

Table 4 Discussion (Stage Record)

Minimum stage occurred during a low flow period at the end of September 2017. Maximum stage occurred during high flow conditions caused by a storm event in mid October of 2016.
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Table 5. Rating Table Summary

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

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 2016.

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

Six streamflow measurements were conducted during WY 2017. Two site visits were conducted where flow was not measured. An additional two site visits were conducted for replacement of the radar gage used for stage measurement.

Appendix

None.