

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

STATION ID: 01C070
STATION NAME: Hutchinson Creek near Acme
WATER YEAR: 2017
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Introduction

Watershed Description

Hutchinson Creek drains a forested basin in the North Cascades foothills that lies between Bowman Mountain on the east and its confluence with the South Fork Nooksack River on the west. The creek supports populations of steelhead, coho salmon, and cutthroat trout. Above the gage, the basin ranges in elevation from 530 feet up to 4220 feet along the mountain ridges to the east. The mean elevation is 1750 feet. About 72 percent of the area is covered by forest canopy. Average annual precipitation is about 70 inches.

Gage Location

This stream gage is located on the left bank at an unmarked Washington State Department of Natural Resources bridge off Mosquito Lake Road in Whatcom County, WA.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	14.0
Latitude (degrees, minutes, seconds)	48° 43' 27.84" N
Longitude (degrees, minutes, seconds)	-122° 9' 7.90" W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	50
Median Annual Discharge (cfs)	46
Maximum Daily Mean Discharge (cfs)	180
Minimum Daily Mean Discharge (cfs)	3.7
Maximum Instantaneous Discharge (cfs)	199
Minimum Instantaneous Discharge (cfs)	3.4
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	105
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	4.9
Number of Days Discharge is Greater Than Range of Ratings	9
Number of Days Discharge is Less Than Range of Ratings	0
Number of Un-Reported Days	9
Number of Days Qualified as Estimates	30
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 Hutchinson Creek near Acme gaging station peaked March 18, 2017 and reached its lowest point September 29, 2017.

Nine days were greater than the range of ratings. These rating exceedences correspond to storm events in early November, mid January, mid February, and a pair of storms in mid March. The peak discharge for Water Year 2017 occurred during the second mid March storm events. There were a total of nine unreported days in Water Year 2017.

Thirty days were qualified as estimates. These days were qualified as estimates based on logger drift error assessment.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	8.6
Potential Weighted Rating Error (% of discharge)	10.1
Total Potential Error (% of discharge)	18.7

Table 3 Discussion (Error Analysis)

Most of the uncertainty in reported discharge for Water Year 2017 is from potential weighted rating error. Potential rating error is based on the difference between the discharge predicted by the rating table and the measured discharge that has been adjusted to the highest potential error based on the quality of the measurement.

All of the discharge measurements taken in Water Year 2017 were rated "good" or "fair."

Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	0.57
Maximum Recorded Stage (feet)	3.33
Range of Recorded Stage (feet)	2.76

Table 4 Discussion (Stage Record)

Minimum stage occurred in late September during the end of the typical summer low-flow period. Maximum recorded stage occurred during a spring storm event in mid March 2017.

Table 5. Rating Table Summary

Rating Table No.	16	21	161
Period of Ratings	10/1/2016-07/31/2017	06/20/2017-09/30/2017	09/29/2017-09/30/2017
Range of Ratings (cfs)	0.39-203	0.39-203	0.39-203
No. of Defining Measurements	17	6	17
Rating Error (%)	10.2	9.8	10.2

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

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

Table 5 Discussion (Rating Tables)

Rating 16 is a hold over in a stable period from Water Year 2016.

Filling of the gage pool over a series of small storm events in early to mid June led to Rating 21.

A series of mid-October storm events caused scouring of the gage pool. This scouring led to Rating 161 which is a clone of Rating 16.

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

None.

Appendix

None.