

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: 2015
AUTHOR: Paul D. Anderson

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)	46
Median Annual Discharge (cfs)	34
Maximum Daily Mean Discharge (cfs)	231
Minimum Daily Mean Discharge (cfs)	4.0
Maximum Instantaneous Discharge (cfs)	328
Minimum Instantaneous Discharge (cfs)	3.6
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	106
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	5.9
Number of Days Discharge is Greater Than Range of Ratings	8
Number of Days Discharge is Less Than Range of Ratings	0
Number of Un-Reported Days	8
Number of Days Qualified as Estimates	58
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 reached its lowest point October 9, 2014 and peaked January 5, 2015.

Eight days were greater than the range of ratings. These rating exceedences correspond with storm events in late November, early and later January, and early February. These eight days also correspond to the number of unreported days in Water Year 2015.

Fifty-eight 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)	10.6
Total Potential Error (% of discharge)	19.2

Table 3 Discussion (Error Analysis)

Most of the uncertainty in reported discharge for Water Year 2015 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.

The majority of the discharge measurements taken in Water Year 2015 were rated "good."

Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	1.28
Maximum Recorded Stage (feet)	4.87
Range of Recorded Stage (feet)	3.59

Table 4 Discussion (Stage Record)

Minimum stage occurred at the end of the summer low flow in October of 2014. Maximum stage occurred during high-flow conditions caused by a storm event in early January of 2015.

Table 5. Rating Table Summary

Rating Table No.	103	123	901
Period of Ratings	10/01/2014-11/28/2014	11/28/2014-01/05/2015	01/05/2015-04/21/2015
Range of Ratings (cfs)	0-292	0-392	17-163
No. of Defining Measurements	10	29	6
Rating Error (%)	10.8	11.6	11.4

Rating Table No.	14		
Period of Ratings	03/09/2015-09/30/2015		
Range of Ratings (cfs)	2-163		
No. of Defining Measurements	6		
Rating Error (%)	9.9		

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

Table 5 Discussion (Rating Tables)

Rating 103 is a copy of rating 102 to preserve the reviewed data for the part of the rating that occurs prior to WY 2015.

Scouring of the gage pool over several storm events in the fall and winter led to Rating 123. Rating 123 is the third clone of Rating 12.

Rating 901 is the first clone of Rating 9 and was created in response to filling of the gage pool over several late winter storm events.

Rating Table 14 represents a stable period in the stage-discharge relationship after a several small fill events that occurred during the spring.

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	n/a

Table 7 Discussion (Surveys)

none

Activities Completed

None.

Appendix

None.