

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

STATION ID: 45L110
STATION NAME: Little Wenatchee River below Rainy Creek
WATER YEAR: 2005
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Introduction

Watershed Description

The Little Wenatchee River originates in the snowfields of the eastern slopes of the central Cascade Mountain range and flows into Lake Wenatchee. The watershed is bounded by both Nason and Wenatchee ridges. Land cover above the gage consists of predominantly coniferous forest but also includes alpine shrubland, montane grassland, bedrock/talus slopes, and riparian woodlands. Mean annual precipitation across the watershed above this gage location is 103 inches (U.S. Weather Bureau, 1965).

Gage Location

The telemetered stream gaging station on the Little Wenatchee River below Rainy Creek was installed on September 17, 2002. The gage is located at the Forest Service Road 6700 bridge on the right bank, approximately one mile downstream of Rainy Creek.

Table 1.

Drainage Area (square miles)	83.6 (USGS, 2012)
Latitude (degrees, minutes, seconds)	47°50'58" N
Longitude (degrees, minutes, seconds)	120°56'44" W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	249
Median Annual Discharge (cfs)	196
Maximum Daily Mean Discharge (cfs)	1700
Minimum Daily Mean Discharge (cfs)	26
Maximum Instantaneous Discharge (cfs)	2000
Minimum Instantaneous Discharge (cfs)	25
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	567
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	33
Number of Days Discharge is Greater Than Range of Ratings	10
Number of Days Discharge is Less Than Range of Ratings	0

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

Narrative

Four discharge measurements were taken, ranging from 26 to 533 cfs. A drought was declared statewide in March of 2005. In the Wenatchee River watershed, precipitation and snowpack were below normal. Snowpack was further diminished by notable rain-on-snow events during the winter months.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	---
Weighted Rating Error (% of discharge)	10.5%
Total Potential Error (% of discharge)	---

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	#201	#5	
Period of Ratings	11/28/03-07/13/05	7/13/05-7/24/07	
Range of Ratings (cfs)	19.5-7205	13-16,700	
No. of Defining Measurements	15	14	
Rating Error (%)	10.8%	9.4%	

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 (%)			

Narrative

The water year began with Table #201, the second occurrence of this rating. Table #4 was created by shifting table #201 by -0.34 ft to compensate for a change in gage datum. Finally, table #4 was phased into table #5 following the gradual filling of the control as spring runoff subsided.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	0.33
Maximum Recorded Stage (feet)	8.59
Range of Recorded Stage (feet)	8.26
Number of Un-Reported Days	10
Number of Days Qualified as Estimates	201
Number of Days Qualified as Unreliable Estimates	0

Narrative

The maximum stage was recorded on December 11, 2004 during a winter storm event. The minimum stage was recorded on September 8, 2005 during base flow conditions. Un-reported days were due to rating-table exceedances. The stage record is considered a reliable estimate for 201 days during the water year. The site is inaccessible during the winter months, and the first visit at the end of April reported damage to the staff gage. Staff gage observations were reliably calculated from a regression of historical R.P. observations until it was replaced and the gage datum changed mid-June.

Modeled Discharge

Table 6. Model Summary

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

Surveys

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

Type	Date
N/A	N/A

Activities Completed

The staff gage was damaged during the winter months, due to high flow. It was replaced without surveying. Therefore, a new gage datum was established.