

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

STATION ID: 45K090
STATION NAME: White River near Plain, WA
WATER YEAR: 2013
AUTHOR: Tyler W. Burks

Introduction

Watershed Description

White River originates in the glaciers and snowfields of prominent peaks and ridgelines (White Mountain, Tenpeak Mountain, High Pass, and Buck Mountain) located due south of Glacier Peak, and flows southeast into Lake Wenatchee. The watershed is bound on the east by Chiwawa Ridge and the west by Wenatchee Ridge. Land cover above the gage consists of predominantly coniferous forest, but also includes riparian woodlands, alpine shrubland, montane grassland, and bedrock/talus slopes. Mean annual precipitation across the watershed above this gage location is 107 inches (U.S. Weather Bureau, 1965).

Gage Location

The telemetered stream gaging station on the White River near Plain was installed on September 19, 2002. The gage is located off Forest Service Road 6400, at the Forest Service Road 6434 (Sears Creek) bridge on the left bank. This location is approximately seven river miles upstream from Lake Wenatchee.

Table 1.

Drainage Area (square miles)	149 (USGS, 2014)
Latitude (degrees, minutes, seconds)	47°52'28" N
Longitude (degrees, minutes, seconds)	120°52'15" W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	899
Median Annual Discharge (cfs)	471
Maximum Daily Mean Discharge (cfs)	4,880
Minimum Daily Mean Discharge (cfs)	104
Maximum Instantaneous Discharge (cfs)	5,150
Minimum Instantaneous Discharge (cfs)	103
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	2,220
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	145
Number of Days Discharge is Greater Than Range of Ratings	0
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

Five discharge measurements were taken, ranging from 280 to 3,391 cfs. Snowmelt runoff began ramp up during the month of March, and reached its peak on May 9, 2013, after a period of warm weather. The minimum discharge was recorded on October 11, 2012, prior to the fall storm cycle.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	1.30%
Weighted Rating Error (% of discharge)	13.4%
Total Potential Error (% of discharge)	14.7%

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	#601	#802	#602
Period of Ratings	10/01/2012-11/01/2012	10/31/2012-04/05/2013	03/01/2013-09/30/2013
Range of Ratings (cfs)	52.8-12,600	87.0-12,600	52.8-12,600
No. of Defining Measurements	26	8	26
Rating Error (%)	15.2%	10.7%	15.2%

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 (%)			

Narrative

The water year began with Table 601 carrying over from the previous water year. During a notable fall storm, Table 601 was phased into Table 802, as sediment filled the control. Table 802 remained valid for the winter months, until the onset of snow melt runoff scoured the control to a previous condition. Table 602 (a clone of Table 6) remained valid for the duration of the water year.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	2.74
Maximum Recorded Stage (feet)	11.82
Range of Recorded Stage (feet)	9.08
Number of Un-Reported Days	24
Number of Days Qualified as Estimates	29
Number of Days Qualified as Unreliable Estimates	0

Narrative

Due to the presence of strong sensitivity drift between the logger and the PGI observations, the following equation was applied to the stage record for this water year: $-0.035X+0.069$ $r^2=-0.97$. Unreported days were due to an ice-impacted channel in which the stage-discharge relationship was not valid. The stage record was qualified as an estimate for 29 days because they followed periods of ice-impacted data prior to the first observation of an ice free channel.

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	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
None	

Activities Completed

--