

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: 2006
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)	858
Median Annual Discharge (cfs)	317
Maximum Daily Mean Discharge (cfs)	6440
Minimum Daily Mean Discharge (cfs)	88
Maximum Instantaneous Discharge (cfs)	6650
Minimum Instantaneous Discharge (cfs)	81
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	2460
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	157
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 200 to 6300 cfs. Snowmelt runoff began during early April as a result of seasonal warming. Discharge reached its peak on May 19, 2006. The minimum discharge was recorded during baseflow conditions on September 18, 2006.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	4.4%
Weighted Rating Error (% of discharge)	14.3%
Total Potential Error (% of discharge)	18.7%

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	#6	#7	
Period of Ratings	10/1/2005-6/20/2006	5/18/2006-9/30/2006	
Range of Ratings (cfs)	52.8-12,600	42.2-12,600	
No. of Defining Measurements	23	16	
Rating Error (%)	14.8%	13.3%	

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 6, carrying over from the previous water year. Following the peak of snowmelt runoff in mid-May, Table 6 phased into Table 7. During this period, stage fell quickly, depositing sediment and debris in the control and causing a shift in the rating. Table 7 was valid for the remainder of the water year.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	2.64
Maximum Recorded Stage (feet)	13.62
Range of Recorded Stage (feet)	10.98
Number of Un-Reported Days	28
Number of Days Qualified as Estimates	90
Number of Days Qualified as Unreliable Estimates	0

Narrative

Unreported days were due to an ice-impacted channel in which the stage-discharge relationship was not valid. The stage record is considered an estimate for 90 days during the water year. Nine of the days qualified as estimates because data was missing due to battery failure. These days were replaced with stage record from 45A240 Wenatchee River below Lake Wenatchee with an $r^2=0.97$. Thirty-three days were qualified as estimates because the logger drift exceeded 20 percent, and the difference in reported discharge was greater than 0.50 cfs. The remaining 48 qualified days occurred following or in-between periods of ice-impacted data.

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

--