

**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:** 2011  
**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)	1,040
Median Annual Discharge (cfs)	629
Maximum Daily Mean Discharge (cfs)	3,710
Minimum Daily Mean Discharge (cfs)	245
Maximum Instantaneous Discharge (cfs)	3,980
Minimum Instantaneous Discharge (cfs)	235
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	2,480
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	278
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**

Four discharge measurements were taken, ranging from 321 to 2,160 cfs. Snowmelt runoff began early May, and reached its peak on July 7, 2011, after a period of warm weather. The minimum discharge was recorded during baseflow conditions on October 8, 2010, and again on September 30, 2011. A cool and wet, spring and early summer, lead to a prolonged period of snowmelt runoff.

**Error Analysis**

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	0.90%
Weighted Rating Error (% of discharge)	15.2%
Total Potential Error (% of discharge)	16.1%

**Rating Table(s)**

Table 4. Rating Table Summary

Rating Table No.	#601		
Period of Ratings	10/01/2010-09/30/2011		
Range of Ratings (cfs)	52.8-12,600		
No. of Defining Measurements	26		
Rating Error (%)	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, and it remained valid for the duration.

## Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	3.33
Maximum Recorded Stage (feet)	10.29
Range of Recorded Stage (feet)	6.96
Number of Un-Reported Days	28
Number of Days Qualified as Estimates	70
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:  $-0.045X+0.163$   $r^2=-0.94$ . 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 48 days because they followed periods of ice-impacted data prior to the first observation of an ice free channel. The remaining 22 days were estimated based on the stage record of 45A240 ( $r^2=0.95$ ) because data was lost due to battery failure at the station.

## 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

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