

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: 2008
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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)	825
Median Annual Discharge (cfs)	321
Maximum Daily Mean Discharge (cfs)	6,660
Minimum Daily Mean Discharge (cfs)	122
Maximum Instantaneous Discharge (cfs)	6,970
Minimum Instantaneous Discharge (cfs)	118
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	2,230
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	183
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 174 to 1,240 cfs. Snowmelt runoff began mid-April, and reached its peak on May 18, 2008, after a period of warm weather. The minimum discharge was recorded during baseflow conditions on September 29, 2008. One other event of note occurred in early December which severely damaged the staff gage. It was a "pineapple express" event that occurred while the channel contained some shore ice. Though notable for the water year, this event was far more powerful west of the Cascades. Wind and rain battered the coast and southwest Washington, resulting in landslides and major flooding. The Chehalis River flooded I-5, closing it for four days.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	1.6%
Weighted Rating Error (% of discharge)	12.2%
Total Potential Error (% of discharge)	13.8%

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	#8	#701	#801
Period of Ratings	10/01/2007- 12/04/2007	12/03/2007- 09/16/2008	06/30/2008- 09/30/2008
Range of Ratings (cfs)	87-12,600	42.2-12,600	87-12,600
No. of Defining Measurements	8	15	8
Rating Error (%)	10.7%	13.0%	10.7%

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

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Period of Ratings			
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Rating Error (%)			

Narrative

The water year began with Table 8, carrying over from the previous water year. In early December, a significant "pineapple express" rain event occurred. Table 8 was phased into Table 701 (a clone of Table 7) across this period in which the combination of shore ice and rapidly rising stage scoured the control. Beginning at the end of June, Table 701 was phased into Table 801 (a clone of Table 8), in which gradual sediment deposition filled the control as snowmelt runoff subsided. Table 801 was valid for the remainder of the water year.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	3.00
Maximum Recorded Stage (feet)	14.00
Range of Recorded Stage (feet)	11.00
Number of Un-Reported Days	29
Number of Days Qualified as Estimates	280
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 a questionable estimate for 38 days during the water year due to intermittent ice influence. The remaining 242 days were qualified as estimates because the staff gage was damaged and had to be back-calculated based on another index until the flow conditions allowed for repair. Gage height determined by any means other than direct observation or measurement is considered an estimate.

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
Station	10/08/2007

Activities Completed

A gaging station level survey was completed at the beginning of the water year in order to establish a stage relative datum at this location.