

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

**STATION ID:** 46B060  
**STATION NAME:** Roaring Creek nr Mouth  
**WATER YEAR:** 2007  
**AUTHOR:** Howard Christensen

**Introduction**

Watershed Description

Station 46B060, Roaring Creek, drains 24.75 square miles; and the basin elevation ranges from 1,180 ft. to 3,870 ft. The mean basin slope is 46 percent. The area is 32% forest canopy, and the rest is open grass land with steep hill sides. Land is mainly forested with some small farm and orchards. The stream channel is gravel to bedrock in places.

Gage Location

The gage is located up the Entiat River Road to Roaring Creek Road about eight miles. Turn left onto Roaring Creek Road and drive about two miles. The station is on the left-hand side. PGI is staff gage.

Table 1. Basin Area and Legal Description

Drainage Area (square miles)	25
Latitude (degrees, minutes, seconds)	47 41 09 N
Longitude (degrees, minutes, seconds)	120 20 35 W

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	10
Median Annual Discharge (cfs)	5.6
Maximum Daily Mean Discharge (cfs)	56
Minimum Daily Mean Discharge (cfs)	0.7
Maximum Instantaneous Discharge (cfs)	71
Minimum Instantaneous Discharge (cfs)	0.3
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	1.2
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	29
Number of Days Discharge is Greater Than Range of Ratings	3
Number of Days Discharge is Less Than Range of Ratings	0
Number of Un-Reported Days	9
Number of Days Qualified as Estimates	108
Number of Modeled Days	0

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

Table 2 Discussion (Discharge Statistics)

One hundred eight days were qualified as estimates. Most of the estimated days followed periods of icing in which stage was not confirmed. Other days were estimated because drift (difference between observed and recorded stage) exceeded the 20 percent of predicted flow threshold. Because of battery issues, four days in February are estimated because discharge values were based on the record of another station. Six days were not reported in the winter months because icing precluded accurate reporting. Three days were not reported because flows exceeded the reporting limits of the rating curve.

Table 3. Error Analysis Summary.

Potential Logger Drift Error (% of discharge)	13
Potential Weighted Rating Error (% of discharge)	14
Total Potential Error (% of discharge)	27

Table 3 Discussion (Error Analysis)

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Table 4. Stage Record Summary

Minimum Recorded Stage (feet)	0.73
Maximum Recorded Stage (feet)	2.37
Range of Recorded Stage (feet)	1.64

Table 4 Discussion (Stage Record)

The maximum stage recording occurred on April 10, and the minimum stage was recorded on September 25.

Table 5. Rating Table Summary

Rating Table No.	6	7	8
Period of Ratings	10-01-06 to 04-11-07	03-11-07 to 05-14-07	05-12-07 to 09-30-07
Range of Ratings (cfs)	0.47 to 109	0.47 to 109	0.44 to 109
No. of Defining Measurements	8	2	21
Rating Error (%)	15	7	17

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 (%)			

Table 5 Discussion (Rating Tables)

Rating 6 was created because of a scouring event during spring runoff. Rating 7 was created due to a filling event; and rating 8 was created because of filling at the lower end of the rating.

Table 6. Model Summary

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

Table 6 Discussion (Modeled Data)

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

Type	Date

Table 7 Discussion (Surveys)

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Activities Completed

Routine station maintenance and discharge measurement was conducted at six-week intervals.
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