

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

STATION ID: 31B070
STATION NAME: Rock Creek at Old Hwy 8 Bridge
WATER YEAR: 2008
AUTHOR: Don Watt

Introduction

Watershed Description

The Rock Creek basin in south central Washington lies between the Bickleton Ridge in the north and the Goodnoe Hills in the south. The creek drains into Lake Umatilla on the Columbia River about three miles downstream from the gage. The basin above the gage drains approximately 217 square miles and includes range and agricultural lands with limited forest areas at higher elevations in the north. Elevation ranges from about 420 feet at the gage to 4730 feet along the ridge at the northern basin boundary. About five percent of the basin is covered by forest canopy. Annual precipitation averages 18 inches per year. Surface water generally flows in Rock Creek from November until July. A deep pool remains at the gage site year around.

Gage Location

The gage is about 18 miles southeast of Goldendale at the west end of the Old Highway 8 bridge, near river mile 3. The gage is on the right bank and measures water level in a deep year-round pool in the channel under the bridge. The Primary Gage Index is a staff gage mounted on the bridge abutment at the right bank near the gage house and slant pipe.

Table 1.

Drainage Area (square miles)	217
Latitude (degrees, minutes, seconds)	45 44 52
Longitude (degrees, minutes, seconds)	120 26 11

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	68 cfs
Median Annual Discharge (cfs)	30 cfs
Maximum Daily Mean Discharge (cfs)	434 cfs
Minimum Daily Mean Discharge (cfs)	0 cfs
Maximum Instantaneous Discharge (cfs)	584 cfs
Minimum Instantaneous Discharge (cfs)	0 cfs
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	215 cfs
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	0 cfs
Number of Days Discharge is Greater Than Range of Ratings	9 days
Number of Days Discharge is Less Than Range of Ratings	6 days

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

Narrative

While continuous gaging equipment was not installed until 11/20/2007, a flow measurement on October 29th suggests that seasonal surface flow started around October 27th. The six days with discharge less than the range of ratings occurred in July as water level approached the estimated point of zero flow. Flow ceased on 7/25/2008. There were 67 days from late July to the end of the water year that the water level dropped below the point of zero flow. The large number of days with zero flow skews the Median Annual Discharge downward to a value much lower than the Mean Annual Discharge.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	3 %
Weighted Rating Error (% of discharge)	13 %
Total Potential Error (% of discharge)	16 %

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	1		
Period of Ratings	11/20/2007-9/30/2008		
Range of Ratings (cfs)	0.12 to 610		
No. of Defining Measurements	9		
Rating Error (%)	13 %		

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

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

Narrative

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Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	3.85 ft
Maximum Recorded Stage (feet)	10.34 ft
Range of Recorded Stage (feet)	6.49 ft
Number of Un-Reported Days	60 days
Number of Days Qualified as Estimates	6 days
Number of Days Qualified as Unreliable Estimates	0 days

Narrative

Of 60 unreported days, nine had flow that exceeded the range of ratings and 51 occurred prior to the installation of continuously recording gaging equipment. The six estimated days occurred in July 2008 and had mean discharge of 0.1 cfs or less.

Modeled Discharge

Table 6. Model Summary

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

Surveys

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

Type	Date

Activities Completed

Most station infrastructure was installed in the summer of 2007. Flowing water was observed and a 0.25 cfs discharge was measured on 10/29/2007. Continuous gaging equipment was installed on 11/20/2007