

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

STATION ID: 25E060
STATION NAME: Abernathy Creek
WATER YEAR: 2007
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Introduction

Watershed Description

Abernathy Creek is a right bank tributary to the Columbia River located approximately 9 miles west of Longview, Washington. Historically, the stream supported runs of coho and chinook salmon and steelhead and cutthroat trout. Land use is primarily commercial forestry with state and private holdings. Flow basalt with interbedded sandstone defines the underlying geology. Precipitation varies with elevation but typically ranges between 60 and 70 inches annually. Hydrology is almost entirely rainfall driven.

Gage Location

The gage is on the right bank near the downstream side of the Slide Creek road bridge.

Table 1.

Drainage Area (square miles)	20.3
Latitude (degrees, minutes, seconds)	46 12 20.7 north
Longitude (degrees, minutes, seconds)	123 09 14.0 west

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	75
Median Annual Discharge (cfs)	32
Maximum Daily Mean Discharge (cfs)	385
Minimum Daily Mean Discharge (cfs)	6.1
Maximum Instantaneous Discharge (cfs)	437
Minimum Instantaneous Discharge (cfs)	5.8
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	252
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	7.8
Percent of Time Discharge is Greater Than Range of Ratings	10.7
Percent of Time 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

The 39 days of missing record occurred during the highest discharges. For that reason all statistics under-report the actual values. An additional 46 days of the annual record were missing due to a variety of technical problems including power failure, equipment changes, and programming errors. Where possible, the gaps in the data were filled using well correlated stage data from adjacent stations.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	2.4
Weighted Rating Error (% of discharge)	7.4
Total Potential Error (% of discharge)	9.8

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	3	3	4	4
Period of Ratings	10/01-02/24	04/03-06/05	02/24-04/03	06/05-09/30
Range of Ratings (cfs)	3.8-380	3.8-380	3.9-466	3.9-466
No. of Defining Measurements	6	6	4	4
Rating Error (%)	9.9	9.9	5.5	5.5

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

Narrative

Rating Table 3 covered the start of Water Year (WY) 2007 from 10/01/2006 to 02/24/2007. The rating then shifted to Table 4. Interestingly, the remainder of the Water Year was marked by a shift back to Rating 3 and then back to Rating 4 in June of 2007. Rating 4 covered the end of WY 2007.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	4.04
Maximum Recorded Stage (feet)	9.96
Range of Recorded Stage (feet)	5.92
Number of Un-Reported Days	39
Number of Days Qualified as Estimates	0
Number of Days Qualified as Unreliable Estimates	39

Narrative

The stage record for WY 2007 was incomplete. Gaps in the stage data were caused by equipment malfunction, power supply issues, programming errors, and recorded stages that were often elevated beyond twice the highest measured discharge.

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	10/04/2007

Activities Completed

Continuous turbidity monitoring was initiated on 10/26/2006.