

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

STATION ID: 35J050
STATION NAME: Tenmile Creek at Mouth
WATER YEAR: 2011
AUTHOR: Mitch Wallace

Introduction

Watershed Description

Tenmile Creek is located in Asotin County in southeastern Washington. Tenmile Creek drops 2000 feet from the fringes of the Blue Mountains to the Snake River. The canyon created by the creek provides habitat for a variety of wildlife including deer, elk, coyote, and many species of birds. Land use is primarily rangeland.

Tenmile Creek also has a small population of threatened Snake River steelhead.

Gage Location

The gage is located off of Weisenfels Ridge Road, approximately 0.50 miles southwest from the Snake River Road. It is located on the left bank.

Table 1. Basin Area and Legal Description

| | |
|---------------------------------------|--------------------|
| Drainage Area (square miles) | 41.6 (Streamstats) |
| Latitude (degrees, minutes, seconds) | 46° 17' 28" N |
| Longitude (degrees, minutes, seconds) | 116° 59' 54" W |

Table 2. Discharge Statistics.

| | |
|---|------|
| Mean Annual Discharge (cfs) | 7.2 |
| Median Annual Discharge (cfs) | 1.6 |
| Maximum Daily Mean Discharge (cfs) | 48 |
| Minimum Daily Mean Discharge (cfs) | 0.50 |
| Maximum Instantaneous Discharge (cfs) | 71 |
| Minimum Instantaneous Discharge (cfs) | 0.50 |
| Discharge Equaled or Exceeded 10 % of Recorded Time (cfs) | 18 |
| Discharge Equaled or Exceeded 90 % of Recorded Time (cfs) | 0.59 |
| Number of Days Discharge is Greater Than Range of Ratings | 0 |
| Number of Days Discharge is Less Than Range of Ratings | 68 |
| Number of Un-Reported Days | 127 |
| Number of Days Qualified as Estimates | 112 |
| Number of Modeled Days | 1 |

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)

The pressure transducer was removed in the middle of November to protect it from freezing temperatures. It was replaced in the middle of March. This was the reason for the high number of missing days.

The estimated days were a result of logger drift. Data is qualified as an estimate if the mean daily flow difference between corrected and uncorrected data is greater than 20% and greater than 0.50 cfs.

Table 3. Error Analysis Summary.

| | |
|--|------|
| Potential Logger Drift Error (% of discharge) | 70.1 |
| Potential Weighted Rating Error (% of discharge) | 15.7 |
| Total Potential Error (% of discharge) | 85.8 |

Table 3 Discussion (Error Analysis)

The high potential logger drift error is a result of the mean daily flow difference between corrected and uncorrected data being large. This difference was caused by extremely low flows causing very shallow water depths at the location of the pressure transducer.

Table 4. Stage Record Summary

| | |
|--------------------------------|------|
| Minimum Recorded Stage (feet) | 3.99 |
| Maximum Recorded Stage (feet) | 5.04 |
| Range of Recorded Stage (feet) | 1.05 |

Table 4 Discussion (Stage Record)

| |
|--|
| No continuous data was collected between the middle of November through the middle of March. |
|--|

Table 5. Rating Table Summary

| | | | |
|------------------------------|--------------------|---------------------|-------------------|
| Rating Table No. | 14 | 15 | 16 |
| Period of Ratings | 10/1/10 to 10/5/10 | 10/1/10 to 11/16/10 | 10/5/10 to 1/4/11 |
| Range of Ratings (cfs) | 0.36 to 161 | 0.48 to 161 | 0.44 to 161 |
| No. of Defining Measurements | 7 | 2 | 2 |
| Rating Error (%) | 14.8 | 15.4 | 14.2 |

| | | | |
|------------------------------|--------------------|-------------------|--------------------|
| Rating Table No. | 17 | 141 | 171 |
| Period of Ratings | 11/16/10 to 2/8/11 | 1/4/11 to 7/26/11 | 6/14/11 to 9/30/11 |
| Range of Ratings (cfs) | 0.30 to 161 | 0.36 to 161 | 0.30 to 161 |
| No. of Defining Measurements | 5 | 7 | 5 |
| Rating Error (%) | 17.7 | 14.8 | 17.7 |

| | | | |
|------------------------------|-------------|--|--|
| Rating Table No. | 18 | | |
| Period of Ratings | 8/30/11 | | |
| Range of Ratings (cfs) | 0.30 to 161 | | |
| No. of Defining Measurements | 2 | | |
| Rating Error (%) | 14.4 | | |

Table 5 Discussion (Rating Tables)

All the ratings were either a result of leaf litter build-up or the subsequent flushing out of the leaf litter.

Nine discharge measurements were taken throughout the water year, ranging from 0.59 to 59 cfs.

Table 6. Model Summary

| | |
|--|------------------|
| Model Type (Slope conveyance, other, none) | Slope Conveyance |
| Range of Modeled Stage (feet) | 5.25 to 5.50 |
| Range of Modeled Discharge (cfs) | 110 to 161 |
| Valid Period for Model | WY 2011 |
| Model Confidence | 1.4 % |

Table 6 Discussion (Modeled Data)

| |
|--|
| |
|--|

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

| Type | Date |
|------|------|
| n/a | n/a |

Table 7 Discussion (Surveys)

| |
|--|
| |
|--|

Activities Completed

| |
|---|
| Removed the pressure transducer in November 2010 and replaced it in March 2011. |
|---|