

GS407 / 507 River Environments – Summer 2003

Day 5 - Lab Exercise 4 at Buckskin Mary Campground – Middle Deschutes

Read over the notes on flood periodicity (i.e. "recurrence interval") as presented on p. 14, p. 39-40, p. 45, and p. 66 of the field guide.

1. A total of 60 years of river discharge data were collected for a hypothetical river. The peak discharges for each year were identified and tabulated (herein referred to as "Qp"). The data were ranked from 1 = highest Qp to 60 = lowest Qp for the 60 year period. As subset of the data below were selected from the 60-year record.

Qp (cu. m /sec)	Rank	RI	Prob.
1300	16	_____	_____
500	53	_____	_____
1100	23	_____	_____
1700	6	_____	_____
2200	2	_____	_____
2000	3	_____	_____
100	60	_____	_____
300	57	_____	_____
800	39	_____	_____
1500	10	_____	_____

- A. Calculate the Recurrence Interval (RI) for each of the above discharges, answer in the space provided above.
 - B. Calculate the probability of occurrence for each of the above datum ($p = 1/RI$), answer in the space provided above.
 - C. Plot the recurrence interval –Qp data on the "Gumbel" probability graph on p. 69 of the field guide. RI is on the "x-axis", put Qp on the "y-axis". Use a y-axis scale of 10 tics = 500 cu. meters /sec.
 - D. Draw a best-fit line through the data, project the line to estimate Qp-100 (i.e. the anticipated discharge necessary for a 100-year flood).
 - E. Examine the graph you have created. Comment on the relationship between the frequency of small-scale floods vs. large scale floods. Which ones happen more often? How does the frequency of occurrence relate to the probability that a flood of a given magnitude will occur in a given year?
2. Examine the hillslope adjacent to Buckskin Mary Campground on river right. Compare the hillslope deposits and shape to the mass wasting diagram on p. 113 of the field guide. Identify the dominant processes responsible for the colluvial deposits that you observe.
 3. Hike to the Dant overlook along the gravel road. Identify the landform and material that comprise the surficial deposit at the mouth of the steep canyon across the river. Draw a line around the boundary of this landform on the topo sheet on p. 173 of your field guide. What is the dominant process that resulted in this deposit? What observational evidence support your interpretation as to the process?