Reach 1A Spawning Area Bed Mobility

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RESTORATION PROGRAM

Monitoring and Analysis Plan Study 28
Reach 1A Spawning Area Bed Mobility

Status

Field work for the bed mobility experiments at the two established study sites, Riffle Clusters (RC) 38 and 40, are on hold pending analysis and results of previously collected data.

Data Collection

Channel topography monitoring efforts did not occur during the first half of 2013 and will remain on hold until completion of data analysis and reporting of results from previous monitoring efforts.

Key Findings

The bed mobility experiment's results are presently nearing final analysis and reporting. Tracer results for both sites may be the most key result from the experiment considering their usefulness in estimating the critical shear stress for the reach. Using the tracers, we've observed two mobility thresholds: (1) a lower threshold where tracers begin to mobilize for a given shear stress or relative shear stress, and (2) a higher threshold where all tracers are mobilized for a given shear stress or relative shear stress. We suspect that mobilized tracers may represent the loosest portion of the bed's particles and therefore their full mobility may be suggestive of incipient bed material motion.

Table 1: Onset of mobility and full mobility thresholds as observed from the tracers at RC38. "Retaining sieve" sizes represent the smallest particle diameter within each size class. Shear stresses represent the value for the entire size class. Given that the D50 of ~75mm was measured using the sieve method its threshold shear stresses (in red) are best represented by the 64mm size class. The discrete shear stress is nearly equal between size classes. The mean onset of mobility shear stress for this site is 23.3 Pa. Full mobility of tracers about the D_{50} appear to be 40 Pa. Grayed out cells indicate the sizes for which full mobility threshold was not reached during the 2011 peak flow events.

Retaining Sieve	Shields τ*		Discrete Measurements τ (Pa)	
(mm)	Onset	Full	Onset	Full
32	0.035	0.048	27	34
45	0.024	0.041	23	40
64	0.017	0.033	22	40
90	0.010	≥0.025	24	≥42
128	0.009	≥0.017	21	≥40

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