

Restoration Structure Inventory and Survey Results from the Little Snake River and Tributaries, Northern Colorado

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Using data collected from surveys of over 500 stream restoration structures five years post-construction, we examine associations between structure condition and pool volume. Data collection necessitated the development of a structure condition classification and rapid surveys of structure and pool geometry. We compare pool maintenance among structure classes, develop multiple regression models to identify parameters most important for pool maintenance, and compare the project layout to published pool spacing relationships observed in natural channels. Residual pool depth and volume are greater for structures sealed with sediment than those not sealed, but the depth and volume differences lack statistical significance. Comparisons between sealed or unsealed structures and mobilized structures are typically statistically significant with residual pool depth and volume greater for sealed and unsealed structures than mobilized structures. In general, depth and volume increase with drop height over the structure crest and the degree of bankfull width constriction through the structure. Structure condition is quantified by a dimensionless measure of the space available for flow between crest rocks of a structure, essentially a measure of structure sealing. This variable is only significant in models of Cross-Vanes. These results indicate that the condition of intact (sealed and unsealed) structures is not strongly associated with differences in pool scour; however, structure condition has a greater influence on pool scour for Cross-Vanes than for J-Hooks. The variability in pool volume across the project may in part be due to small structure spacings, as compared to mean pool spacing for natural pool-riffle channels.

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