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186-4 - CHANNEL MORPHOLOGY CHANGE AND LEGACY SEDIMENT MOBILIZATION FOLLOWING DAM REMOVAL ON THE MAURY RIVER, VIRGINIA

Tuesday, October 12, 2021
2:30 PM - 6:30 PM
Oregon Convention Center - Exhibit Hall A

Booth No. 31

Abstract

Navigation dams and milldams, once prominent features of American waterways, have been in use since colonial times. The Maury River of Rockbridge County, Virginia has many of these structures, a number of which have been removed due to disrepair, lack of use, or waterway revitalization efforts. The Jordan's Point Dam in Lexington, Virginia was one of the most recent removals, occurring in 2019. Previous research determined that there is little legacy sediment storage in the channel behind the structure, but a significant volume of legacy sediments are stored in the floodplains upstream. This legacy sediment is now at a higher risk of erosion stemming from channel changes following dam removal.

Repeat channel geometry measurements, geospatial analysis, channel bed grain size analysis, and USGS historic and current streamflow data define key changes in river channel structure two years post-removal. The buildup and post-breach remobilization of impounded sediment behind dams poses a potential health risk for downstream residents and users of local water, as it may contain harmful components, such as reduced Mn and other metals. An understanding of stream competency and erosion rate will determine the risk for downstream travel of legacy sediment.

A notable observation is that migration of sediment bars is contributing to bank erosion upstream of the dam by redirecting the flow of water. An active project aiming to stabilize these banks is a contributor to channel restructuring. At one location about 300 meters upstream of the dam, the deepest and swiftest part of the flow has changed

armor are larger in the channel and on the point bar upstream, suggesting an increase in competency, providing further support for greater risk of bank erosion and remobilization of legacy sediments.

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Session

186: T132. Sediment Residence Times and Thresholds for Sediment Transport in Fluvial Corridors (Posters)

Kristin Jaeger, *U.S. Geological Survey, WAWSC, Tacoma, WA and* ***Nicholas Sutfin***, *Case Western Reserve UniversityEarth & Environmental Sciences, Cleveland, OH*

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CHARACTERIZING LAND USE HISTORY AND ASSESSING POTENTIAL GEOCHEMICAL CONTAMINANTS FROM LEGACY SEDIMENTS AND IMPOUNDED WATER IN ROCKBRIDGE COUNTY, VA

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LONG-TERM GEOMORPHIC EFFECTS OF THE GLINES CANYON DAM REMOVAL ON THE ELWHA RIVER, WASHINGTON, USA

DEMOTT, Alyssa[1], *ELY, Lisa L[1] and FREE, Bryon[2], (1)Geology Department, Central Washington University, 400 E University Way, Ellensburg, WA 98926, (2)Salem, OR 97301*

BEDROCK RIVER MORPHOLOGY REFLECTS UPSTREAM SEDIMENT SUPPLY IN RAPIDLY UPLIFTING SOUTHERN TAIWAN

YANITES, Brian[1], *SHORE, Dominique[2], RITTENOUR, Tammy[3], SHYU, J. Bruce H.[4], DELISLE, Clarke[1] and CHEN, Chia-Yu[4], (1)Earth and Atmospheric Sciences, Indiana University, 1001 East 10th Street, Bloomington, IN 47405, (2)Department of Geology, Utah State University, 4505 Old Main Hill, Logan, UT 84321, (3)Department of Geosciences, Utah State University, Logan, UT 84322, (4)Geosciences, National Taiwan University, Taipei, 106, Taiwan*

EVIDENCE FOR ROCK MECHANICAL LAYERS INFLUENCING CHANNEL MORPHOLOGY IN A BURIED BEDROCK VALLEY

CONWAY-WHITE, Oliver[1], *PARKER, Beth L.[2], STEELMAN, Colby[3], SMIAROWSKI, Adam[4], UGALDE, Hernan[5], ARNAUD, Emmanuelle[6], MUNN, Jonathan D.[2], BROWN, Jesse[7] and GORRIE, Connor[1], (1)Morwick G360 Groundwater Research Institute, University of Guelph, 50 Stone Road East, Guelph, ON N1G2W1, Canada, (2)Morwick G360 Groundwater Research Institute, University of Guelph, 50 Stone Road East, Guelph, ON N1G 2W1, Canada, (3)Dept of Earth and Environmental Sciences, University of Waterloo, Centre for Environmental and Information Technology (EIT), 200 University Ave. W, Waterloo, ON N2L 3G1, Canada, (4)CGG MultiPhysics Canada, Missassauga, ON L5N 5S2, Canada, (5)Department of Earth Sciences, Brock University, St. Catharines, ON L2S 3A1, Canada, (6)School of Environmental Sciences, University of Guelph, Alexander Hall, 50 Stone Rd East, Guelph, N1G 2W1, Canada, (7)School of Environmental Sciences, University of Guelph, 50 Stone Road East, Guelph, ON N1G 2W1, Canada*

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