



PRESIDENTIAL DREAM COURSE  
The UNIVERSITY of OKLAHOMA

# Engineering the Nature of Change

Featuring: Dr. Bob Hedin

6:30 PM March 21, 2023  
David L. Boren Auditorium  
National Weather Center

Form Follows Function:  
Lessons From Passive Mine  
Water Treatment Systems

Public attendance encouraged. Free parking available.

Effective mine water treatment can create opportunities for values beyond those associated with simply clean water. Passive treatment systems, which utilize natural materials and processes, produce diverse ecological benefits and opportunities to emphasize public interaction. The success of these innovative treatment systems depends on their functionality. Once sustainable treatment is assured, unexpected ecological, educational, and artistic benefits are possible. This presentation will describe two passive mine water treatment systems in western Pennsylvania that are fully functional and have become public assets. The Wingfield Pines system includes an influent fountain, a unique arrangement of oxidation/settling ponds, a large wetland, and an extensive trail system. The system is used by high school and college classes, is a birdwatching hotspot, and has been incorporated into the local community fabric. The Lotus Pond treats a flow of acidic aluminum-contaminated mine water at the Pittsburgh Botanic Garden using a passive limestone-based approach. The treatment system has been developed into a walking trail and the Lotus Pond, which receives the primary discharge from the treatment system, has been planted with ornamental aquatic plants, stocked with fish, and landscaped to promote public interaction.

**Engineering the Nature of Change** is an in-depth exploration of Ecological Engineering, Engineering With Nature, Nature-Based Solutions, and Natural Infrastructure with world-renowned experts from academia, industry, government, and other sectors.

<https://www.ou.edu/dreamcourse/current-courses/engineering-the-nature-of-change>

## Dr. Bob Hedin

Robert Hedin has been involved in mine water remediation for 35 years. Working with many colleagues (including Bob Nairn), Dr. Hedin helped to establish the legitimacy of passive treatment technologies and recommended design procedures that are still in use. In 1994, Bob left the Bureau of Mines and formed Hedin Environmental, a small consulting firm specializing in mine water remediation through passive treatment. Over the last 28 years, Hedin Environmental has designed 80 installed passive treatment systems.



**CREW**

Center for Restoration of  
Ecosystems and Watersheds  
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GALLOGLY COLLEGE OF ENGINEERING  
SCHOOL OF CIVIL ENGINEERING  
AND ENVIRONMENTAL SCIENCE  
The UNIVERSITY of OKLAHOMA

For more information or accommodations, please contact Dayton M'Kenzie Dorman (dayton.m.dorman-1@ou.edu)