

Some thoughts about the November 19 High Flow Experimental Release
Jack Schmidt
November 18, 2012

Today's event is another milestone along the path of enlightened management of the Colorado River. Much of that path has been forged by the Bureau of Reclamation and the U.S. Geological Survey. The people of these agencies explored these magnificent canyons, measured the river's flow, developed ways to measure the river's enormous sediment load, and identified sites where the river's water and energy resources could be harnessed. Today, the scientists and engineers of the USGS and Reclamation work together to identify ways to responsibly utilize the critically important water of the Colorado River system, produce electricity in a responsible way, and also repair those aspects of the natural river environment that were damaged during decades when river ecosystems were not valued as they are today.

But one cannot just want to rehabilitate a river ecosystem while responsibly managing water and energy resources. One must know how to do this. And knowing how to fix a river that is as carefully managed as the Colorado River is managed has required the very best of American river science – led to a large degree by the engineers and scientists of the Bureau of Reclamation and the Geological Survey.

Today's experimental release of water through the turbines and river outlet tubes of Glen Canyon Dam creates a small flood whose goal is to create a disturbance to the physical and ecological environment downstream. In the aftermath of the devastation of Hurricane Sandy, it seems counterintuitive to think that a flood of any kind would be of benefit. But that is precisely what scientists 20 years ago recognized and what engineers have worked so hard to create today.

Realizing that small floods are the key to restoring the modern Colorado River in a way that preserves and protects the values of Glen Canyon National Recreation Area and Grand Canyon National Park was the fundamental intellectual breakthrough of the initial era of comprehensive scientific research here in the 1980s. Scientists of that era recognized that to maintain the valued ecosystem, it was necessary to reestablish the natural processes of the natural river. The very best of the nation's scientists who reviewed this work – scientists of the National Research Council – reaffirmed the need to introduce disturbance into this unique river ecosystem.

The challenge has been to do so in a responsible and efficient way that does not jeopardize water resource management and power production. Thus, the idea of small, controlled floods was introduced by scientists of the Geological Survey and their academic collaborators in the early 1990s. Soon, the idea took hold amongst the scientists and managers of sister agencies as well as advocates of the river ecosystem. This is the background that led to Secretary Babbitt's decision to implement a controlled flood in spring 1996.

But implementing this large release of water from the dam also provided scientists and engineers the opportunity to make critical measurements that necessitated substantial refinement of how these small, controlled floods should be designed. Implementation of a formal program to incorporate these large releases of water has necessitated many scientific breakthroughs about how to measure and analyze sediment transport, report accurate data in short time periods, efficiently make river measurements in a remote environment, and to understand how to link our understanding of the physical world of the river with the world of the fishes and plants that depend on the ebb and flow of the river.

And of course, the Colorado River is also the world's most political river, governed by international treaties, interstate compacts and agreements, laws, and administrative agreements. Thus, scientists and engineers have had to learn to apply their ever-improving understanding of the river within a context of political agreements negotiated as much as a century ago. Thus, today's event also occurs because the river basin's stakeholders have been willing to trust each other, take some large political risks, and to work effectively with scientists and engineers.

Today, we celebrate a new age in Colorado River management, where we have applied the insights of river scientists and engineers within a modern water management policy framework. We have developed a protocol in which we can incorporate these types of small controlled floods at those times when these dam releases will do the most good for the environment. We have developed a decision structure so that we can make decisions relatively quickly and effectively. And we are willing to accept that American river science, which is certainly among the best that there is in the world, still stumbles onto new insights that will inevitably force refinement of the political agreements we celebrate today. Thus, today's dam release is a High Flow Experiment, from which we are committed to learning as much as we can as we continually seek to manage the Colorado River in a more responsible way.