American Water Resources Association
2009 SUMMER SPECIALTY CONFERENCE
Adaptive Management of Water Resources II
June 29 – July 1, 2009
Snowbird, UT

Wednesday, July 1
8:30 AM – 10:00 AM
SESSION 30: Adaptive Management in a Changing Climate

1. Is Adaptive Management Applicable to Global Climate Change? - Indur Goklany, Office of Policy Analysis, U.S. Dept. of the Interior, Washington, DC

Adaptive management has surfaced as a potentially viable approach to dealing with climate change at the local scale in light of the uncertainties associated with climate change, its impacts, the consequences of management actions at that scale, and the value of obtaining additional information on these aspects (DOI Task Force on Climate Change 2008). This paper will briefly explore the extent to which the principles underlying adaptive management apply at the global scale, whether such a management regime can be employed at that scale, and associated pros and cons. Reference: DOI Task Force on Climate Change. 2008. An Analysis of Climate Change Impacts and Options Relevant to the Department of the Interior's Managed Lands and Water. Report of the Subcommittee on Land and Water. Available at http://www.usgs.gov/global_change/docs/land_water_management.pdf.

2. Water Resources Planning and Permitting in a Changing Climate - Erik Heinen, AECOM, Belmont, NH (co-authors: Mark Gerath, Don Galya, Blaine Dwyer)

There is substantial evidence that climate is changing. Many of the projected impacts associated with climate change are related to changes in precipitation, runoff, water quality, and associated changes in biological communities. The availability and quality of water already present significant challenges for the industries and communities in many areas. These challenges are expected to increase with climate change. Current projections indicate that water availability is likely to decrease in many areas. Extreme events such as flooding and drought are likely to increase in frequency and intensity. Water quality is also likely to change due to increased temperature, higher pollutant loads, reduced assimilative capacity, and changes in water chemistry. Potential biological changes include expanding ranges of invasive species and increased numbers of threatened and endangered species. These changes will create challenges for industry directly (e.g. by reducing water supplies and changing water quality) and indirectly as regulatory agencies to respond to these changes in ways that will likely make permitting more difficult in many cases. For example, there are likely to be additional challenges associated with water and natural resource permitting associated with these changes. For example, NPDES permitting of discharges is likely to be more challenging in many cases. This difficulty will be related to decreased baseflow, increasing numbers of impaired water bodies, decreasing assimilative capacity, increase concerns related threatened and endangered species, and other factors. As a result, the use of regulatory provisions that consider site-specific factors and increase permit flexibility will be increasingly important for permittees. In addition, ensuring that permits contain appropriate upset and bypass conditions will become increasingly important as permit conditions become more stringent and the potential for climate variability to cause upset conditions increases. Planning for these risks has the potential to reduce there impact. We will examine approaches to identifying potential impacts of climate change on hydrology using the Colorado River as a case study, discuss other impacts on water quality, biology, and associated impacts on the policy and permitting. In addition, we will discuss potential adaptation strategies for industries.

3. Integrating Policy and Science to Adapt to a Changing Climate – Gerald Sehlke, Idaho National Laboratory, Idaho Falls, ID

It is now generally accepted by the scientific community that we are experiencing climate change. It is also generally accepted that even if we were willing and able to drastically reduce our greenhouse gas emissions we will still experience climate change impacts due to our historical releases. The

Administration, Congress, states and many organizations are presently gearing new funding and programs to begin addressing those anticipated impacts. Many agencies, organizations and individuals have recently started planning processes and initiating research to address these issues. However, there is a large amount of scientific uncertainty associated with our current climate projections. And, there is a large amount of policy uncertainty how to coordinate our efforts, prioritize the limited available funding for future research. Rather than initiating a plethora of independent planning and research efforts, each addressing important but narrowly focused issues, it may be better to stop, take a deep breath, scope out the situation. We should evaluation the universe of potential impacts, determine the sphere of potential issues, and then establish a rational regional-basis, based on the greatest policy and scientific needs. We should then decide how we can establish rational, systematic, inter-agency/ inter-organizational collaborative teams to address the highest priority issues within the various basins or regions. This presentation will explore some of the major policy and scientific needs and issues, based on current climate impact projections, and it will offer up some suggestions relative to developing rational, systematic climate change adaptation programs using the Columbia River Basin as a case study.