Rio Grande-Río Bravo Workshop Summary – 28 September 2014

On September 10-11, 2014, 25 scientists and natural resource managers met at the offices of the International Boundary and Water Commission (IBWC), in El Paso, Texas, to use strategic scenario planning techniques to gain insights into environmental and natural resources planning under conditions of high uncertainty. Participants included climatologists, meteorologists, geologists, hydrologists, ecologists, biologists, and environmental economists, representing a range of U.S. and Mexican federal agencies, state agencies, universities, and non-governmental organizations. The workshop was organized by members of the National Oceanic and Atmospheric Administration (NOAA)-funded Climate Assessment for the Southwest (CLIMAS), the Department of the Interior's Desert Landscape Conservation Cooperative (Desert LCC), Big Bend National Park, NOAA's Southern Region, and the World Wildlife Fund, in conjunction with the North American Climate Services Partnership. The key outcomes of the workshop included: increased capacity in the Rio Grande-Río Bravo bi-national region for using scenario planning to address uncertainty in future climatic conditions; a set of preliminary climate change scenarios for the region, including plausible scenarios of future environmental and social impacts; and enthusiasm for continued and more detailed and deliberate bi-national discussions of these issues.

During the course of the two days, participants were briefed on the climate, hydrology, and ecology of the region, with a special focus on the Big Bend reach of the river, including the Rio Grande Wild and Scenic River and the Monumento Natural Río Bravo del Norte en Mexico. Dr. Holly Hartmann (Holly C. Hartmann Consulting) introduced workshop participants to strategic scenario planning techniques used by industry, the military, and some federal agencies (e.g., National Park Service), and facilitated most of the scenario planning exercises. Hartmann emphasized that the techniques were aimed at addressing factors typically outside the control of resource managers, such as climate or economic fluctuations, as well as helping managers to confront situations of high uncertainty, while generating insights from outside-of-the-box thinking.

NOAA scientists from the National Climatic Data Center, NOAA's Southern Region office, and the El Paso Weather Forecast Office, worked with regional and state climatologists and others to assess plausible future conditions associated with highly uncertain climate factors, such as summer precipitation amounts and the dates of North American Monsoon (NAM) onset. Texas State Climatologist, John Nielsen-Gammon, noted that the region receives the vast majority of its annual precipitation during the summer season, regional precipitation variability is exceptionally high, and that aside from temperature-related soil moisture decreases, there is very high uncertainty associated with climate model projections of future precipitation. During a wide-ranging discussion of projections of future climate, and topics of high potential impact and high uncertainty, climatologists, hydrologists, and meteorologists developed plausible climate scenarios. Among the factors considered by the group were eastward and westward shifts in the center of action of the NAM in the border region, the timing, intensity, and amount of summer precipitation, the severity and extent of regional drought, and the impact that these factors might have on river hydrology, especially sediment flow balances.

Participants developed four preliminary scenarios, which focused on: uncertainties in the amount and timing of future precipitation; the degree to which future cooperation between stakeholders amplifies or moderates future environmental challenges; and the degree to which implementation

of management actions is based on correct scientific understanding of future environmental changes. Discussions about these scenarios demonstrated the need for continued collaborative initiatives to increase preparedness and coordination for future changes, as well as opportunities for collaboration to achieve positive outcomes in the face of a range of potential future climate conditions—from sustained drought, to increased flash flood episodes.

The participants were addressed by IBWC Commissioner Edward Drusina, who lauded the bi-national workshop, noted key issues related to water resource reliability in the bi-national region, and exhorted participants to convey their knowledge to society. Commissioner Drusina emphasized the need order to build the capacity for the region to respond in a timely and informed manner, to the challenges of drought and sometimes extreme regional climate variations.

The workshop organizers are considering potential next steps, including (a) bringing the scenario planning methods to a broader stakeholder group interested in the region, and (b) continuing the scenario planning process, by exploring existing and alternative scenarios in greater depth and developing a portfolio of potential adaptation actions and strategies. These next steps will probably engage additional participants, through workshops in Mexico and the U.S. In addition, the Desert LCC is considering how to apply the climate scenario methodology presented at this workshop to landscape conservation planning and design.