

**Notes from Upper Rio Grande Basin Water Operations Review ID NEPA
Team Meeting; May 11, 2000, 1:00 PM; Corps of Engineers, Albuquerque
District Conference Room**

In attendance:

Neal Ackerly, Dos Rios Consultants	Ron Kneebone, Corps
Scott Bulgrin, Pueblo of Sandia	Dick Kreiner, Corps
William DeRagon, Corps	Julie Maitland, NMDA
Ellen Dietrich, SAIC	Art Martinez, BIA-AAO
Darrell Eidson, Corps	Tracy Matthews, NMISC
Richard Fike, Corps	Cynthia Piirto, Corps
Chris Gorbach, Bureau of Reclamation	Gary Rutherford, Corps
Lloyd Gronning, Parsons Engineering Science	Steve Silcox, USFWS
Bill Hays, NMGF	Doug Strech, MRGCD
Walter Hines, CH ₂ M Hill	Leann Towne, Bureau of Reclamation
Conrad Keyes, Jr., EWRI of ASCE	Rae Van Hoven, NMSHTD

- ❖ Chris Gorbach opened the meeting with a discussion of the displays to be prepared by the technical teams for the public scoping meetings, and some conversation about the meeting format and technical team participation.
 - Tracy Matthews showed the group a sample of the display board that she created for the Aquatic Systems Technical Team. The board was 36” by 48”, smaller than first planned, so there was some discussion on the size of the display and the type of board preferred by the teams.
 - The group would like to use larger boards, with the same layout—a central map with information on the resource and specific locations placed around the outside edges of the map.
 - Additional information can be included on handouts about the resource. Not all information should be included on the display.
 - It was recommended that someone find out what **types of folding, freestanding display boards are available** from office supply stores. **Tracy will check** into these.
 - **Displays must be completed within a month so they can be discussed at the next ID NEPA Team meeting on June 8.**
 - Scoping meeting preparation and format
 - Technical teams were asked to complete summary paragraphs on their resources that will be included in a general handout.



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 - **Each technical team should be working on a longer (1-2 page) handout that explains the conditions, indicators, and issues related to their resource.**
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 - The Management Team plans to publish the list of public meeting locations and dates by June 1. A tentative schedule was distributed by Leann Towne, who will **e-mail the final dates to the technical team leaders when it is ready.**
 - A question was asked about how comments from the public will be recorded. Chris responded that comment cards will be available that can be completed and left at the meeting or mailed in later. This is the best way for individual comments to be captured. Flip charts will be located at each technical team station so comments can be recorded by the technical team members as they are discussing the resources with members of the public. The flip charts will inform others of what was discussed and enable team members to record important comments that they hear at the meeting.
 - Will all scoping meetings be held in the evening? Yes, but additional ones can be added if necessary.
- Chris Gorbach will be addressing the Middle Rio Grande Pueblos Water Coalition about the Upper Rio Grande Basin Water Operations Review on June 2.
- ❖ Neal Ackerly, archaeologist, presented a longer term perspective on Rio Grande flows than can be addressed using only stream gage data. He has correlated tree ring data and historic records to develop a different perspective than that used by hydrologists.
 - To avoid being limited to the length of the stream gage record, Neal identified tree ring data as proxy indicators in the region.
 - There are 90 tree ring stations in New Mexico, mostly in the northern part.
 - Twenty-five of these stations from the Fort Wingate area contain long term data that fit with the historic gage data from San Marcial.
 - Neal plotted the tree ring widths against the actual discharge data. The correlation is not great but provides a starting point for analysis. The correlation would be improved if data from more tree ring stations were available.
 - He generated a time series of discharges for the gage period (back to 1880) using gage data. He used tree ring data to generate 494 years of reconstructed discharges, calibrated by historical references written by the Spaniards and other local people.
 - All of the major low flow points correlate with the historic record. For example, in 1680, one factor cited for the Pueblo Revolt is severe drought; in 1751, the historical record documents the Rio Grande drying up; in 1851, John Bartlett, who was conducting a survey of the US-Mexico boundary, notes that the Rio Grande stayed dry from Santa Fe to El Paso for an extended period.
 - The low points in the hydrograph generated from tree ring data shows much lower low flows than any since 1880.
 - There is a correlation between flows aggregated by decade and the standard deviation.
 - Neal concluded from this quick analysis that the period represented by gage data does not provide a true picture of Rio Grande flows because the last 120 years have been too wet. He went on to state that he believes the data show that there is a higher probability

- of lower flows and a lower probability of higher flows than the gage data leads hydrologists to project.
- Neal was asked whether he could see any correlation to the thirty-year cycles of El Niño that have been recently identified by NASA. He responded that those cycles are macro-regional, and while they might be worth exploring, he did not know how they relate to regional data.
 - For analysis of impacts in the EIS, Neal pointed out that it is important to realize that the fluctuations of the natural environment are not necessarily captured in the short period of the gage data. Technical team members need to think in broader terms and plan for water operations during more extreme conditions than the wet and dry years documented since 1880.
 - The drought of the 1950s is currently used as a reference dry period, but the drought of the 1890s would be better to use, or a combination of the two. To plan for water operations, it is important to know how low the flow can get.
 - **Using gage data exclusively will cause the high and low flows to be underestimated.**
 - Neal was asked if he had calculated the average annual estimated flow over the total 494 years. The average annual flow in the Rio Grande for this period is between 840,000 and 850,000 acre-feet per year. The average annual flow from the gage data (120 year period) is between 950,000 and 960,000 acre-feet per year.
 - It was recommended that Neal might get better correlation with tree ring data if he used the Embudo or Otowi gages. Neal responded that this could be done but would require rescreening of the tree ring data.
- ❖ Chris Gorbach briefly discussed the purpose and history of the Low Flow Conveyance Channel (LFCC). He distributed handouts summarizing its history and purpose.
- The LFCC is a constructed channel from the San Acacia diversion to Elephant Butte Reservoir that was built in the 1950s to increase water delivery to Elephant Butte by reducing water lost to evaporation and seepage.
 - It was originally constructed after flood damage to the channel in the middle valley during the 1940s.
 - The lower 15 miles are now obliterated by the Elephant Butte pool.
 - It is the main source of water for the wetlands above Elephant Butte.
 - Floods were followed by a drier period from the mid-1940s to the late 1970s that resulted in New Mexico falling behind in its Compact deliveries.
 - In the early 1950s, approximately 15% of the total middle valley Rio Grande flow was used for irrigation and the river was comprised of segments of water separated by dry reaches.
 - High water in the LFCC caused the deposition of sediment in the LFCC, resulting in the suspension of diversions in 1985.
 - The Bureau of Reclamation has the responsibility of maintaining the Rio Grande channel from Velarde to below Elephant Butte, which includes the LFCC.

- The future operation of the LFCC will be considered in the Water Operations Review. Alternatives and issues to be considered include the following.
 - The maximum amount and number of diversions allowed that still meet ESA requirements.
 - Identification of conditions that help determine whether to divert water.
 - The effect of sedimentation on channel maintenance.
 - Water conveyance to Elephant Butte to meet Compact requirements.
 - Endangered species issues.
 - Drainage and water supply considerations.
- There is a proposal to realign the LFCC and the river below Black Mesa (San Marcial), to alleviate sediment and channel capacity concerns.
- A question was asked on whether the LFCC can show a water savings (reduction in water loss) at any discharge. Chris responded that, yes, water savings can be demonstrated, but it is most effective in low flows. However, when this occurs, there is no flow in the river. During the 1960s, the LFCC carried approximately 80% of the river flow.

❖ Update from the GIS Technical Team

- The GIS Technical Team has developed a slide presentation to assist technical teams in understanding how to use GIS, data acquisition, and developing their study plans.
- Ellen Dietrich and Tracy Matthews have presented the slide show to the Aquatic Systems and Geomorphology Technical Teams to date. Discussion stimulated by the presentations assisted the teams in thinking about the scoping meeting displays, data needs, data acquisition, and analysis.
- Ellen stressed the importance of keeping track of the basic information on any GIS coverages obtained by the technical teams, such as the date of data collection and creation of the coverage, method of collection, projection, scale, resolution, and intended use. **She will soon distribute a file to each technical team leader with the headings indicating the information that should be collected about any GIS data acquired for the Review.**
- This information will be added to the project GIS database. It will be important to keep track of the original sources of data, in addition to the changes made to the data for the project.
- Clay Mathers will be developing an index map of the GIS coverages available to the technical teams. He is hoping to make this accessible through the project web site.
- To schedule presentations for the other technical teams, contact Ellen at 842-7845 or via e-mail at ellen.dietrich@saic.com.



- ❖ **The next meeting of the ID NEPA Team will be held on Thursday, June 8 at 1:00 p.m. at the Bureau of Reclamation Rio Grande conference room on the 13th floor of 505 Marquette (Compass Bank building).**