San Acacia Reach Workgroup

Presentation of Final Products to the Executive Committee of the Middle Rio Grande Endangered Species Collaborative Program

January, 2013
San Acacia to Elephant Butte Narrows – 70 miles of River; 55 miles of LFCC
Through public outreach and discussion, the SAR Workgroup identified topics that we would examine further to:

- Determine opportunities to address multiple stakeholder’s interest through further evaluation and action
- And find if they are issues the MRGESCP should address to some degree.
- Topics included in the following white papers are:
  - Floodplain Land Use,
  - River Erosion and Sedimentation,
  - Low Flow Conveyance Channel Options,
  - Water Rights and Adjudication, and
  - Agricultural Sustainability.
General Recommendations

• Convene a diverse group of stakeholders, present workgroup papers and discuss San Acacia Reach Plan development.

• Develop small working groups, as needed, with specific tasks to evaluate and prioritize recommendations from the papers to move towards long term solutions that address MRGESCP action plan goals.

• Evaluate recommendations with respect to water and land management policies and laws affecting the San Acacia Reach, and science and priority research needs to inform plan formation and plan action elements.

• Identify alternatives and develop a course of action for agencies’, MRGESCP, and other stakeholders’ consideration.

• Present draft plan in a follow-up workshop for stakeholders.
Background:

- Levee on the west side only through SAR
- Floodplain is unprotected from development through county ordinances
- Landownership is diverse; majority is private
- High flows provide important habitat benefits
- “Floodway” delivers water to downstream users
Floodplain Land Use

Issues:

• Endangered Species Habitat
  ▪ Future obstructions & the need to protect structures could limit water management that benefits endangered species;
  ▪ Rio Grande silvery minnows could be stranded due to obstructions.

• Liability
  ▪ Potential liability to landowners & local & federal agencies if flooding endangers the public or damages property;
  ▪ Possible changes in flow paths of the river due to obstructions which could impact the levee;
  ▪ Construction of structures in the floodplain can increase fire danger at the wildland-urban interface.
Additional Issues:

- **Ecosystem Processes**
  - High flows help to scour vegetation on river bars and keep the channel open to pass floods and move sediment;
  - Riparian wildlife habitat could be disturbed and/or fragmented by floodplain development.

- **Water Management**
  - There could be increased water loss due to ponding at obstructions;
  - If development in the floodplain further reduces channel capacity, water delivery to Elephant Butte Reservoir to meet Rio Grande Compact obligations would be impacted.
Current Status/Efforts Underway:

• Grassroots efforts to protect and enhance floodplain
  ▪ Rio Grande Agricultural Land Trust
  ▪ Save Our Bosque Task Force
  ▪ Natural Resources Conservation Service
  ▪ Others

• Agency efforts
  ▪ COE San Acacia to Bosque del Apache Levee
  ▪ BOR River Maintenance Program

Looking north from Escondida at active floodplain
Recommendations:

• Complete scope of work to evaluate potential risks from future development
• Engage local community
• Develop a comprehensive program to provide incentives for protection and enhancement on private lands; encourage conservation easements
• Encourage county permitting and review processes that address floodplain land use
Introduction:

- Effective Sediment Management is a key component for the reach’s geomorphic and ecologic function.

- Reach has both degrading and aggrading sub-reaches causing challenges to safe flood risk management, water delivery, and the creation and sustainability of quality endangered species habitat.

- Channel is constantly changing as the river seeks to balance the movement of sediment (sediment supply) with the power available from the flow of water (sediment transport capacity).

- Imbalance between transport capacity and supply is a key cause of channel and floodplain adjustment in reach.

**River Erosion and Sedimentation**
Background:

- The river is narrowing in the reach.
- This narrowing coupled with vegetation encroachment increases the channel’s boundary roughness & the amount of sediment deposition.
- This depositional process is strongly evident in the perched channel reach between San Antonio & San Marcial.
- With recent drought & resulting base level lowering at Reservoir pool (125 feet), the river bed has lowered ~4 ft. at the San Marcial railroad bridge.
Primary Issues:

- Effective water and sediment delivery and improved sediment management.
- Protection of riverside facilities from flooding damage or erosion damage.
- Channel process dynamics including sediment erosion and deposition are critical fluvial processes to the regeneration and development of new endangered species habitat.
  - Incision is progressing below San Acacia diversion downstream, where there is excess transport capacity and in San Marcial area, where slope adjustment is occurring in response to the lowered reservoir pool.
  - Deposition in the Refuge subreach and delta of Elephant Butte Reservoir where there is limited transport capacity due to slope and width changes.

River Erosion and Sedimentation
Recommendations:

• Monitor & collect data on sediment transport loads into & through the reach;

• Analyze and model river sediment transport behavior for current trends & future management scenarios in the reach. Consider endangered species habitat quality & sustainability, effective water delivery, & flood risk management;

• Develop options for better sediment management in the river & floodplain, apply text practices, & report results;

• Provide decision makers with comprehensive analysis & alternatives to consider for effective sediment management.
Background

• The Low Flow Conveyance Channel (LFCC) was constructed in the 1950s to deliver river flows efficiently from San Acacia Diversion Dam to Elephant Butte Reservoir; it extends about 60 miles.
• A spoil levee was established immediately to the east of the LFCC using material dredged during its construction.
• It was operated as a surface water delivery channel for approximately 30 years until Elephant Butte Reservoir filled and flooded the LFCC outfall (1984); it has operated as a passive drain since that time.
• The LFCC delivers surface water & captures shallow groundwater.
• There is a new outfall at the upstream end of the Silver Canyon (~River Mile 55).

Low Flow Conveyance Channel
Current Status/Efforts Underway:

- MRGCD can divert water from 3 LFCC locations.
- Bosque del Apache NWR has the capacity to divert water from 2 LFCC locations.
- The LFCC currently supports flycatcher habitat at the historic Reservoir delta area (River Mile 60 downstream to narrows).
- LFCC serves as 1 of 2 primary sources of water delivered to Elephant Butte Reservoir, the river being the other primary source.
- The COE is beginning construction of a levee project to protect, among other area assets, the LFCC.
- The Bureau of Reclamation/MRGESCP, currently pumps water from the LFCC to the river drying periods (3 to 4 locations).
Issues:

- The LFCC & area levee constrict the active floodplain to the eastern side of the valley;
- A sediment imbalance through the reach affects water volume in the river & LFCC;
- The LFCC is an important water delivery source for water users in the San Acacia Reach, including the MRGCD & the Bosque del Apache NWR (supplying summer & the only winter water delivery source to the refuge);
- The LFCC serves as area drain for shallow groundwater, but as such, & in certain sections, impacts the ability to keep low flows in river channel as aquatic habitat for the minnow and has been shown to impact groundwater availability to riparian vegetation;
- Options for alignment, construction design, & management of LFCC have not been updated and evaluated.
Recommendations:

• Collect/compile currently available information on the LFCC, river, water delivery, ecosystem function & valley drainage;
• Identify priority data gaps & seek to fill them;
• Evaluate current LFCC benefits & impacts on:
  • Water delivery to agriculture
  • Water delivery to downstream water users
  • River flows
  • Endangered species
  • Ecosystem function
  • Valley drainage

Low Flow Conveyance Channel
Additional recommendations:

• Evaluate potential future scenarios of water delivery & infrastructure through the San Acacia Reach including the river, LFCC, & MRGCD & Bosque del Apache NWR delivery patterns & works.

• Consider:
  ▪ Alignment, configuration, & management of LFCC to address, to the greatest degree possible, benefits to all stakeholders.
  ▪ Future scenarios for their effects on endangered species, habitat quality, & water delivery (including efficiency, supply & demand), & sediment/water dynamics.

Low Flow Conveyance Channel
Background

- New Mexico’s 1907 Water Code uses the principles of public ownership of water, and the doctrines of prior appropriation and beneficial use to administer water rights.
- The public owns the waters of the state, but individuals have the right to use water based on the timing of when the water was first put to beneficial use and the amount of water put to use and consumed.
- Water rights can be sold with the land on which the water has been historically used, or, the consumptive use portion of the right can be severed from the property and sold separately.
- Adjudication is a lawsuit that determines all claims to the use of water in a stream system.
- Adjudication would result in the quantification and assignment of relative priorities of all water rights for both surface water and groundwater in the Middle Rio Grande basin.
- The Middle Rio Grande has not been adjudicated.
Issues:

- Agricultural water rights are being transferred out of the San Acacia reach.
- Loss of water rights could have negative impacts on endangered species.
- Loss of water rights could have negative impacts on local farming economy.
- Loss of water rights could have negative impacts on agricultural landscape and culture.
- Basin is over-allocated and adjudication is needed.

Water Rights and Adjudication
Current Status/Efforts Underway:

- OSE transfer process with public notice
- Conservation easements – Rio Grande Agricultural Land Trust & NRCS
- Active Water Resources Management
- Strategic Water Reserve
Recommendations:

- Assess the volume of water rights transferred out of San Acacia Division;
- Assess the effect of those transfers at San Acacia Diversion dam in terms of water supply to users and water available to river;
- Assess MRGCD potential delivery changes;
- Assess the Strategic Water Reserve implementation strategies and develop steps to follow through on strategies.
Background

• Agriculture in the Middle Rio Grande Valley affects both the time and spatial distribution of water.
• Storage of and delivery of water have attenuated the historic peak flows in Spring but have also increased the average summer and low flows.
• Since 2003, 80% of the approximately 100,000 acre feet of water that enters the Middle Rio Grande Conservancy District (MRGCD) Socorro Division originates from Belen Division canals.
• On average about 40% of this water is consumed by the 13,500 acres of irrigated land cultivated by Socorro Division farmers.
• Water remaining at the south end of the MRGCD passes on to the Bosque del Apache National Wildlife Refuge.
Issues:

- Development of farmland and selling water rights outside the San Acacia reach may decrease delivery of water to this reach.
- A perception that high salinity levels in irrigation water are negatively affecting crop outputs.
- Forbearance strategies were suggested for further study but have serious practical and legal impediments.
- The availability of sufficient water for farmers throughout the growing season.
- Growing crops with the highest market return to make agriculture more sustainable and resilient.
Stakeholders of Interest:
• Farmers/Producers and Ranchers
• Consumers
• Developers
• Public and private organizations that support agriculture and land conservation
• Land and water management agencies

Current Status/Efforts Underway:
• Levee reconstruction
• Farmland water delivery improvements on private lands throughout the reach
• Conservation easements to keep agricultural lands from development
• Active farmers market in Socorro and assessment of the local food system

Agricultural Sustainability
Recommendations:

• Analyze scenarios of water rights transfers that might change the delivery requirements to the Socorro Division of the MRGCD & what it would mean to water users within & south of the MRGCD, Endangered and sensitive species & return flows to the Rio Grande;

• Evaluate the potential supplemental use of groundwater for irrigating in very dry years;

• Continue to fund the Private Lands Biologist in Socorro to work with landowners to get assistance with implementation of & payments for wildlife habitat projects.

Agricultural Sustainability
Additional Recommendations:

• Further investigate the potential for surface and/or groundwater forbearance, including: legal issues; additional hydrologic studies; a cost-benefit analysis of a forbearance program & analysis of socioeconomic impacts;

• Continue water quality monitoring done by the MRGCD in the Belen & Socorro Divisions. Investigate & identify all possible causes of high water & soil salinity;

• Encourage local farmers to pursue funding & technical assistance through NRCS & other agencies to implement on-farm water efficiency measures.
Thank you.