# Executive Committee Meeting

## *March 18, 2010*

## Meeting Materials:

Meeting Agenda

Meeting Minutes

San Acacia Diversion Dam Fish Passage Facility Design, Estimating, and Construction Review [presentation]

# Middle Rio Grande Endangered Species Collaborative Program
## Executive Committee Meeting
## March 18, 2010, 9:00 am to 1:00 pm
## Bureau of Reclamation Rio Grande Conference Room
## 555 Broadway NE, Suite 100, Albuquerque, NM

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|---|---|---|---|
| | **1.** | **Introductions and Changes to the Proposed Agenda** | *(5 minutes)* |
| * | **2.** | **Approval of February 18 EC Meeting Minutes** | *(10 minutes)* |
| | **3.** | **Appropriations Request/Trip to Washington D.C.** (Estevan Lopez) | *(10 minutes)* |
| * | **4.** | **Coordination Committee Report** (Co-chairs)<br>a. Revised LTP Development<br>b. Adaptive Management update<br>c. ***Recommendations:*** Workgroup Charters, 2009 Accomplishments and 2010 Work Plans<br>d. ***Decision:*** Approve/Revise **Charters**<br>i. PHVA/Hydrology ad hoc workgroup<br>ii. San Acacia Reach (SAR) ad hoc workgroup<br>iii. Monitoring Plan Team (MPT) ad hoc workgroup<br>e. ***Information:*** **2009 Accomplishments** *(read aheads previously posted for February 18 meeting)*<br>i. PHVA/Hydrology ad hoc workgroup<br>ii. SAR ad hoc workgroup<br>iii. Species Water Management (SWM) workgroup<br>iv. Science workgroup<br>f. ***Decision:*** Approve/Revise **2010 Work Plans** *(read aheads previously posted for February 18 meeting)*<br>i. PHVA/Hydrology ad hoc workgroup<br>ii. SAR ad hoc workgroup *(Revised and reposted)*<br>iii. SWM workgroup *(Revised and reposted)*<br>iv. Science workgroup | *(20 minutes)* |
| * | **5.** | **San Acacia A&R Peer Review Process/Lessons Learned** (Lisa Croft/Yvette McKenna) | *(10 minutes)* |
| | **6.** | **Program Manager Update** (Yvette McKenna)<br>a. Workgroup updates<br>b. Collaborative Program videos | *(10 minutes)* |
| * | **7.** | **USACE Request to Offset Depletions from a Potential Overbanking Action** (William DeRagon) | *(30 minutes)* |
| | **8.** | **FWS Rio Grande Silvery Minnow Recovery Plan** (Lori Robertson)<br>**Biology Update** - Status of the Species | *(45 minutes)* |
| * | **9.** | **Fish Passage/DEC Review** (Kathy Dickinson) | *(45 minutes)* |
| | **10.** | **PVA Update** (Jim Wilber) | *(15 minutes)* |

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| **11. BA/BO ESA Consultation Update** | *(10 minutes)* |
| **12. PHVA/Hydrology Update** (Leann Towne) | *(20 minutes)* |
| **13. Public Comment** | *(10 minutes)* |
| **14. Next Meeting: April 15, 2010** | |

***** ***Denotes read ahead material provided for this item***

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# Middle Rio Grande Endangered Species Collaborative Program
# Executive Committee Meeting
# March 18, 2010 9:00 am to 1:15 pm
# Bureau of Reclamation Rio Grande Conference Room
# 555 Broadway NE, Suite 100, Albuquerque, NM

## Decisions

The February 18th, 2010 EC meeting minutes were approved with 2 suggested amendments: (1) corrections to the spelling of Stacey Kopitsch's name and (2) correcting "Section 10" to "Section 7" on Pg. 3 3rd bullet.

With quorum present and no objections, the EC approved the PHVA/Hydrology, San Acacia Reach, and Monitoring Plan Team ad hoc work group charters.

With quorum present and no objections, the EC approved the PHVA/Hydrology ad hoc, San Acacia Reach ad hoc, Science, and Species Water Management work group 2010 work plans.

With quorum present, the EC expressed support for the proposed 2010 Cochiti Deviation for overbanking flows project conceptually, but decided the Program will not pay for the depletions costs (recognizing the water is considered supplemental and under current legislation is obligated to the federal agencies). The federal agencies and others as appropriate were requested to discuss how this project could be funded from other sources.

## Actions

Yvette McKenna will send a reminder email to the CC regarding the March 24th comment deadline for the adaptive management scope of work.

Lisa Croft will work with the Coordination Committee (CC) to create a 15 minute presentation on "Adaptive Management 101" to begin facilitating common understanding of adaptive management for the next EC meeting.

The Corps will meet with MRGCD to discuss possible mitigations and impact issues resulting from the proposed 2010 Cochiti Deviation for overbanking flows.

Reclamation, the Corps, and ISC will meet as requested to discuss how the depletions costs from the proposed 2010 Cochiti Deviation for overbanking flows could be funded.

Lori Robertson will check Big Bend egg monitoring and population monitoring schedules with Jason Remshardt and report back to Program.

Lori Robertson will investigate recovery team involvement in the development of revised recovery criteria, and report back with the names of individuals.

## Future Agenda Items

Discuss methods to address the unintended consequences of compounding impacts from different projects and how project impacts can interact or are interrelated. Part of the discussion will be to eventually determine what type of work product is expected and what kind of information is desired for considering in the development of future project descriptions/contracts.

Adaptive Management update/presentation for April 15th.

**Next EC Meeting April 15th, 2010 from 9:00am to 1:00pm at Reclamation**

## Meeting Summary

- Estevan Lopez called the meeting to order and asked whether a quorum was present. A quorum was confirmed and introductions were made around the table.
- The agenda was approved with a clarification change to Item #7 – the USACE Request to Offset Depletions from a Potential Overbanking Situation is a *funding* request.
- The February 18th, 2010 EC meeting minutes were approved with 2 suggested amendments: (1) corrections to the spelling of Stacey Kopitsch's name and (2) correcting "Section 10" to "Section 7" on pg. 3, 3rd bullet.
- It was announced that the Program Manager (PM) position has been advertised. There are 2 position announcements: 1 for current federal employees (please apply for the announcement with an "M") and 1 for non-government employees (please apply for the position announcement with a "D"). It was also announced that the new FWS 10J biologist position has been filled. Mr. Mark Brennan will begin work on April 12th and will be working on reintroductions funded through the Program, assessing how existing 10J populations are doing, working on safe harbors, and identifying possible 10J locations. Kathy Dickinson is taking a lateral position within Reclamation. She has been involved in the Program for over 6 years and will be greatly missed!
- At the suggestion of Dave Sabo and concurrence of congressional staff, non-federal partners are arranging a trip to Washington, D.C. for March 22nd through 24th, 2010. Coordinators have been successful in setting up meetings with all of the delegation or their staff. Unfortunately, not many people are able to attend: Estevan Lopez, Rolf Schmidt-Petersen, Janet Jarratt, and Subhas Shaw will be going. John Stomp will already be in Washington D.C.. There is still a possibility that some tribal representation will be able to attend, but confirmation is pending tribal approval. The non-federal partners are meeting independently after this meeting to discuss a letter of support.
- In the CC report, it was shared that the main focus has been on the revision of the Long-Term Plan (LTP) development, particularly Table 7.0 (future list of activities). The work groups were asked to prioritize the identified future activities based on near-term requirements versus longer-term projects. The CC agreed that a Priority Ranking 1 would be projects to be completed in FY11, FY12, and FY13; a Priority 2 is for targeted project completion in FY14, FY15, and FY16; and a Priority 3 is for longer-term projects from FY17 to FY20 and beyond. Once prioritized, the work groups have been tasked with developing the activity summaries which is expected to take at least 1 month.
    - It was shared that the CC discussions on the adaptive management plan and the scope of work are on-going. However, it was strongly cautioned that from a funding and schedule stand point, the adaptive management scope of work must be advertised as soon as possible. The EC has already approved the funds.
- With quorum present and no objections, the EC approved the PHVA/Hydrology, San Acacia Reach, and Monitoring Plan Team ad hoc work group charters with no changes.
- With quorum present and no objections, the EC approved the PHVA/Hydrology ad hoc, San Acacia Reach ad hoc, Science, and Species Water Management work group 2010 work plans with no changes.
- The executives discussed the San Acacia (SA) Analysis and Recommendations (A&R) contracted peer review that was presented on February 24th. This peer review was

conducted to test the process. It is recommended the Program continue to use peer review to ensure scientific defensibility of the products being funded. In the future, the peer review will be conducted on draft reports or documents in order to get valid input from objective, unbiased, "outside" participation while still in the draft stages to allow contractors to address comments before finalization.

- Concern was raised regarding the compounding impacts and unintended consequences of different projects. It was agreed that this "impact analysis" topic should be a near future agenda item for discussion.

- In the Program Update it was shared that the work groups have been working diligently to maintain the LTP schedule. At this time, the schedule is on track and it is assumed that the EC will have a draft version of the revised document by April 30th. An adaptive management plan page has been added to the Program's website under the Library to house examples of other plans. There is still confusion on how adaptive management will fit with the LTP and the Recovery Plans and the BA/BOs. It was suggested that a short adaptive management presentation be provided at the next EC meeting to facilitate a common understanding of the adaptive management concepts.

- There is an opportunity to do a Cochiti overbanking deviation this year. However, the depletions on the actual storage of 900 ac-ft to 1,200 ac-ft for this action have to be accounted for. The U.S. Army Corps of Engineers (USACE) is requesting funding to offset depletions from the proposed overbanking action for 2010. The forecast is for a peak near 5,000 cfs in Albuquerque. This action would increase that to 5,800 cfs for 5 days. A flow of 5,000 cfs translates into 7,500 ac-ft of inundation while a 5,800 cfs flow translates into an addition 2,800 ac-ft of inundation. This means nearly a 50% increase in inundation for San Acacia. This operation can be terminated at any time if the forecast shows natural flows will be higher than expected or there is a safety issue. Other benefits to this action include (1) a controlled flushing of the system for flood control capacity; (2) it has been 5 years since the last overbanking and the deviation may expire before the opportunity arises again; and (3) support of recently completed restoration projects in terms of performance monitoring.

  - Concerns were raised about water deliveries, impacts, and potential damage for Isleta and MRGCD if the flows were to be increased from 5,000 cfs to 5,800 cfs.

  - It was discussed that the additional water is actually supplemental water which is a federal cost component under current authorizing legislation. Reclamation has an agreement in place and will not provide supplemental water to offset depletions for overbanking flows. Reclamation risks spending supplemental water at the beginning of season when there may be the need to wet the river later in the year to met BO requirements. Concerns were also shared about the Program taking on federal responsibilities and setting a precedent for continued obligation. Unfortunately, there is a decision deadline and if the depletions cannot be offset by the end of March, the deviation probably won't occur.

    - One suggested solution was to have Reclamation create a new water category that would not be supplemental water but could be used for depletion offsets and would be fully federally funded. Unfortunately, this would not be available to assist this year – only for subsequent years.

  - With quorum present, the EC expressed support for the proposed 2010 Cochiti Deviation for the overbanking flows project conceptually, but decided the Program will not pay for the depletions costs (recognizing the water is considered supplemental and under current legislation is obligated to the federal agencies).

The federal agencies and others as appropriate were requested to discuss how this project could be funded from other sources.

- Lori Robertson, FWS, provided a species and recovery plan update.
    - *Flycatcher:* In 2009, there were 334 nests along the Rio Grande between Velarde and Elephant Butte with the majority (approx. 88%) of those nests located near San Marcial. Another 9 nests were observed north of Velarde. Near San Marcial, there has been an increasing trend in flycatcher nests. In 2009, there were 293 nests at this location, compared to 98 in 2003. Within the Bosque del Apache area, there have previously been few nesting birds. In 2009, there were 12 successful nests and six failed nests. The new date for proposed critical flycatcher habitat designation is July 31, 2011 with an additional year for internal determination resulting in a final ruling by July 2012.
    - *Minnow:* In 1994, when the minnow was listed, there was a catch rate of 16.2 fish/100 $m^2$. Today's catch rate is very similar. Minnow, including young of year, were present at 19 of the 20 sites sampled in October 2009.
    - *Big Bend 10J Population:* Approximately 445,000 minnow were released in December 2008 with an additional 509,000 minnow released in October 2009. Monitored occurred in May 2009 (7 adults), August 2009 (0 adults), October 2009 (0 adults) and February 2010 (84 adults). Egg monitoring and habitat assessment work are scheduled for March and April to coincide with USGS.
    - *RGSM Recovery Plan:* The recovery team was comprised of many agencies and entities with subgroups. The original recovery plan was completed in 1999 with a first draft revised plan in 2007. The recovery criteria were revised in 2009 and the final revised plan issued February 2010. The plan serves as the guiding document for the recovery process that provides the framework for restoring the minnow and minnow habitat. The plan includes an executive summary and extensive background section but the heart of the plan is the Recovery Implementation Program section with identified goals, objectives, and criteria. The estimated total cost is $168 million over a total of 30 years.
        - Concern was raised that the SWCA Coleman Report indicated that meeting Goal 1 might not be consistently possible and since it took over 10 years to get a revised plan there is additional concern that no interim process or mechanism exists for requesting revisions earlier than the 5 year re-evaluation. The recovery team developed the goals with the knowledge that they need to be achievable and FWS continues to believe that the goals are achievable. Attendees were reminded that the recovery plan is only advisory in nature and is not regulatory; it is a framework and if implemented it will lead to recovery. The Coleman report, annual research, and project results will all be considered and built on through time but this is the best knowledge at this time.
- Kathy Dickinson provided a SA diversion dam fish passage/DEC review update. Reclamation has a corporate process for providing independent oversight for major agency projects of estimated costs greater than $10 million. The review includes design, cost estimating, and construction or DEC. The additional review and oversight for these projects is to support successful project accomplishment. Current and retired senior Reclamation staff comprised the review team for the SA fish passage project. The review was not from a biological perspective but only to determine if the passage met the stated design criteria based on the swimming studies done on the minnow. The resulting report

indicated 3 essential potential show stoppers and 8 significant potential major cost impacts that needed to be addressed. Reclamation will use 2010 and 2011 to implement corrective actions in response to the DEC recommendations.

- In the hydrology update, it was shared that the forecasts are hitting right on and that usable storage is around 400,000 ac-ft. As of yesterday, we are still in Article VII restrictions. The final credit number and useable water at Elephant Butte will be determined this Friday and be retroactive to January 1st.
- In the Population Viability Analysis (PVA) update, it was shared that members are engaged and diving into the issues not just from the modeling standpoint but for future data and monitoring needs for the Program. At their last 2 day meeting, the work group discussed: (1) age and growth and how those relate to age classes, survival, fecundity, etc.; (2) following the data that is available to learn what we can from what exists and identify data gaps and needs; (3) river drying – what is known and what isn't known; (4) fish passage and connectivity between reaches. The work group reached general consensus to stay on their current model development schedule and not take any short cuts to get to a useable model in the interim. In the consultation framework, the PVA will be most useful as a comparative tool, not for the non-front loaded scenario, but in looking at future alternatives and what needs to be part of the adaptive management plan. However, the PVA models aren't going to be ready for comparative analysis for at least 6 months.
- In the BA/BO(s) consultation update, it was shared that the consultation team has been meeting regularly to proceed with the consultation process. The expectation is to submit the non-front loaded BAs by September 30th. The non-front loaded runs will hopefully allow the Service to begin initial analysis to start working on a draft BO(s). It is critical to have the LTP and adaptive management plan in place in order for the Service to have a "complete package" and issue a final BO(s).
- The Population Habitat Viability Analysis (PHVA) Hydrology ad hoc work group has completed the re-run of the pre-ESA Water Management scenario with the updated rules and policy changes – this is the key run for the BA analysis. They will be focusing on completing summary documents for general Program use including clarification, descriptions, and summarizing key steps of the process. The next run for URGWOM would be the comparative 2003 BO runs; this will be initiated by a request from the consultation team.
- There was no public comment.

**Next Meeting: April 15th 2010**

**Executive Committee (EC) Meeting Attendees**
**March 18, 2010 9:00 am to 1:15 pm**

Attendees:

| *Representative* | *Organization* | *Seat* |
|---|---|---|
| Lisa Croft | Bureau of Reclamation | Bureau of Reclamation |
| Kris Schafer | U.S. Army Corps of Engineers | U.S. Army Corps of Engineers |
| Nancy Gloman | U.S. Fish and Wildlife Service | U.S. Fish and Wildlife Service |
| Estevan Lopez | NM Interstate Stream Commission | non-Federal co-chair, NM Interstate Stream Commission |
| Bob Jenks | NM Department of Game and Fish | NMDGF |
| Rick Billings | Albuquerque Bernalillo County Water Utility Authority | ABCWUA |
| Subhas Shah | MRGCD | MRGCD |
| Ann Moore | NM Attorney General | NMAGO |
| Frank Chavez | Pueblo of Sandia | Pueblo of Sandia |
| Ann Watson | Santo Domingo Tribe | Santo Domingo Tribe |
| Janet Jarratt | Assessment Payers Association of the MRGCD | APA |
| Terina Perez | City of Albuquerque | City of Albuquerque |
| Cody Walker | Pueblo of Isleta | Pueblo of Isleta |

*Others*

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| Yvette McKenna – PM | Bureau of Reclamation |
| Kathy Dickinson | Bureau of Reclamation |
| Jim Wilber | Bureau of Reclamation |
| Mary Carlson | Bureau of Reclamation |
| Robert Hall | Department of Interior/Solicitor's Office |
| April Fitzner | U.S. Army Corps of Engineers |
| LeeAnn Summer | U.S. Army Corps of Engineers |
| Susan Bittick | U.S. Army Corps of Engineers |
| Monika Mann | U.S. Army Corps of Engineers |
| William DeRagon | U.S. Army Corps of Engineers |
| Stacey Kopitsch | U.S. Fish and Wildlife Service |
| Lori Robertson | U.S. Fish and Wildlife Service |
| Jennifer Bachus | U.S. Fish and Wildlife Service |
| Wally Murphy | U.S. Fish and Wildlife Service |
| Grace Haggerty | NM Interstate Stream Commission |
| Amy Louise | NM Interstate Stream Commission |
| Chris Shaw | NM Interstate Stream Commission |
| Julie Maas | NM Interstate Stream Commission |
| Rolf Schmidt-Petersen | NM Interstate Stream Commission |
| Joe Jojola | Bureau of Indian Affairs |
| Ann Moore | NM Attorney Generals Office |
| Brian Gleadle | NM Department of Game and Fish |

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| Brooke Wyman | MRGCD |
| Patricia Dominguez | Senator Bingaman |
| Jenae Maestas | GenQuest |
| Marta Wood | Tetra Tech |

# MEETING READ AHEADS

**Charter for PHVA/Hydrology Ad Hoc Work Group**
**of the**
**Middle Rio Grande Endangered Species Collaborative Program**

**Overview**

The Middle Rio Grande Endangered Species Act Collaborative Program (Program) By-Laws, adopted by the Executive Committee (EC) on October 2, 2006, define the Program's organizational structure and discuss the various organizational units including the EC, Coordination Committee (CC), Program Manager (PM), Program Management Team (PMT), and work groups. The EC may establish work groups and designate members of work groups on its own initiative or on the recommendation of the CC when additional assistance or expertise is needed to accomplish the goals of the Program. The PHVA/Hydrology ad hoc work group was established by the EC at the December 2007 EC meeting.

The work group will operate with specific schedules, objectives, and scopes of work necessary to obtain a new Biological Opinion for the "Bureau of Reclamation's (Bureau) Water and River Maintenance Operations, U.S. Army Corps of Engineers' (Corps) Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico." Reclamation and Corps will articulate the schedule for meeting this timeframe to the workgroup. Methods for accomplishing the established activities will be identified by the work group. The PM will assign a PMT liaison to support the work group. Reclamation and the Corps will take all necessary actions to ensure that objectives and work products are clearly identified, assigned work group tasks are completed, and schedules are met. The workgroup will provide hydrologic information needed by Reclamation and the Corps to write their Biological Assessments (BAs) for use in consultation with the Fish and Wildlife Service (FWS). Such information is necessary in order to obtain a new Biological Opinion.

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The ad hoc work group will disband when the work group objectives have been met.

**Work Group Objectives**

The purpose of the PHVA/Hydrology ad hoc work group is to articulate ideas and input into the Population Viability Assessment (PVA), and to provide hydrologic information needed by Reclamation and the Corps to write BAsfor use in consultation with the Fish and Wildlife Service. Such information is necessary in order to obtain a new Biological Opinion. Workgroup members will develop hydrologic analysis, water management scenarios, and define such for analysis in the PVA and BAs.

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**Ad Hoc Work Group Membership**

At the December 2007 EC meeting the EC established the workgroup and appointed the following members to the work group:

David Gensler (Middle Rio Grande Conservancy District)
Paul Tashjian (FWS) or alternate
April Fitzner (U.S. Army Corps of Engineers)
Rolf Schmidt-Petersen (New Mexico Interstate Stream Commission)
Rick Billings (Albuquerque Bernalillo County Water Utility Authority)
Leann Towne (Bureau of Reclamation)

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Deleted: John Stomp

Deleted: Tim Ward (University of New Mexico)

In addition to the above members the workgroup has requested participation by the Bureau of Indian Affairs. Randy Shaw has agreed to represent the BIA.

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**Work Group Leaders**

Leann Towne and April Fitzner have been selected to serve as the leaders of the ad hoc work group. At least one leader will participate in each monthly EC meeting to update the Program on work group progress.

**Work Group Meetings**

The work group will meet approximately monthly, or more often if needed, to accomplish specific tasks. The PMT will post work group meeting schedules, locations, and agendas on the Program website at least one week in advance of the meeting date. All meetings will be open to the public. The work group leaders will ensure meeting summaries are kept which accurately reflect actions of the work group. The PMT will ensure that meeting summaries are posted on the website within one week after they are final.

If a member cannot attend a meeting, the member may send a written request or statement regarding agenda items of interest.

**Work Group Responsibilities and Scope of Work**

The ad hoc work group is responsible for carrying out specific work necessary to obtain hydrologic information needed by Reclamation and the Corps to write BAs for use in consultation with the FWS. Reclamation and Corps will articulate the schedule, key milestones, and necessary information needed from the workgroup. The PMT liaison will assist the leaders to develop a work plan for submittal to, and approval by, the EC. The work plan will contain tasks, schedules, and deliverables to be completed.

**Work Plan**

During the December 2007 PHVA workshop, work groups identified water distribution scenarios that could be evaluated using the PVA. The PHVA/Hydrology work group will further define those scenarios and other water management options for use in new proposed actions in the new BAs. The ad hoc work group expects that their work will be completed by the end of March 2011. The workgroup will work with the PVA modelers to assess a suite of water management scenarios in the PVA Model. The work group will utilize the results to further refine water management options for the development of the proposed actions.

**Relationship of the Ad Hoc Work Group to Other Organizational Units of the Collaborative Program**

The EC makes Program decisions. The workgroup co-chairs will provide workgroup products to the CC for communication to their EC member.

The PM is the leader of the PMT. The PMT will provide a liaison to support the ad hoc work group and to ensure that assigned work group tasks are completed. Kathy Dickinson (Reclamation, PMT Liaison) has been assigned to the work group. The PMT reports to the EC.

Coordination between work groups occurs through the PMT and at joint work group meetings. Joint work group meetings will be held when needed, such as when preparing for fiscal year activities and working collaboratively on specific projects.

**Support to Work Group**

Kathy Dickinson has been assigned to support the ad hoc work to ensure necessary support is provided as further identified in the Program By-Laws.

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The PMT will provide support for meetings of the ad hoc work group, including distribution of agendas and meeting materials, and distribution of meeting summaries. Final meeting summaries will be made available to the public via an established Program distribution network. The PM will provide work group products to the CC and EC.

**Work Group Recommendations**

The PHVA/Hydrology ad hoc work group will make technically sound recommendations based on the professional judgment of the members and best available science for use by Reclamation and the Corps in writing BAs. If a consensus recommendation is not reached by the work group at key milestone dates, the issue will be elevated to the EC. Reclamation and the Corps will make decisions as necessary to ensure key milestones are met and tasks are completed to ensure a new Biological Opinion is obtained within the established timeframe.

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**Reporting Results and Communicating Recommendations**

Work group leaders will provide work products and recommendations to the CC for their information and communication to their EC member. Work group leaders will report on the group's activities and progress toward meeting stated objectives at each EC meeting and at CC meetings upon request.

**Work Group Products (Deliverables)**

Workgroup deliverables include the following.

Written description of and documentation of decisions used to develop hydrologic sequences to be utilized for PHVA/Hydrology analysis.

Written description of and documentation of decisions used to develop initial hydrologic conditions and assumptions for PHVA/Hydrology analysis.

Written description of initial water management scenarios for analysis with the PVA model.

Written description of water management scenarios and decisions used to develop those scenarios for use by Reclamation and the Corps in describing proposed actions in the new BAs.

Documentation of URGWOM model results for water management scenarios used in the PVA models and/or the new BAs.

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**Review of the Ad Hoc Work Group**

The PM and Reclamation and Corps work group leaders, with input from the PMT, will continuously review the accomplishments of the ad hoc work group with respect to its objectives, schedule, and participation by members, and make recommendations to the EC regarding continuation or termination of the work group, changes in objectives, schedule, or membership.

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**Amendment of Work Group Charter**

This charter may be amended as deemed appropriate within the bounds of the By-Laws, with input from ad hoc work group members, and approval by the EC. At a minimum, the charter will be reviewed annually.

**EC originally approved the PHVA/Hydrology Ad Hoc Work Group Charter on August 21, 2008. This amended Charter was approved by the EC on _____, 2010.**

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**Draft Charter for the San Acacia Reach Ad Hoc Work Group**
**of the**
# Middle Rio Grande Endangered Species Collaborative Program

**Overview**
The Middle Rio Grande Endangered Species Collaborative Program (Program) By-Laws, adopted by the Executive Committee (EC) on October 2, 2006, define the Program's organizational structure and discuss the various organizational units including the EC, Coordination Committee (CC), Program Manager (PM), Program Management Team (PMT), and work groups. The EC may establish work groups and designate members of work groups on its own initiative or on the recommendation of the CC when additional assistance or expertise is needed to accomplish the goals of the Program. The San Acacia Reach Ad Hoc Work Group (Work Group) was authorized by the EC at the June 18, 2009 EC meeting.

The Work Group will operate with a specific schedule and detailed action plan necessary to accomplish the Work Group objectives. Methods for accomplishing the tasks listed in the action plan will be identified by the Work Group.

The Work Group will disband on or before December 31, 2011.

**Background**
A workshop was held on February 20 and 21, 2009 which focused on developing a common understanding of the historical development of the San Acacia reach (objective met); developing a shared vision and common goals for the future condition of the San Acacia reach (objective partially met); and identifying possible priority actions for the San Acacia reach (objective met). Workshop participants are interested in continuing the process to develop long term solutions for the reach. The workshop planning group is willing to serve as a chartered, ad hoc work group to determine strategies to carry out appropriate recommendations from the workshop.

Workshop participants voiced the suggestion that the Program can benefit from coordinated, comprehensive planning efforts which reduce duplication of effort, increase information/data sharing, synthesize program objectives with community social values, and basically result in better solutions to the complex problems in the reach. Workshop planning members thought that a comprehensive planning effort would help individual agencies and the Program:

- Gain support for Program efforts,
- Gain support for agency project efforts, and
- Spread costs over multiple agency budgets.

**Work Group Objectives**
Facilitate the development of sustainable, holistic long term solutions for the San Acacia reach of the Middle Rio Grande.

1.) Increase public outreach and involvement by:
   a. Providing venues to the public and other stakeholders to discuss issues and opportunities,
   b. Communicating the status of planned and on-going agency actions, and
   c. Facilitating discussions among all stakeholders about long term goals for the reach and which steps to implement.

2.) Identify resource management issues and establish forums that would seek to resolve those issues, and
3.) Develop recommendations to implement San Acacia Reach resource management issues.

**Ad Hoc Work Group Membership**
MRGCD: Brooke Wyman, Yasmeen Najmi
NMISC: Page Pegram, Amy Louise
Reclamation: Robert Padilla, Cheryl Rolland
RG Restoration: Steve Harris
UNM: Ayesha Burdett
USACE: Ryan Gronewold
USFWS: Gina Dello Russo, Jason Remshardt
Others/Public Involvement

Members of the Program's Public Involvement and Outreach Work Group will be invited to all meetings that include discussion of public outreach activities.

Additional participants in work group meetings may include:

1. Additional personnel from agencies/entities that are signatories to the Program,
2. Professionals with expertise in the subject matter who do not represent Program signatories, and
3. Contractors or other parties, including members of the public, with experience and/or interest in the subject matter addressed during the work group meeting.

**Work Group Co-Chairs**
The Co-chairs will work with the PMT liaison to develop meeting agendas and a written work group update for each EC meeting. When requested by the EC, at least one co-chair will participate in monthly EC meetings to update the Program on Work Group progress.

**Work Group Meetings**
The Work Group will meet monthly, or more or less often, as needed to accomplish specific tasks. The co-chairs may assign specific tasks to Work Group participants for completion outside of Work Group meetings. Technical subgroup products will be reviewed at Work Group meetings. The PMT will post Work Group meeting schedules and locations on the Program website at least one week in advance of the meeting date. All meetings will be open to the public. The Work Group co-chairs will ensure meeting summaries are kept which accurately reflect actions of the Work Group. The PMT will ensure that meeting summaries are posted on the website within one week after they are final.

If a member cannot attend a Work Group meeting, the member may send a written request or statement regarding agenda items of interest. Work Group meetings will proceed if a quorum (simple majority) of the membership is expected to be in attendance.

**Work Group Responsibilities and Scope of Work**
The Work Group is responsible for carrying out the specific work necessary to achieve Work Group objectives. The PMT liaison will assist the Work Group members to develop a Work Plan for submittal to, and approval by, the EC. The Work Plan will contain tasks, schedules, and deliverables to be completed based on the following key themes from the February 20-21, 2009 workshop:

- The natural habitat,
- The economic viability for farming and the culture of the area,
- An open, functioning channel,
- Sustain flexibility in water management and riparian floodplain management to maintain a balance, and
- Sustain dialogue momentum.

**Relationship of the Ad Hoc Work Group to Other Organizational Units of the Collaborative Program**

The EC makes Program decisions. The Work Group co-chairs will provide Work Group products to the CC for communication to their EC member.

The PM is the leader of the PMT. The PMT will provide a liaison to support the Work Group and to ensure that assigned Work Group tasks are completed. The PMT reports to the EC.

Coordination between work groups occurs through the PMT and Work Group co-chairs.

**Support to Work Group**

The PMT will provide support for meetings of the Work Group, including distribution of agendas and meeting materials, and distribution of meeting summaries. Final meeting summaries will be made available to the public via an established Program distribution network. The PM will provide Work Group products to the CC and EC.

**Work Group Recommendations**

The Work Group will make technically sound recommendations based on the professional judgment of the members and best available science. If a consensus recommendation is not reached by the Work Group, the discussion will be elevated to the CC level.

**Reporting Results and Communicating Recommendations**

Work Group co-chairs will provide work products and recommendations to the CC, through the PMT, for their information and communication to their EC member. Work Group co-chairs will report on the group's activities and progress toward meeting stated objectives at EC and CC meetings upon request.

**Review of the Work Group**

The PM, with input from the PMT, will review the accomplishments of the Work Group with respect to its objectives, schedule, and participation by members, and make recommendations to the EC regarding continuation or termination of the Work Group, changes in objectives, schedule, or membership.

**Amendment of Work Group Charter**

This charter may be amended as deemed appropriate within the bounds of the By-Laws, with input from Work Group members, and approval by the EC. At a minimum, the charter will be reviewed annually.

**EC approved the foregoing San Acacia Reach Ad Hoc Work Group Charter on _____.**

**Draft Charter for the Monitoring Plan Team Ad Hoc Work Group**
**of the**
**Middle Rio Grande Endangered Species Collaborative Program**

**Overview**

The Middle Rio Grande Endangered Species Collaborative Program (Program) By-Laws, adopted by the Executive Committee (EC) on October 2, 2006, define the Program's organizational structure and discuss the various organizational units including the EC, Coordination Committee (CC), Program Manager (PM), Program Management Team (PMT), and work groups. The EC may establish work groups and designate members of work groups on its own initiative or on the recommendation of the CC when additional assistance or expertise is needed to accomplish the goals of the Program. The Monitoring Plan Team ad hoc Work Group (MPT) was established by the EC at the September 17, 2009 EC meeting.

The MPT will operate with a specific schedule and detailed action plan necessary to accomplish the MPT objectives. Methods for accomplishing the tasks listed in the 2009 action plan will be identified by Dr. Paul Hook, Intermountain Aquatics, in consultation with the MPT. The PM will assign a PMT liaison to support the MPT and ensure that objectives and work products are clearly identified, assigned tasks are completed, and schedules are met.

The MPT will disband after all MPT objectives have been met.

**MPT Objectives**

The MPT will develop:

1) Detailed annual action plan listing tasks, deliverables, due dates and responsible party
2) A SOW for implementing the first year of the 2-year pilot Monitoring Plan.
3) A Draft and Final Habitat Restoration (HR) Effectiveness Monitoring Plan (EMP) to measure the effectiveness of completed habitat restoration projects funded by the Program in the Middle Rio Grande.
4) A SOW for external peer review of the draft EMP and the results of the first year of the pilot study.
5) A SOW for implementing the second year of the 2-year pilot EMP.

The MPT will participate in efforts to integrate the results of the pilot HR EMP with: (1) other Program-sponsored studies; (2) prioritization of future HR projects; and (3) the Program's adaptive management plan.

The purpose of the 2-year Monitoring Plan is:

1) to contribute to meeting the 2003 Biological Opinion (BiOp) RPA element S which requires 10 years of annual monitoring for each habitat restoration project "to assess whether created habitats are self-sustaining, successfully regenerating, and are supporting the flycatcher and silvery minnow" (the MPT will address these items in the following order: a) supporting the species, b) self-sustaining, c) successfully regenerating) ; and
2) to provide input to the Program's Adaptive Management Plan; and
3) to serve as a pilot for developing a longer-term Program Monitoring Plan that will cover all reaches of the Middle Rio Grande within the Program boundaries.

The U.S. Fish and Wildlife Service (FWS) and action agencies will coordinate to determine if the 2-year Monitoring Plan is consistent with the requirements of the BiOp.

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**Deleted:** the Scope of Work (SOW) for implementing the 2-year Monitoring Plan has been developed.

**Comment [ahl1]:** ADD; the MPT or a subset of the MPT will assist in the corrdination activities related to the task orders for implementing any particular years monitoring effort including participating in the coordination meeting and advising that year's COTR.

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**Deleted:** <#>a pilot 2-year monitoring plan to measure the effectiveness of completed habitat restoration projects funded by the Program in the Albuquerque and Isleta reaches of the Rio Grande (2-year Monitoring Plan)¶
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**Comment [ahl2]:** ADD IN; past CP HR project monitoring efforts

**Comment [ahl3]:** Should MPT led the "state of the HR" workshop?

The first SOW should be completed by November 30, 2009 in order to award a contract(s) to implement the 2-year Monitoring Plan by March 31, 2010, via a competitive acquisition process.

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**MPT (Ad Hoc Work Group) Membership**
The following Program members form the MPT:

Ondrea Hummel - co-chair (U.S. Army Corps of Engineers, HRW)
Anders Lundahl – co-chair (NM Interstate Stream Commission, HRW)
Jennifer Bachus – (FWS, ScW)
Yvette McKenna (Interim Program Manager)
Peter Wilkinson (NM Interstate Stream Commission, HRW)
Jill Wick (NM Department of Game and Fish, HRW)
Yvette Paroz (Bureau of Reclamation)
Michael Porter (U.S. Army Corps of Engineers, ScW)
Cody Walker (Pueblo of Isleta, SWM)
Brooke Wyman (Middle Rio Grande Conservancy District, PVA, CC)
Gina DelloRusso (FWS, HRW)
Rick Billings (Albuquerque-Bernalillo County Water Utility Authority, HRW, PVA, CC)

Deleted: Lisa Croft

Deleted: Yvette McKenna

Deleted: Matt Martinez (Middle Rio Grande Conservancy District, SWM)¶

All members of the Habitat Restoration (HRW), Science (ScW), and Species Water Management (SWM) work groups are invited to attend joint work group meetings and participate in the development of the 2-year Monitoring Plan. It is important that representatives from all areas of technical expertise assist with development of the 2-year Monitoring Plan. Additional participants in joint work group meetings may include:

1. Additional personnel from agencies/entities that are signatories to the Program;
2. Professionals with expertise in the subject matter who do not represent Program signatories;
3. Contractors or other parties, including members of the public, with experience in the subject matter addressed during the joint work group meeting.

Participants in the development of the 2-year Monitoring Plan are not eligible to be awarded a contract, or sub-contract, to implement any portion of the 2-year Monitoring Plan.

**MPT Advisor**
Dr. Paul Hook, Intermountain Aquatics Inc., has been contracted by the Program to provide technical assistance to develop a scientifically sound effectiveness monitoring plan for completed habitat restoration projects. He will work with the steering committee to plan the tasks necessary for development of the 2-year Monitoring plan. He will assist with the development of an overall monitoring framework including: discussion of scientific research components, discussion of past research/monitoring efforts and results, development of questions/hypotheses, discussion of what elements to monitor in order to answer these questions and discussion of methodology (including appropriate statistical design, field methods, sampling frequency, and analysis of data collected). Jericho Lewis, U.S. Bureau of Reclamation (Reclamation) Contract Specialist, is the only person authorized to negotiate and make decisions affecting the contractual relationship with Dr. Hook.

**MPT Co-Chairs**
Ondrea Hummel and Anders Lundahl have agreed to serve as co-chairs of the MPT. When requested by the EC, at least one co-chair will participate in monthly EC meetings to update the Program on Work Group progress. Ondrea Hummel will serve as the point of contact with Dr. Hook to communicate technical information between the Work Group and Dr. Hook. Jericho Lewis will receive a copy of all e-mail communications between Ondrea and Dr. Hook. The co-chairs, with assistance from the PMT Liaisons if requested, will work with Dr. Hook to develop agendas for MPT and joint work group meetings.

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**MPT Meetings**
The MPT will meet at least monthly or more often as needed to accomplish specific tasks. The co-chairs may assign specific tasks to MPT participants for completion outside of MPT meetings. Technical subgroup products will be reviewed at MPT meetings. The PMT will post MPT meeting schedules and locations on the Program website at least one week in advance of the meeting date. The MPT co-chairs will ensure meeting summaries are kept which accurately reflect actions of the MPT. The PMT will ensure that meeting summaries are posted on the website within one week after they are final.

If a member cannot attend a MPT meeting, the member may send a written request or statement regarding agenda items of interest. MPT meetings will proceed if the majority of MPT membership is expected to be in attendance.

**MPT Responsibilities and Scope of Work**
The MPT is responsible for carrying out the specific work necessary to achieve MPT objectives. The PMT liaison will assist the MPT members to develop a work plan for submittal to, and approval by, the EC. The work plan will contain tasks, schedules, and deliverables to be completed.

**Work Plan**
The work plan will include, but is not limited to, the following tasks:

- Draft preliminary hypotheses for effectiveness monitoring.
- Develop a range of monitoring plan alternatives to be presented to the CC for review and recommendation and the EC for review and approval. Alternatives will include descriptions of the parameters to be monitored, monitoring frequency, benefits, risks and rough cost estimates.
- Outline the monitoring plan framework.
- Assign responsibility for developing each section of the draft EMP.
- Review and provide input on the draft EMP.
- Develop a SOW for external peer review of the draft EMP and the results of the first year of the pilot study
- Finalize the EMP based on the results of the external peer review and the pilot study results.
- Develop SOWs for implementing the 2-year EMP.
- All deliverables will be reviewed by the MPT, submitted to the CC for review and recommendation, and submitted to the EC for review and approval.
- Participate in discussions of how to best integrate the results of the pilot monitoring plan with other Program-funded studies, prioritization of future HR projects, and the Program's adaptive management plan.

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**Relationship of the MPT (Ad Hoc Work Group) to Other Organizational Units of the Collaborative Program**
The EC makes Program decisions. The PM will provide MPT products to the CC for communication to their EC member.

The PM is the leader of the PMT. The PMT will provide a liaison to support the MPT and to ensure that assigned tasks are completed. The PMT reports to the EC.

Coordination between work groups occurs through the PMT and at joint work group meetings.

**Support to MPT**
A PMT representative will be assigned to ensure necessary support is provided to the MPT as further identified in the PMT Work Plan. The FWS PMT member will serve as PMT liaison for the MPT.

**Comment [ahl4]:** Really?
**Deleted:** Susan Bittick is the primary PMT liaison and Kathy Dickinson is the alternate PMT liaison for the MPT.¶

The PMT will provide support for meetings of the MPT, including distribution of agendas and meeting materials, and distribution of meeting summaries. Final meeting summaries will be made available to the public via an established Program distribution network. The PM will provide MPT products to the CC and EC.

**MPT Recommendations**

The MPT will make technically sound recommendations based on the professional judgment of the members and best available science. Reclamation, FWS, and the Corps will make decisions as necessary in a transparent manner to ensure MPT objectives are met within the established timeframe if a consensus recommendation is not reached by the MPT, CC or EC.

**Reporting Results and Communicating Recommendations**

MPT co-chairs will provide work products and recommendations to the CC, through the PMT, for their information and communication to their EC member. MPT co-chairs will report on the group's activities and progress toward meeting stated objectives at EC and CC meetings upon request.

**Review of the MPT**

The PM, with input from the co-chairs and PMT liaison, will continuously review the accomplishments of the MPT with respect to its objectives, schedule, and participation by members, and make recommendations to the EC regarding continuation or termination of the MPT, changes in objectives, schedule, or membership.

**Amendment of MPT Charter**

This charter may be amended as deemed appropriate within the bounds of the By-Laws, with input from MPT members, and approval by the EC. At a minimum, the charter will be reviewed annually.

**EC approved the first Monitoring Plan Team Ad Hoc Work Group Charter on: September 17, 2009. This updated Charter was approved on: .**

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**Middle Rio Grande Endangered Species Collaborative Program**

c/o Bureau of Reclamation
555 Broadway Ave NE, Suite 100
Albuquerque NM 87102
PHONE 505-462-3541 I FAX 505-462-3783

**www.middleriogrande.com**

Federal Co-Chair: **David Sabo**
Non-Federal Co-Chair: **Estevan Lopez**
Interim Program Manager: **Yvette McKenna**

# 2010 ANNUAL WORK PLAN

## JANUARY 2010 – DECEMBER 2010

**Work Group Name: San Acacia Reach Work Group**
**Date: March 11, 2010**

Work Group Members (*primary (P) or alternate (A)*):
Ayesha Burdett (UNM, P), Gina Dello Russo (FWS, P; co-chair), Ryan Gronewold (USACE, P), Steve Harris (RG Restoration, P), Robyn Harrison (Farmer/Festival of Cranes Coordinator, P), Ondrea Hummel (USACE, A), Susan Kelly (UNM, A), Amy Louise (ISC, PMT Liaison), Yasmeen Najmi (MRGCD, P), Robert Padilla (Reclamation, A ), Page Pegram (ISC, P; co-chair), Jason Remshardt (FWS, A), Cheryl Rolland (Reclamation, P ), Brooke Wyman (MRGCD, A)

| TASK | DELIVERABLE | DUE DATE | LEAD |
|---|---|---|---|
| Review Deliverables | Comments to COTR | 30 days after receipt | co-chairs |
| Discuss Future Activities that will help the Program meet RGSM and/or SWFL Recovery Plan (RP) goals, especially to meet RP objectives that we don't currently have activities for.<br>Agree on which current WG activities should continue in the future to meet RP objectives. | 1. A list of current WG-sponsored activities that help meet RP objectives and that should continue into the future.<br>2. A list of future Program activities that could help meet RP objectives. | Will be needed for joint Coordination Committee (CC)/WG/PMT meetings on Feb. 17 and March 4. | co-chairs & PMT Liaison |
| Attend joint CC/WG meetings to develop future activities for the Program's Long Term Plan (LTP) | Present description of WG-proposed future activities and share list of current activities that should continue. | 10:00 a.m. to 4:00 p.m. February 17, March 4, April 7 and April 14. | co-chairs |
| Review and comment on Draft 1-page descriptions of proposed future activities | Marked-up versions of the draft 1-page future activity descriptions | February 18 - April 23 | co-chairs |
| Decision for Peer Review | Recommendation for 2 reports to be reviewed | March 2 | co-chairs & PMT Liaison |
| Review SWFL Recovery Plan for LTP recommended activities | NA | March 2 | SAR Work Group |
| Review RGSM Recovery Plan for LTP recommended activities | NA | March 24 | SAR Work Group |

**SAR DRAFT ANNUAL WORK PLAN 2010**


| TASK | DELIVERABLE | DUE DATE | LEAD |
|---|---|---|---|
| Review needs and recommended activities to be funded in 2011 with estimated costs included (Objective 3) | Recommended activities and justification with estimated costs | April 1 | SAR Work Group |
| Finalize Objectives of Work Group | Objectives Summary | April 1 | co-chairs & PMT Liaison |
| Review Long Term Plan | NA | May 14 | SAR Work Group |
| Agency Response to Workshop Themes | Summary | June 3 | co-chairs |
| Work Group field trip (Objective 2) | Report | July 8 | SAR Work Group |
| 2011 SOW Development for EC approved activities | SOWs | July 30 | co-chairs & PMT Liaison |
| Participate in Open House | NA | Fall | SAR Work Group |
| Review Draft Annual Report 2008-2009 | Comments | September (tentative) | SAR Work Group |
| Write White Papers (Objective 2) | White Papers | September 30 | SAR Work Group |
| Participate in Festival of the Cranes | NA | November | SAR Work Group |
| Participate in Public Forum (Objective 1) | Report | November 30 (tentative) | SAR Work Group |
| Develop Outreach Products | Outreach Products | December 9 (tentative) | SAR & PIO Work Groups |
| Develop 2011 Work Plan | 2011 Work Plan | December 9 | SAR Work Group |

**Middle Rio Grande**
**Endangered Species Collaborative Program**

c/o Bureau of Reclamation
555 Broadway Ave NE, Suite 100
Albuquerque NM 87102
PHONE 505-462-3541 I FAX 505-462-3783



# DRAFT ANNUAL WORK PLAN

## January 2010 thru December 2010

## Work Group Name: Species Water Management Work Group
## Date: March 11, 2010

Work Group Members (*primary (P) or alternate (A)*):
Cyndie Abeyta (FWS, P), Chris Banet (BIA, P; co-chair), Hilary Brinegar (NMDA, P), Keith Candelaria (Pueblo of San Felipe, P), Dennis Garcia (USACE, A), David Gensler (MRGCD, A), Steve Harris (RG Restoration, P), Janet Jarratt (APA, P), Andrew Lieuwen (ABCWUA, P), Amy Louise (NMISC, PMT Liaison), Matt Martinez (MRGCD, P; co-chair), Curtis McFadden (USACE, P), Page Pegram (ISC, P), John Sorrell (Pueblo of Isleta, P), John Stomp (ABCWUA, A), Valda Terauds (Reclamation, P), Cody Walker (Pueblo of Isleta, A)

| TASK | DELIVERABLE | DUE DATE | LEAD |
|---|---|---|---|
| Review Deliverables | Comments to COTR | 30 days after receipt | co-chairs |
| Decision for Peer Review | Recommendation for 2 reports to be reviewed | February 3 | co-chairs & PMT Liaison |
| Review Charter | Updated Charter | February 3 | SWM Work Group |
| Discuss Future Activities that will help the Program meet RGSM and/or SWFL Recovery Plan (RP) goals, especially to meet RP objectives that we don't currently have activities for.<br>Agree on which current WG activities should continue in the future to meet RP objectives. | 1. A list of current WG-sponsored activities that help meet RP objectives and that should continue into the future.<br>2. A list of future Program activities that could help meet RP objectives. | Will be needed for joint Coordination Committee (CC)/WG/PMT meetings on Feb. 17 and March 4 | co-chairs & PMT Liaison |
| Attend joint CC/WG meetings to develop future activities for the Program's Long Term Plan (LTP) | Present description of WG-proposed future activities and share list of current activities that should continue. | 10:00 a.m. to 4:00 p.m. February 17, March 4, April 7 and April 14 | co-chairs |
| Review and comment on Draft 1-page descriptions of proposed future activities | Marked-up versions of the draft 1-page future activity descriptions | February 18 - April 23 | co-chairs |
| Review SWFL Recovery Plan for LTP recommended activities | NA | March 3 | SWM Work Group |

**SWM DRAFT ANNUAL WORK PLAN 2010**


| TASK | DELIVERABLE | DUE DATE | LEAD |
|---|---|---|---|
| Review RGSM Recovery Plan for LTP recommended activities | NA | March 24 | SWM Work Group |
| Review needs and recommended activities to be funded in 2011 with estimated costs included | Recommended activities and justification with estimated costs | April 7 | SWM Work Group |
| Review Long Term Plan | NA | May 14 | SWM Work Group |
| 2011 SOW Development | SOWs | July 30 | co-chairs & PMT Liaison |
| Participate in Open House | NA | Fall | SWM Work Group |
| Review Draft Annual Report 2008-2009 | Comments | September (tentative) | SWM Work Group |
| Participate in Festival of the Cranes | NA | November | SWM Work Group |
| Develop 2011 Work Plan | 2011 Work Plan | December 1 | SWM Work Group |

# Panel Review of the Restoration Analysis and Recommendations for the San Acacia Reach of the Middle Rio Grande, NM

Peer Review Group
PO Box 80605
Portland, OR 97280

December 2009

Dr. Barry Noon
Dr. Will Graf
Dr. Bill Murdoch
Dr. Bill Pine
Dr. Drew Tyre
Robin Vercruse
Dr. Steven Courtney

# Table of Contents

# INTRODUCTION

The Peer Review Group (PRG) (renamed from Sustainable Ecosystems Institute) is a public benefit, non-profit organization, founded in 1992. The goal of the Institute is to provide impartial scientific support for conservation decisions; the Institute is non-partisan, and seeks science-based, cooperative solutions to environmental issues. The organization has previously carried out extensive work on resource conservation and management, and has developed the use of peer review in such situations (Brosnan 2000).

The Bureau of Reclamation (BOR) contracted with PRG/SEI to conduct a peer review of the "Restoration Analysis and Recommendations for the San Acacia Reach of the Middle Rio Grande, NM" (San Acacia A&R) prepared by Parametrix on behalf of the Middle Rio Grande Endangered Species Collaborative Program, as described in the Request for Proposal and Statement of Work provided to PRG/SEI by the Bureau of Reclamation (appended as Appendices 1 & 2).

The specific charges to PRG included:

- To scope the review and, based on PRG's experience with other reviews and the materials to be considered, to determine the size, composition and academic specialties of reviewers.

- To select the reviewers best suited to the review, and to contract with them to carry out the review. PRG was also charged with maintaining the scientific integrity of the process, by allowing Bureau of Reclamation to observe the process, but not to influence the selection of reviewers.

- To set up a wiki site, and to make all relevant materials (provided by Bureau of Reclamation) available to reviewers, and to ensure that reviewers carry out a timely and well prepared review.

- To provide a written report that summarizes the opinions of individual reviewers, and of the review group as a whole, including any rebuttal or changes to reviews following comments received from Bureau of Reclamation.

The overall goal of this review then is to provide a comprehensive, and critical evaluation of relevant information regarding the important science issues discussed by the San Acacia A&R. Ultimately, this evaluation may be used by the Bureau of Reclamation, the Middle Rio Grande Endangered Species Collaborative Program and partner agencies in making science and management decisions. These are appropriately the responsibility of the various agencies. PRG's process is designed to provide an impartial scientific evaluation. It is not our role to provide advice on management decisions, and reviewers were instructed to avoid such comments. Our approach is restricted to summarizing, critiquing, analyzing, and

synthesizing scientific materials.

The process we adopted was to set up a panel of experts drawn from a range of different academic backgrounds relevant to the review. These experts read the materials that were available or that were developed. Overall project lead was Dr. Steven Courtney, Vice-President of PRG, who has expertise in endangered species research and management, and in the application of peer review processes to natural resource management issues.

**PANELISTS**

Panel members and their particular expertise in the review were:

| | | |
|---|---|---|
| • Dr. Will Graf | Univ. of SC | Fluvial Geomorphology |
| • Dr. William Murdoch | UC Santa Barbara | Population Ecology |
| • Dr. Barry Noon | Univ. or CO | Landscape Ecology/Ornithology |
| • Dr. William Pine | Univ. of FL | Fisheries Science |
| • Dr. Drew Tyre | Univ. of NE | Population Ecology/Adaptive Management |

Dr. Graf is University Foundation Distinguished Professor and Professor of Geography and Chair of the Department, at the University of South Carolina. He is a National Associate of the National Academy of Sciences, and at the National Research Council he has been a member of the Board on Earth Sciences and Resources, Water and Science Technology Board, Committee on Glen Canyon Environmental Studies, Committee on Rediscovering Geography, first and third committees overseeing science for the restoration of the Florida Everglades, and committee on sediment issues in the Missouri River. He has also chaired the NAS/NRC Committee on Innovative Watershed Management, the Workshop to Advise the President's Council on Sustainable Development, Committee on Endangered Species and the Platte River, Committee to Advise the U.S. Geological Survey on research priorities, Committee to Review Further Studies of the Klamath River, second Committee for IndepGeographical Sciences Committee. He also presently serves on the Environmental Advisory Board of the Chief of the U.S. Army Corps of Engineers. His background also includes work on the Rio Grande in regards to endangered species management for South West Willow Flycatcher. He has published more than 80 peer-reviewed publications.

Dr. Murdoch is currently Professor of Ecology, University of California, Santa Barbara, California. A member of the National Academy of Sciences, he is a Guggenheim Fellow, and recipient of the President's Award, (*American Society of Naturalists)* and the Robert H. MacArthur Award, *Ecological Society of America).* He is also currently acting Director of the National Center for Ecological Analysis and Synthesis (National Science Foundation). He has published three books and 144 peer-reviewed publications. He is a member of PRG's board, and has previously served on PRG/SEI panels

Dr. Noon has long professional history in both government and academia. He is currently Professor of Wildlife Ecology, Department of Fishery and Wildlife Biology, Colorado State University. Previously he was Supervisory Research Ecologist, U.S. Forest Service, Redwood Sciences Laboratory, Arcata, CA., and Chief Scientist, U.S. Department of Interior, National Biological Service, Washington, D.C. He has published more than 60 peer–reviewed publications. He is a member of PRG's board, and has previously served on several panels (Everglades etc.)

Dr. Pine is Assistant Professor, Department of Wildlife Ecology and Conservation, at the Program in Fisheries and Aquatic Sciences, University of Florida. He has authored more than 26 peer-reviewed publications, and has served on numerous advisory committees, including one for PRG/SEI.

Dr. Tyre is Assistant Professor, School of Natural Resource Science, University of Nebraska-Lincoln. An expert in adaptive management of large systems, including the Missouri and other river systems, Dr. Tyre has published numerous peer-reviewed publications in many different areas of ecology and management, including monitoring. He has a particular strength in quantitative approaches.

PRG was asked to select 3 to 5 reviews, the exact number to be determined by PRG, on the basis of covering all the necessary academic disciplines, and with adequate relevant experience. In the event, PRG elected to employ 5 reviewers. Our rationale was that we needed at least one hydrologist, one ornithologist, one icthyologist, and an expert in adaptive management. We also wanted to have a strong quantitative approach, and to employ reviewers who were familiar with peer review in applied contexts, such as other PRG reviews, or those of the National Academies.

The five reviewers were selected using standard PRG approaches. We consulted our database of experts who have already committed to carrying out reviews for management-relevant science. However we first decided to approach three reviewers, Drs. Murdoch, Noon and Pine who had previously served on our review panels, and who were familiar with our work. Each of these three was an ideal candidate (ecology, ornithology, ichthyology) and were known to provide high quality reviews. We interviewed each of these three, and explored their qualifications, expertise, potential conflicts of interest and willingness to serve. All agreed to serve. We also approached a single candidate, Dr. Tyre, to fill the adaptive management position. We were familiar with his work on the Missouri and Platte systems, and he had observed PRG reviews in progress, so he appeared well suited to this review. He also agreed to serve. We spent more time researching the hydrologist position and considered several candidates. However after receiving a recommendation regarding Dr. Graf from another SEI panelist and National Academy member, we decided to interview him first. He also agreed to serve. Hence, we did not interview any candidates other than these five, who (based on our comparisons with other PRG panels) seem extraordinarily well qualified for the task.

The panelists did not meet in person, but carried out their review using conference calls and the collaborative wiki site. On the first conference call, the panelists decided to prepare a single joint report (with discussion of any disagreements between panelists) as opposed to five individual reviews. This was a unanimous decision of the reviewers. However, we have also appended the individual panelist reviews, to show the full breadth of opinion, and so that we comply with FACA and OMB guidelines.

***REVIEWS***

Through the scoping process we refined the questions to be addressed to the panelists, and ensured that such questions were entirely scientific. We also policed the interaction between panelists and SARA staff, to ensure that our review was restricted to issues of science, and did not include comments on issues of policy or management decisions.

We assigned the eleven questions to reviewers based on their individual expertise, but also instructed each reviewer to consider the entire San Acacia A&R (and relevant background materials) on the basis of his own area of expertise.

The sections that follow first present an overview of the reviews received, followed by summary responses to the eleven questions that guided the review process, and then the individual reviews of the five panelists.

# OVERVIEW OF REVIEWS

Our review of the "Restoration Analysis and Recommendations for the San Acacia Reach of the Middle Rio Grande NM" identified strengths and weaknesses of the restoration program that are discussed below. In reviewing the document, we were highly cognizant of the difficulties in implementing a restoration program, such as the one described, given the large number of cooperating local, state, federal, and private entities involved, each with its own jurisdictions, interests, and views of how program goals should be reached. We commend the program coordinators for their efforts to coordinate and arbitrate between agencies with different resource responsibilities.

A strength of this research program, likely a result of the careful coordination among cooperators, is the clearly articulated program goal found in section 3 where "…[Rio Grande silvery minnows are] the primary species of concern to the Program" and "Ultimately, the success of habitat restoration efforts in the MRG will be judged by the success to increase the size of the silvery minnow population.". A well defined program goal is an essential first step to developing and assessing the restoration program. All project activities, whether they are related to riverine flows, habitat restoration activities, or land use decisions in the basin, must address how these actions relate to this program goal. Unfortunately, relating program objectives to the goal of increasing the size of the silvery minnow population, or even how to assess population trends of silvery minnows, is not clearly articulated in the report.

A revised report could address this shortcoming in several ways. First, much of the report is presented in discrete sections organized as chapters related to hydrology, organisms, and possible management actions. However, the material is presented in a "parallel play" arrangement where each activity is discrete with little evidence of integration between research, management actions, and project objectives. For instance, are there tradeoffs between the hydrologic management actions and restoration objectives for southwest willow flycatchers and/or Rio Grande silvery minnows? Does the stated overall goal of increasing the size and distribution of the silvery minnow populations have precedent over other program objectives? Is this overall objective possibly in conflict with other program objectives? A direct discussion of possible tradeoffs between restoration objectives needs to be addressed. Also, some discussion of the time periods anticipated between a management action and achievement of management goals needs to be included in a revised report.

Further, the report does not appear to use all available information for assessing the current status and trends of Rio Grande silvery minnows (the key species in the program). Several times in section 3, references are made to a time series of available catch-per-unit effort (CPUE) information on Rio Grande silvery minnows that is longer than what is presented in this section, and at least a portion of a longer time series is included in a figure in section 4 (Exhibit 4.20 and 4.21). If this information is available (and key assumptions discussed below can be met), these data could be used to retrospectively assess Rio Grande silvery minnow population responses to natural variations in flow over a longer time period than the two

years discussed in section 3. For example, to quote section 3 "The spring flows of greater than 6000 cfs downstream of Cochiti Reservoir in May 2005 produced a strong spawn, with a subsequent high recruitment of silvery minnows." This section suggests that this is the only year since 1993 (when fish sampling began) that strong recruitment was observed as related to flow conditions, yet Exhibit 4.21 demonstrates at least 4 years with flows of this magnitude and high Rio Grande silvery minnow CPUE in these years. The information presented in Exhibits 4-20 and 4-21 certainly suggests a correlation between flow and Rio Grande silvery minnow CPUE and this longer time series should be included in the discussion on Rio Grand silvery minnow in section 3. Key revisions to section 3 would include: (1) present all available information on spring flows and Rio Grand Silvery minnow recruitment or CPUE of adults including information from exhibit 4.21 and other years if available; and (2) suggest and discuss ecological mechanisms (stated as a research hypothesis to be tested or model parameters to be estimated) that would explain the relationship between high flows and increased access to spawning or rearing habitats.

A key assumption related to the current Rio Grande silvery minnow monitoring program must be addressed before the CPUE data can be used as a response metric to restoration activities (or natural flow experiments). That assumption is that the current CPUE monitoring program accurately reflects temporal trends in Rio Grande silvery minnow population abundance. This is a common sampling problem in many fish studies, particularly with rare species, and one that is often addressed by transitioning from a CPUE based monitoring program to a tagging based monitoring program. Based on recent peer-reviewed literature for this species, a tagging program is currently being tested, but it is unclear if this program has been implemented. Additionally, detailed information related to the fish monitoring program such as descriptions of gear used and spatial and temporal distribution of sampling must be included in the report to aid in determining whether any population trend discussed in the report reflects a true change in Rio Grande silvery minnow abundance, or simply a change in the sampling protocol.

We recognize and applaud the commitment to Adaptive Management (AM) expressed in the report. Particularly in light of the uncertain response of Rio Grande silvery minnow to the proposed restoration projects this is an appropriate approach to integrating scientific results into future decision-making. The description of AM is in general consistent with current thinking. However, the connection to actual decision making is not presented in any form – AM requires iterated decision making in order to take advantage of learning. There is a reference on page 6-4 to changing future restoration projects in response to the monitoring, and a diagram of iterated do-monitor-change. However, this description is far too vague to be useful. Who decides? When? After 5 years? After 1 year? Under what circumstances would the program abandon the relocation of channels? How much evidence and of what sort would be needed to conclude that channel relocation was not helping Rio Grande silvery minnow? These questions should be a part of future efforts to implement AM on the middle Rio Grande. Another aspect of adaptive management, outside the formal scope of this review, but essential for successful implementation, is a description of how scientific results

(including possible research results) will play into future decision processes. For instance, will particular decision re-considerations be triggered by some results but not others?

What is proposed in this report is effectiveness monitoring, measuring how well the projects meet their intended purposes (Field et al 2007), not adaptive management intended to improve future decision making. If the authors and the program wish to institute adaptive management and to integrate it with decision-making, then an expanded program of biological work may be necessary, as will explicit discussions of how such data might be used in decision-making.

# QUESTION RESPONSES

## Question 1

*Is the scientific material referenced in the document preparation comprehensive? Are there other relevant studies or data sets that are readily available and are not referred to? If there is additional relevant information, how would it change the conclusions of the scientific analysis in this report?*

The scientific materials referenced in the report in regards to the southwestern willow flycatcher appeared to rely on the Final Recovery Plan for the Southwestern Willow Flycatcher (FWS 2002), unpublished reports to federal agencies, and personal communications. Citations to literature more recent than the 2002 Recovery Plan are restricted to Sogge et al. (2003; Sogge, M.K., B.E. Kus, S.J. Sferra, and M.J. Whitfield [eds.], Ecology and Conservation of the willow flycatcher. Studies in Avian Biology 26). Our review of more recent literature found only one published study that may be relevant to the report (Hatten, J.R., and C.E. Paradzick. 2003. A multiscaled model of southwestern willow flycatcher breeding habitat. Journal of Wildlife Management 67:774-788). However, information contained in that publication would not change conclusions and recommendations in the report.

The scientific materials referenced in the report to support reasoning and conclusions related to the geomorphology and hydrology of the Rio Grande in the study reach appear to be complete and useful for the purposes of the report. The authors include some basic general references as foundation, including the classic works of Wolman and Miller (1960) and Richards (1982). The authors of the report use three bodies of specific literature for their report: hydrology, geomorphology, and interactions among hydrology, geomorphology, and riparian vegetation. The hydrologic references rely on full-scale assessments of Rio Grande flows such as works by Berry and Lewis (1997) and Bullard and Wells (1992), supplemented by more recent data that have appeared in environmental impact assessments and operating reports. The geomorphic literature supporting their report includes a standard (but useful) geomorphologic assessment by Massong et al. (2002), with more detailed investigations of the role of sediment by MEI (2002) and of channel processes with bars by MEI (2006). The interactions among physical and biological aspects of the river are outlined by specific previous investigations such as those by Horner and Sanders (2009) on the processes related to spring floods, and by Everitt (1998) on specific interactions related to tamarisk. The authors also import knowledge about these integrated processes in other rivers such as the regulated Bill Williams (Shafroth et al., 1998) which has some useful similarities to the Rio Grande. We are not aware of any significant omissions in the literature cited in this report.

With regard to the RGSM, this report does not appear to use all available data for assessing trends in RGSM abundance or assessing the possibly relationships between flow events and RGSM population trends. As detailed in the report introduction and in comments by Pine, discrepancies in the years of available data appear in sections 3 and 4 of the report.

The report includes two proposed hypotheses for the decline of RGSM in the San Acacia reach of the middle Rio Grande (1) alterations to hydrology and associated changes in available habitat for spawning, larval distribution, and rearing and (2) interactions with non-native species (3-11). This second hypothesis has recently been examined more closely with RGSM elsewhere in the Rio Grande basin in a peer reviewed paper by Moyer et al. (Moyer et al. 2005, Molecular Ecology 14 1263-1273) that likely should be included in this report when addressing hypotheses for RGSM population declines.

## Question 2

*Are the descriptions of species life history and habitat needs accurate?*

The scientific materials referenced in the report in regards to the silvery minnow rely to a large extent on recent Fish and Wildlife publications (FWS 1995, 2003a) and the designation of critical habitat in the Federal Register (FWS 2003b). References to the primary scientific literature are also prevalent and, for the most part, appear to be thorough and up-to-date. Two publications relevant to the report that were not cited include: Cowley, DE. 2006. Strategies for ecological restoration of the Middle Rio Grande River in New Mexico and recovery of the endangered Rio Grande silvery minnow. Reviews in Fisheries Science 14:187-200; and Gillon, K. 2007. An environmental pool for the Rio Grande. Natural Resources Journal 47:615-638. Further, the report adequately describes habitat requirements of the minnow by life history stage and links these requirements to hydrologic processes. The discussion of limiting factors (p. 3-14) is useful—however, the discussion would be strengthened if limiting factors for the minnow were linked directly to proposed restoration activities.

Descriptions of the life history and habitat requirements for the southwestern willow flycatcher at the scale of individual breeding territories or small habitat patches appear to be adequate. However, there is no discussion in the report of the total habitat area required at the scale of the San Acacia Reach to address recovery goals. Successful recovery of listed species requires a consideration of habitat requirements at three spatial scales—the individual territory, the local population, and the regional metapopulation. Some discussion of the total area proposed for restoration (e.g., via creation of willow swales) and its relationship to population size targets for the Reach would be useful.

## Question 3

*Are the river processes that support existing habitat well-described? Are proposed improvements to habitat clearly based on described river processes?*

Generally, the report describes quite well the river processes that support existing silvery minnow habitat, but there are some important issues that should be addressed to increase the usefulness and effectiveness of the report. The description of the river discharge history captures the essence of the record, and the discussion of river channel changes in the study reach is accurate. The observations about the connections among channel narrowing, over-

bank deposition, and the stabilization of bar, island, and bank material by dense riparian vegetation is well supported by the evidence. The outcome of these processes, more simplified aquatic and riparian habitats, is clear, and provides the stimulus for restoration strategies such as vegetation removal and remobilization of channel sediments.

The emphasis on regulated flows and prescriptions for manipulating those flows to more closely mimic natural river hydrology are appropriate and represent the most sustainable approach to restoration of habitats. By using various prescriptions as hypotheses for testing, river managers can increase the likelihood of success. It is especially important to have several flow prescriptions available, each tuned to a different snow-pack condition, so that options will be available regardless of the general hydro-climatic situation: wet year, average year, or dry year. The restoration plan outlined in the report would be more effective, however, if there were a closer connection between the flow scenarios and the mechanical construction projects. An additional improvement would be to take greater account of potential variability of sediment supplied by the Rio Puerco and Rio Salado, both of which are presently storing much of their sediment internally. Both streams might release their stored sediment in a process reversal, however, and their contributions to the Rio Grande might have significant consequences for restoration efforts.

Groundwater systems interact with the main river in a variety of ways, and this report and its plan addresses some potential groundwater issues. The role of seepage from the main channel into the Low Flow Conveyance Channel is particularly important because the conveyance channel has a floor lower than the bed of the channel. Management of the resulting hydraulic head will be a key to managing water in the river.

The restoration plans outlined in this report would be strengthened by consideration of the temporal framework, wood in the channel, and downstream implications. Restoration plans should be set in a temporal framework that is as long as possible, using long-term reconstructed discharge records, for example, to characterize the present conditions. Historical ground photography can extend the aerial photographic record to reveal how similar or different present conditions are when compared to those prevailing a century ago. Channel wood in the form of downed trees probably plays an important role in the dynamics of the system, but is only briefly considered. Wood could be artificially introduced to the channel system, for example, to increase the variety of aquatic habitats. The downstream consequences of the proposed mechanical projects are inadequately considered. If sediment is remobilized by the projects, it will like move downstream into the portion of the river near the headwaters of Elephant Butte Reservoir where sedimentation is already elevating the river.

In Chapter 3 of the report, the effects of river restoration are characterized as being generally positive for the southwestern willow flycatcher. However, the report does not address in any detail possible short-term effects of river restoration projects on breeding habitat for the flycatcher. Of particular concern are possible effects of removal of exotic vegetation currently

used by flycatchers for nesting. Any discussion of restoration effects on flycatcher critical habitat should include separate considerations of anticipated short- and long-term effects.

## Question 4

*Are the scientific conclusions made by the scientists supported by the material presented? Are the scientific and management recommendations based on a sound reading of the science?*

The conclusions reported on hydrology and geomorphology, and on the flycatcher, are in general supported by the material presented and on a sound reading of the science. The relatively few exceptions can be found in the detailed comments by Graf in the Appendix. They include: relevant information exists that predates the aerial photography records used in the report; interpretation of discharge rates; return intervals of bankfull return rates.

The conclusions reached on the Middle Rio Grande silvery minnow (RGSM) are in general not well supported by the material presented (Appendix, Pine and Murdoch comments). The list of such conclusions includes, among others: existence of population declines in the San Acacia Reach, the inferred causal relationship between spring flows and recruitment, and the relationship between spatial differences in minnow abundance in the Reach and hydrological conditions, the mechanisms leading to fish unable to move upstream after displacement, and loss of genetic diversity. A particular concern is the use of a small set of data selected from a 16-year time series and the lack of comprehensive analysis of the full data set.

It is not clear if the estimates of changes in abundance over time are reliable. Pine notes (Appendix) 'Throughout this document, catch-per-unit-effort of RGSM is apparently used as a surrogate of population abundance (3-17, 3-19, 3-21). For example, regression analyses between hydrologic measures and RGSM are used to document apparent relationships between spring flow events and RGSM population (3-17). However, catch rate information does not incorporate information on capture probabilities which is the probability of capturing an animal, given that an animal is present. A worry is that the sampling is conducted "where we can catch fish".' If this is true, there would be a positive bias to inferences of population status..

Although 5 possible causes of reduced minnow abundance are listed, two (longitudinal fragmentation and competition and predation by exotics) are not discussed in sufficient detail. The implication is that these factors do not merit additional consideration. No data are presented to support this claim, especially with respect to the effect of exotic species. W. Pine notes (Appendix) that "[t]his second hypothesis has recently been examined more closely with RGSM elsewhere in the Rio Grande basin. Within the Rio Grande river basin, RGSM were extirpated in the Pecos River by 1979 following introduction of the plains minnow Hybognathus amarus into the Pecos River sometime in the 1960's (Moyer et al. 2005, Molecular Ecology 14 1263-1273). Moyer et al. (2005) suggests that the rapid extirpation of RGSM following plains minnow introduction could suggest that RGSM were extirpated due to hybridization with plains minnow or due to competition with this congeneric species."

## Question 5

*When there are gaps in the information or data, are such gaps identified clearly? Are there unidentified data gaps that (if addressed) might improve future analysis and decision-making?*

We take "gaps" to mean data or concepts that are not presently known to any degree. The report has one section in Chapter 6 that clearly identifies groundwater, soils data, and sediment transport information as gaps. However there are several other gaps (noted below) that are mentioned elsewhere in the text (especially Chapters 3 and 4), that are not mentioned again in Chapter 6.

Graf (appendix) noted that the report made no use of historical information beyond the current aerial photography, and pointed out that previous photography and maps do exist that may provide an improved context for establishing desired future conditions.

Chapter 3 describes several gaps for RGSM. For instance, downstream drift distances are relevant but poorly known. The potential need for LWD is mentioned. Whether or not there are adequate feeding areas for the minnow is unknown, but the report assumes that the restoration projects will meet this need. Habitat requirements are similarly poorly known.

## Question 6

*Similarly when there are uncertainties in the information, are these uncertainties identified and presented clearly?*

We take "uncertainties" to mean estimates of statistical precision (e.g., standard errors, confidence limits). For example, exhibit 3.2 shows confidence limits on the regression line but does not provide estimates of confidence for the derived adult survival rate. As with data gaps, there are many uncertainties about ecological responses to restoration projects that are mentioned in passing, but that receive no further treatment in Chapter 6.

There appears to be no sensitivity analysis of the FLO-2D model predictions. This is particularly important to address given that the effects of the proposed restorations on key channel characteristics (e.g. surface roughness) are largely a guess. For example, on page 5-55 the report states "Restoration project areas were assigned n-values that were significantly lower than those associated with the dense riparian existing conditions." What if the assigned values were wrong by 25%? 50%?

Section 4-21 identifies uncertainty about the response of vegetation to high flows, but as with other ecological processes, the response appears to assume the proposed restoration projects will be sufficient.

## Question 7

*Does the adaptive management and monitoring section of the document address these data gaps and uncertainties?*

None of the gaps or uncertainties identified in Questions 5 and 6 are proposed to be addressed by monitoring or other targeted data acquisition. Monitoring is limited to CPUE for RGSM and nest success/point counts for SWWF. How these monitoring results will be used to improve understanding of ecosystem response to restoration is not clear, because none of the objectives described in chapter 6 connect river attributes to RGSM CPUE or SWWF abundance. Gaps and uncertainties in ecological responses to restoration appear to be primarily addressed by assuming restoration projects will be sufficient, rather than explicitly collecting data to reduce the uncertainty or fill the gaps.

## Question 8

*Are the risks, in terms of longevity and sustainability of proposed projects accurately addressed and analyzed?*

The authors of the report state:

"There is no point to effectiveness monitoring unless a mechanism exists that allows the results to effect adjustments in restoration management. Neither the Program's Long-Term Plan (ESACP, 2006a) nor the Draft Interim Monitoring Plan (ESACP, 2006b) clearly articulates the process by which this would happen. In lieu of a Program sponsored Adaptive Management Plan that outlines this process, we suggest that the monitoring results must ultimately be presented and discussed with a decision making body (i.e., the Program's Executive Committee). This is where the need for management adjustments will be determined and a course of action would be developed."

We concur with the authors of the report that an adaptive management and monitoring program needs to be addressed to the needs of decision-makers and that there needs to be a formal mechanism by which scientific results both address management risks and sustainability, and are discussed between scientists and decision-makers.

On the basis of this report, we see no evidence that such risks, although they may be identified during monitoring or other activities, will be accurately and speedily identified, or communicated to those who must address any discrepancies or sustainability issues.

## Question 9

*Does the adaptive management and monitoring section of the document address these risks?*

The report does not integrate adaptive management into assessing such risks, other than in general terms. In general, we agree with the emphasis placed by the authors for the need for explicit feedback loops for the use of new information, and we applaud the attempt by the authors to highlight this need. The several examples provided, e.g. the hypothesis that destabilizing accreted islands and bank-attached bars will locally increase channel bedform and flow velocity heterogeneity, appear directed at important management/population

issues. However, on this reading, it is hard to determine whether the identified major hypotheses address all the major issues of risk, or whether the briefly described research and monitoring programs will be adequate to determine whether all important risks are addressed.

The report also highlights the perceived urgency of aggressive restoration management. We see no reason to disagree with this sentiment that action should take place to meet population goals, and that inaction may reduce population and ecosystem restoration opportunities. We also note the authors statements that "We strongly advocate the need for performing research on the Middle Rio Grande to evaluate the sheer stress thresholds for first and second year riparian seedlings on various bar substrates.", and see no reason to disagree at this point. However what appears to be lacking from this report is an assessment of the relative sensitivity of restoration opportunities and risks to possible outcomes or assumptions. It might be useful for the program to identify which hypothesized relationships or outcomes carry the most risks for recovery, and to allocate effort and resources to such critical areas.

## Question 10

*Is the adaptive management and monitoring section of the document thorough and well-based in quantitative and experimental approaches? Are the feedback loops to decision-making explicit?*

Although there are many ways to conduct Adaptive Management, a shared characteristic is an emphasis on making repeated decisions, learning from previous decisions to improve future decisions. The report has clear "SMART" objectives for many river attributes, which is good. However, these objectives are related primarily to determining if the restoration projects are changing physical characteristics of the river (i.e. "means" objectives), rather than measuring the fundamental objectives of the restoration, abundance of SWWF and RGSM. In addition, there are no clear connections to decision making. The projects described in Chapter 5 appear "fixed" – there does not appear to be any future decisions that will benefit from whatever learning is achieved through monitoring physical and ecological responses to these projects. If monitoring shows that RGSM are continuing to decline, what will be done differently? There is a vague reference to future projects on page 6-4 being conducted in a different manner depending on monitoring results. What features would be changed? Would entire options be dropped? The monitoring and analysis described here does not appear to have sufficient connection between the physical and ecological responses to be able to provide this type of guidance.

In addition, given the relatively small number of SWWF in the study area, it is not clear that Adaptive Management can be instituted in any statistically viable way, if SWWF numbers or success are the metrics used. If vegetation is to be used as a surrogate measure, then the feedback loop between this assumed covariate and management needs to be more explicit.

## Question 11

*Can you identify any additional restoration issues and opportunities for the San Acacia Reach?*

[TYRE] The only thing I can think of is that they should beef up their description of how to prepare for possible high flow events - there is some mention in the document of planning for how to take advantage of opportunities that arise from high runoff events. Given the strong connection of minnow recruitment to high discharge, this seems critical to pursue at every opportunity.

[GRAF] We do want them to explore as many possibilities as they can on operations for releases from dams upstream, but other than that, I think this is good for now.

# REVIEWER COMMENTS

## *Will Graf*

**Geomorphology and Hydrology Comments – Will Graf**
**November 25, 2009**

**Chapter 2, portions related to geomorphology**

The discussion of river geomorphology is fine as far as it goes, but there are important components of river history that are not discussed, even though they may have bearing on the objectives of restoration. The discussion appears to be limited largely to the time period of available aerial photography, but by that time there were significant vegetation changes in the river channel and flood-plain areas. The river is rich in ground photography that extends the aerial photographic record back several decades to the time period before the massive invasion of exotic vegetation. The report would benefit from using at least a few of these historical images (many available from museums in Albuquerque and Santa Fe).

The authors did not use an important source of historical maps made in the 1930s that showed geomorphology and vegetation in great detail, reach by reach, that may be available in Santa Fe or Albuquerque libraries: National Resources Council. Regional Planning, Part V – Upper Rio Grande. Washington, D.C.: U.S. Government Printing Office.
These sources give us a more detailed view of the nature of the river and its habitats prior to extensive upstream control and invasion of exotic vegetation.
The commentary in this chapter about the connections among water, sediment, and channel morphology are largely correct and well stated. The sediment contributions from the Rio Puerco and Rio Salado have indeed declined, which makes restoration more difficult. However, it is also possible that this decline might reverse, since it is more the product of climate variation than just land use alone. The decline in sediment yield from these systems is seen everywhere in the Southwest, so it is general. The implication for restoration is that we need to plan for reduced sediment yields, but be prepared for larger influxes that may occur.

The major reaches of the study area do not all behave the same way, as correctly described in Chapter 2. The Escondida and San Antonio reaches appear to have stable gradients and be near equilibrium, while the lower portion of the Refuge reach has aggraded 3 feet since 1992, only to be incised as the local base level was lowered in Elephant Butte Reservoir. These are critical differences among the sections that should be reflected in the discussions of Chapters 4 and 5.

The hydrologic description of river flows is correct in its interpretations, but it could be presented in a fashion more useful in making connections to the biological aspects of the

report. Instead of using only flow duration curves, for example, summary statistics of peak flows, low flows, number of flow reversals, pulse number and duration, would be more helpful to readers and biologists. The Indicators of Hydrologic Change program of The Nature Conservancy could be used to calculate and display these parameters for the three periods of the record.
More interpretation of Exhibit 2-16 would be helpful for the reader. The inundation curve for the Refuge sub reach is clearly different from the others, reflecting its continued channel filling. What does this imply for restoration planning?

The groundwater and soils sections are adequate for the uses of this report.

**Chapter 4, Portions related to hydrology and geomorphology**

The discussion of channel narrowing and its connection to bar expansion and stabilization is generally correct. The connections among narrowing, vegetation, island and bar-top deposition, and attachment of islands and bars to the flood plain are on-going and have been in evidence for at least 40 years. From a purely hydraulic standpoint, faster, more-confined, less diverse flows are the logical outcome.

The discussion about shear stress and the stability of seedlings in Chapter 4, section 9 is sound on a theoretical basis, but the empirical evince for the quantitative connections between shear stress in flows and instability of vegetation are required if these concepts are to be used for management decisions and manipulation of the river. This section could be connected to adaptive management approaches, with various relationships providing the hypotheses to be tested in an adaptive management scheme. However, there will likely be great variability over short distances in the required shear stress because the issue is not only the plants, but the sediments in which they grow, and the authors have already pointed out the substantial variability of sediments and soils. This entire discussion could be expanded to major status as a route to restoration: manage flows to do the restoration work (or much of it) instead of using mechanical means.

While the hydrologic and geomorphic parts of this chapter are well explained, there is little true analysis of the ideas. Even a few simple calculations of how much water might be needed to achieve the suggested flows and shear stress, and of the total areas of channel, bars, islands, and flood plains that would be affected would be helpful to the reader in sorting out the consequences of using managed flows.

The section on mechanical removal of bars and islands along with their vegetation correctly points out the need for adaptive management, but inadequately explores the costs and concerns raised by the need for nearly constant maintenance.

The discussion of ground water shows that cottonwood and willow require shallow groundwater, with depths of less than 10 feet. An extended discussion of the ability of salt

cedar and Russian olive along the same lines would be useful. Salt Cedar, according to USGS reports, can send tap roots to depths of greater than 50 feet, and other research has confirmed the ability of salt cedar to easily use water 30 feet below the surface.

There is no question that overbank flows are important to the biological, chemical, and physical integrity of the river, but 17 of Chapter 4 does not link the flood events to the features that favor willow flycatchers. A specific link is needed at this point to consider the hydrographs and the effects of the floods they record.

The interpretation of the catch rate data and flows in Section 20 of Chapter 4 is useful, but my conclusions are slightly different from those of the authors. The regression analysis shows substantial explanation for catch rates by using number of days above 2,000 cfs. However, we know that if greater areas are inundated, more useful refugia for the silvery minnow and its eggs are available. An examination of Exhibit 4-22 shows that increasing discharge does activate more flood plain, but not at a constant rate. The most rapid rate of increase is between 3,000 and 4,000 cfs. However, above 4,000 cfs, we get much less benefit in terms of area inundated. Therefore, the conclusion we should draw is that we should do whatever possible to get the managed discharge up to 4,000 cfs as closely as possible, but we should not be too concerned about going over 4,000 because the benefit per unit volume above that number does not substantially increase.

The conclusions about bankfull discharge contained in Section 22 of Chapter 4 need to be qualified. The literature cited by the authors in support of the idea that bankfull discharge has a two-year return interval is the classic view, but modern geomorphologists and stream ecologists acknowledge that bankfull discharge has different return intervals in different places, and the connection is tenuous, especially in dryland streams like the Rio Grande. The authors themselves point out that the recurrence interval is different in different reaches of their study area. Williams (1978, Bankfull discharge of rivers, Water Resources Research 14;1141-1154) was the first of many authors to use USGS data to show that bankfull ranges from at least 1 year to 30 years. It may be safer to determine the return interval throughout the study reaches at a fairly fine scale of resolution before hanging management strategies on the idea.

In Section 24 of Chapter 4 the authors point out the potential guidance from a series of publications regarding flows to restore native vegetation. Fair enough, but the authors and decision makers should exercise great care in importing the experiences of rivers in other areas. For example, Stromberg and her group work mostly in the low deserts of Arizona, Shafroth's experiences are primarily the Bill Williams River (mostly canyon dominated and unlike the river in the present report), and Mahoney and Rood were working mostly on the Great Plains. Some caveats may be in order in the text regarding these studies and their usefulness for the Rio Grande.

From a hydrologic and geomorphologic perspective, the hypothesis for a flow prescription

found on page 4-52 is a reasonable place to begin.

**Chapter 5, portions related to hydrology and geomorphology**

The proposed restoration projects assume that sufficient snowmelt floods will occur with sufficient regularity to keep the system functional. To be sensible about it, there should be some projects that would be put in place if there is an extended run of snow drought years, a distinct possibility given our knowledge about climate variability and change in the area.
The caveat on page 5-4 that the mechanical approaches is not strong enough. Continuing maintenance has proven the downfall of many clearing projects such as those suggested here. Although many of these clearing efforts were for purposes other than species-driven restoration, they all sought to remove riparian vegetation, particularly salt cedar, and their experiences are a useful guide here. For historical examples, consider the revegetation of the channel and flood plain of the Gila River in southeastern Arizona, the site of a massive USGS experiment (reported in the USGS Professional Paper Series 655). The USBR has spent at least 50 years clearing parts of the Rio Grande to remove salt cedar as a water "salvage" effort, but to no avail. Maintenance will be expensive, and it will be required.

Chapter 5 proposes the following major efforts at selected locations: mowing/plowing active channel bars to activate and remove their sediments; destabilizing terrace banklines by vegetation removal, relocating the channel away from the low flow conveyance channel to prevent leakage; and constructing willow swales for willow flycatchers. The object is to produce a wider, more shallow channel with greater diversity and more wood. All of the proposals are possible, but their effectiveness at changing the river to a more functional system is unproven. Destabilization of banks by tree cutting, for example, will result in unpredictable adjustments not only on site, but also downstream. Attempts to move channels sound fine, but will the new alignments have a sinuosity, cross section, and sediment transport capability that are stable?

Restoration through flow management is most likely to have beneficial effects, be tricky to deal with at first, but after adjustments and administrative management they can provide long-term help for this system. Whether or not the mechanical efforts will have the desired impact remains to be seen, but they seem to be less certain than the flow control approach.

**General Random Thoughts**

None of the discussions of the river's geomorphology in chapters 2, 4, and 5 adequately addresses the role of large woody debris in the channel. The images in Chapter 2 of large woody debris in the channel from the 2005 flood event are illustrative of the positioning of such wood in the modern river (mostly at its edge), but for restoration discussions the historic distribution of the wood is worth exploring. If the Rio Grande is similar to other interior alluvial western rivers (such as the Missouri, Platte, and Gila), wood in the channel is an important consideration not explored in this report.

Major surprises should be taken into account now in the decision process. What happens if

there is a major flood on the Rio Puerco, and we see an influx to the system of large quantities of sediment with only relatively small flows in the main river to move the materials to Elephant Butte Reservoir? What happens if long-term drought produces a sediment-starved, low flow river for a decade or more? These surprises are not out of the realm of possibility, and they even may be likely, so we might as well consider them now.

The appendices in some ways are not helpful to the typical user of the report, who is not likely to need listings of GIS layers, for example. What would be helpful is an expanded section on the law of the river. The project authorization public laws that are listed here are useful, but they are only part of the story. The selected restoration strategy will have to take place within a matrix of laws that should be reviewed here (briefly) with assessments of their effects. The Clean Water Act, section 404 USACE permit process, for example, will have to be a part of the mechanical efforts if they are used. The National Environmental Policy Act will be triggered, an an EIS almost surely will be needed. There is very little information on water rights, yet they guide the process of flow management to some degree. More on the law of the river and its implications for choice of method of restoration are in order.

The most significant potential improvement to the report is to adopt a more encompassing view of the restoration, a veiw defined by space, time, and the river. While it is necessary to focus on specific sites for restoration, the discussion of these sites should place them in the context of the entire drainage basin. What happens in the basin upstream will inevitably affect the individual sites (such as a surprise slug of sediment from the Rio Puerco). What happens to the sites will inevitably affect areas downstream (such as releasing sediment stored in islands and bars that will move downstream and accelerate the sedimentation at the lower end of the reach). While it is necessary to focus on short term responses to mechanical restoration, the long term sustainability of such approaches on a scale of a few decades is not adequately addressed by the report. Controlled flows are possible over a long term of several decades. By adopting a river basin perspective and a long time scale, the report can improve its effectiveness.

## *Bill Murdoch*

**Scientific basis for conclusions, and gaps, related to the minnow**
**November 22, 2009**

**General comment**
Few ecological data are presented and there is almost no analysis. The analysis that is done is, in general, not rigorous. There are some apparent inconsistencies between conclusions and data presented.

**Status of the minnow**
The report refers to data showing that the minnow covers only 5% of its original extent. But there seems to be no data, or at least none presented, showing that the abundance has declined in the San Acacia Reach, which is where restoration is to take place.

Comment: Restoration implies returning (increasing) the abundance towards some earlier level, so it would be good to know if abundance has declined. It might be possible to establish a temporal trend at least for the period 1993-present using the sampling data collected over this period.

**Causes of reduction in abundance if such has occurred**
The possible causes are listed around p 3-11 as:
Drying of channel
Loss of habitat (including food supply) through narrowing of the channel
Longitudinal fragmentation of suitable habitat
Competition and predation by exotic fish species
Water quality is considered less important.
The authors appear to conclude (e.g. p 5-2) that channel narrowing and channel drying are the main causes of reduced minnow abundance.

Comment: While these conclusions appear to be consistent with the known biology and habitat changes, and while assigning relative importance to such factors may be difficult, the authors have not analyzed data that exist and that might be helpful. Thus, it may be possible to analyze the 16-year sampling records from 3 different subreaches, by exploring the relationships between several population measures (abundances, changes in abundance, and trends, reproductive output, adult survival) and various independent variables. They refer to analyses of these data by Dudley and others (p 4-41), but it appears* that Dudley et al. have looked for explanations of annual differences in mean minnow abundance. There might, in addition, be useful information in spatial differences and in temporal trends. Further, although maximum flow may explain annual variation in mean abundance, other factors not explored may influence the level around which annual variation occurs, or spatial differences. Investigation of these relationships might provide a sounder basis for restoration

recommendations.
* These reports are not in published journals

**An apparent anomaly and need for comprehensive analyses**
Page 3-4 and Exhibit 3-2 show high, and higher than expected, adult survival 2002-2005 in the Refuge sub-reach, yet this sub-reach is stated elsewhere to have poor minnow conditions.

Comment: We are not told if this example is a temporal or spatial anomaly. It seems there is a large enough sampling data base that could allow analysis of temporal and spatial survivorship to answer that question. While the Refuge subreach had high inundation in 2005 (P 3-7), we are told on p 3-21 that it dries out earlier than other subreaches, and (p 4-11) had accelerated and possibly extreme narrowing over the last 14 years. These last two observations would not lead us to expect the observed unusually high adult survival, which raises the issue of whether the putative cause-effect relationships are well founded. The report tends to select single observations and uses them in an ad hoc way, rather than doing comprehensive analyses.

**Selection of observations and ad hoc explanation – another example**
Comment: Discussion of the data in Exhibit 3-5 is another example of lack of analysis and data selection in an ad hoc way. This exhibit shows data from a small time span, and infers likely causation by eyeballing the histograms in various months. There is no quantitative analysis, or exploration of statistical significance. The logic is not crisp: it is not clear if we should be looking at mean proportions of fish found in certain areas, or actual accumulated abundances. Here, again, there is a 16-year-long record of data and hypotheses could be tested and perhaps parameters estimated by a comprehensive analysis of the entire data set.

## ***Barry Noon***

In regards to the SWWF, the main question to be addressed is how have changes in the flow regime in the San Acacia Reach of the RG affected flycatcher habitat amount, habitat quality, and food availability? Effects can be direct via declines in the areal extent of habitat, or indirectly mediated through declines in habitat quality. Declines in habitat quality (and thus flycatcher carrying capacity) may have occurred via changes in geomorphology expressed as changes that in dominant vegetation species from cottonwood/willow to largely salt cedar dominance. Changes in vegetation composition can decrease habitat quality in many ways including less suitable nesting substrates, higher nest predation rates, and lower food quality or quantity.

In Chapter 2, the report clearly characterizes the changes in hydrology and geomorphology. Cumulative effects of management (e.g., irrigation diversions) on the RG have reduced the total volume of flow annually, reduced the peak flow volume and duration, and decreased the period of low flow. One consequence has been a reduction of sediment input from upstream, a reduction in the width of the channel and reduction in channel migration across the active floodplain. One result of river entrenchment is the creation of stabilized sand bars that subsequently are colonized and further stabilized by vegetation. [Does this geomorphic outcome create SWWF habitat?]

Hydrologic and geomorphic changes in the river have affected ground water depths. Lowered ground water depths may exceed tolerance thresholds for cottonwood-willow survival and favor the establishment of salt cedar (p 2-44). In addition, infrequent flooding allows the accumulation of salts which further favors salt cedar at the expense of cottonwood-willow. Recent vegetation survey data indicate that saltcedar is the most dominant species in the reach comprising 57% of vegetation patches (p 2-57). Based on existing studies, these changes would lead to direct loss of habitat amount and quality for the SWWF.

**Chapter 3: Ecology of the Southwestern Willow Flycatcher (pages 25-44).**

Key points:

- The SWWF was listed as endangered in 1995 because of "extensive loss of habitat, brood parasitism, and lack of adequate protective regulation"
- The Rio Grande from the headwaters in Colorado to the confluence with the Pecos River supports >10% of the range-wide SWWF population
- Report concludes that the Middle RG is key to maintaining the viability of the SWWF
- Obligate riparian species
- Native and non-native woody riparian species provide nesting habitat for SWWF. However, in 2001, about 50% of the territories of the breeding population consisted of >90% native vegetation
- Nesting success rates appear similar in native vegetation and in saltcedar dominated habitats

- The most common native vegetation used as stopover habitat during migration is coyote willow
- Critical habitat has been designated by the USFWS: 737 river miles comprising 120,824 acres in CA, AZ, NV, UT, and NM within the 100-yr floodplain.
- Recovery goal rangewide (for delisting) is ~1,950 breeding pairs. Surveys within the MRG detected 285 flycatchers in 2005 and 431 in 2006 (p 3-32).
- Recovery goal for MRG is 100 territories which has been attained as of 2006.
- Most SWWF nesting pairs are found within the Elephant Butte Reservoir delta (which lies outside of the San Acacia Reach).
- Number of territories within the San Acacia Reach has ranged from 17 (in 2002) to 3 (in 2005)
- Additional nesting sites are needed within the San Acacia reach if nesting areas within the Elephant Butte Delta are lost.
- Most breeding territories along the RG occur in young and mid-aged riparian vegetation dominated by dense growths of willows > 10 feet tall or other vegetation including saltcedar.
- The greatest proportion of nests (42%) occur in habitats saturated with water throughout the nesting season.

Comments on this section of the report:
In general, I believe the report adequately summarizes what is known about the ecology and life history of the SWWF. The report cites very little primary literature, mostly relying (I believe) on summaries of the research literature provided in the 2002 Recovery Plan.

Near the end of chapter 3, the report links the management objectives for the San Acacia Reach to the Recovery Plan. The focus here is primarily on the generation of new and higher quality habitat by increasing the availability of surface water in active channels and in the near-channel area (p 3-43). Also, the report acknowledges the need to restore vegetation communities needed for flycatcher habitat by altering specific hydrologic and geomorphic conditions of the river. These objectives seem consistent with the scientific literature and the recommendations of the Recovery Plan.

At this point in the report, the key is to tie these somewhat qualitative recommendations for increases in SWWF habitat to specific, quantitative hydrologic management objectives.

**Chapter 4: Issues and Opportunities for Flycatcher Habitat Restoration (pages 20- 54)**
Key Points:
- Gooding's willow appears to be particularly important for improving flycatcher habitat amount and quality.
- Seeds of cottonwood and willow retain their viability for only a few days. Thus, seedling recruitment is closely linked to water level in the channel.

- Cottonwood and willow can successfully compete with saltcedar under favorable hydrologic conditions. Depth to ground water must be < 7feet for strong recruitment of willows.
- Overbank flood inundation is a critical process that must occur for aquifer recharge, organic matter deposition, and scouring to establish new riparian vegetation.
- Given flood control mandates, achieving scouring floods needed for new vegetation establishment may not be possible. Thus, mechanical site manipulations may be needed to replicate these physical processes.
- Long-term climate forecasts predict declining peak flows which may increase the need for "hands-on" reestablishment of native vegetation (i.e., manual planting of willow habitat).
- Extensive scientific information exists on the hydrologic processes needed for native willow and cottonwood establishment (e.g., exhibit 4-24).

Comments on this section:
The authors adequately address the hydrologic and geomorphic conditions and processes needed for the establishment of native vegetation (cottonwood and willow). However, the habitat requirements of the SWWF are only narrowly addressed. For example, there is no discussion of the size and spatial arrangement of revegetated patches of cottonwood or willow that are needed for SWWF breeding territories. Patches of suitable habitat will have to be at least as large as the minimum territory size required by SWWF. Also, there is considerable evidence that SWWF breed in a spatially aggregated pattern. Thus, vegetation patches that support multiple breeding pairs may be needed for high reproductive success [reference needed here].

One major deficiency in this chapter is that the authors did not address the possibility of tradeoffs between the silvery minnow and the SWWF in terms of hydrologic management objectives. Since this topic was not addressed, the implicit message is that there are no significant tradeoffs.

**Chapter 5; Recommended Restoration Projects**
Key Points:
- Restoration success assumes that adequate snowmelt runoff will generally be available
- Primary factors limiting aquatic and riparian habitat availability for the SWWF are a consequence of altered surface water and groundwater hydrology.
- Physical habitat limitations include channel narrowing, channel drying, declines in native vegetation and replacement by saltcedar or Russian olive.
- To achieve restoration goals will require active management—that is, physical manipulation of the channel with machinery.
- Constructing willow swales will be a key habitat restoration goal for the SWWF. Recruitment and retention of willows will require a ground water depth < 5 feet.

- Primary mechanical treatments include the mowing and plowing of channel bars, removal of vegetation to destabilize terrace banks, and restoration of backwater channels.

Comments on this section:
A key issue not addressed in this section is whether widening of the channel via removal of encroaching vegetation will remove SWWF habitat that is currently being used during breeding or migration. Whether mowing and plowing of channel bars will have a short or long term effect on the SWWF needs to be addressed. The goal of removing non-native vegetation is understandable. However, SWWF use non-native vegetation such as saltcedar and Russian olive for nesting and its removal may have a negative short-term effect until restored willow swales become available. Some balance between the rate of removal of exotic vegetation and the rate of recruitment and establishment of native vegetation may be necessary.

In the discussion of supplemental data requirements (p 5-23, 24) the report correctly recognizes the need for information on native riparian vegetation recruitment for the establishment of SWWF habitat. The may be particularly important given Endangered Species Act requirements to evaluate projects for possible jeopardy decisions. For example, the proposed channel relocation activities would remove large areas of exotic vegetation which may be currently used by SWWFs.

The report emphasizes the importance of establishing backwater channels adjacent to newly established willow swales. Existing data suggests that this should be an effective means of restoring SWWF nesting habitat.

## *Bill Pine*

**Q.1. Is the scientific material referenced in the document preparation comprehensive? Are there other relevant studies or data sets that are readily available and are not referred to? If there is additional relevant information, how would it change the conclusions of the scientific analysis in this report?**

Pine: No the scientific material referenced is not complete and yes I think there are other relevant studies that could change the conclusions or analyses. Two key sources of data that are mentioned briefly but are not included in the document include information on trends in RGSM catches across the entire time series of available data since 1993 (referenced on page 3-15) and also information related to the ongoing (?) fish tagging programs mentioned on page 3-12. The majority of the discussions related to trends in RGSM relate to sampling that occurred in 2005 and 2005. For example, page 3-19 states that "The most recent sampling reports for silvery minnows collected along the San Acacia Reach during 2005-2006 show the pattern described above….Very low silvery minnow numbers in collections during the first four months of 2005 were followed by increased populations in May, June, and July 2006….Are these patterns also apparent in the full period of available data dating to 1993? This is important because it highlights periods of time when RGSM may be occupying a habitat type that could be impacted by current flow operations. In a peer-reviewed manuscript by Archdeacon et al. 2009 (full reference below) these authors (USFWS employees) state that "Data from 1996-2001 showed an annual decline in catch rates of Rio Grande silvery minnow in the Rio Grade, New Mexico…" and reference Dudley and Platania (2002),. So here is a reference to longer term data indicating a declined in RGSM (may or may not include the San Acacia reach), yet the data presented in the report we are reviewing for the San Acacia reach is only for two years (in section 3, longer tim period in exhibit 4-21) and shows uncertain trends. Another really important area where long-term data could strengthen or refute a statement in the report is found on page 3-17. Here the authors state that "The spring flows of greater than 6000 cfs downstream of Cochiti Reservoir in May 2005 produced a strong spawn, with a subsequent high recruitment of silvery minnows." Is this the only year since 1993 when these flows occurred during the spring spawning period? Exhibit 4-21 suggests additional data are available. If not then were similar patterns in recruitment observed following these flows? Along these lines (and possibly better to develop elsewhere) this highlights the potential (perhaps) of the existing data to help in "…exploring opportunities to utilize biological data to develop and test experimental flow prescriptions…." (bottom of page 3-24). If the existing monitoring program accurately tracks trends in RGSM population trends (it may or may not, discussed below) then re-examining data since 1993 would be highly informative to assess trends in spatial distribution and recruitment of RGSM. The fish tagging programs mentioned several times in this section (see 3-15, 3-21)offer much promise for improving the monitoring program (by transitioning from CPUE based indicies of population trend to assessing population trends using tagging based methods) and in interpreting how various flows, diversions, and dams alter fish movement

patterns. For example, on page 3-15 in a section discussing fish movement patterns the report states "After flushed downstream through the MRG irrigation diversions, these structures blocked the displaced fish from returning upstream." Again a similar statement is made on page 3-21 where directional movement of RGSM are discussed, but it is unclear whether this directional movement conclusion is based on the CPUE information or from the tagging data. Again, if this is a CPUE based conclusion is this conclusion supported by the tagging data? What tagging data are available, when did the tagging program start? A recent paper by USFWS fisheries staff from Alburuerque (Archdeacon et al. 2009 Comparison of two methods for implanting passive integrated transponders in Rio Grande Silvery minnow. North American Journal of Fisheries Management 29:346-351) provides further evidence that a passive tagging program with PIT tags is under development, but it is unclear in the report we are charged with reviewing if this tagging program has been implemented or if some other tagging program is ongoing in the field.

Proposed hypotheses for the decline of RGSM in the San Acacia reach of the middle Rio Grande primarily include (1) alterations to hydrology and associated changes in available habitat for spawning, larval distribution, and rearing and (2) interactions with non-native species (3-11). This second hypothesis has recently been examined more closely with RGSM elsewhere in the Rio Grande basin. Within the Rio Grande river basin, RGSM were extirpated in the Pecos River by 1979 following introduction of the plains minnow Hybognathus amarus into the Pecos River sometime in the 1960's (Moyer et al. 2005, Molecular Ecology 14 1263-1273). Moyer et al. (2005) suggests that the rapid extirpation of RGSM following plains minnow introduction could suggest that RGSM were extirpated due to hybridization with plains minnow or due to competition with this congeneric species. These authors found through molecular analyses that hybridization risks were low between these two species, but through simple population models predict that competition between these species could be high, and that plains minnow could displace RGSM from habitats where plains minnow are introduced. Are plains minnow present in this section of the Rio Grande?

**Q.2. Are the descriptions of species life history and habitat needs accurate?**

The report relies heavily on various USFWS and BOR documents that describe what is known of life history requirements for this species. As far as I know and that I was able to ascertain from a quick literature search, these documents are complete and up to date.

Q.3. Are the river processes that support existing habitat well described? Are proposed improvements to habitat clearly based on described river processes?
Graf

**Q.4. Are the scientific conclusions made by the scientists supported by the material presented? Are the scientific and management recommendations based on a sound reading of the science?**

All

Pine: Given that the RGSM sampling has taken place since 1993, yet only results from a few years are presented, I am concerned that the conclusions made are not based on all the available information. As I highlighted above, comments related to topics such as strong recruitment of RGSM occurring following spring flows of 6000 cfs may have occurred in the one year that is referenced, but the data from the other years of sampling is not presented so we do not know that in other years these same flows were associated with strong negative recruitment patterns. At the top of page 3-23 a sentence states that "Sampling data from the past decade consistently demonstrate that a high percentage of Middle Rio Grade silvery minnow populations are found in the San Acacia Reach." If this is true, then why is this information not presented to strengthen the conclusions of this section of the report? Additionally, the presentation several analyses as regressions assumes dependence between the x and y variables. However, this dependence is often not identified or properly cited. I am generally a fan of "full disclosure" of the available data.

I did note one inconsistency between the report and peer reviewed literature, in Section 3-12, within the "Habitat Fragmentation" bullet:
"Although the silvery minnow has co-existed with irrigation diversions for nearly 70 years, this appears to have resulted in the loss of the genetic diversity (Alo and Turner 2005)."
This is not a completely accurate statement. Alo and Turner (2005) clearly state (in abstract) that "Analysis of microsatellite and mitochondria DNA detected little spatial genetic structure over the current geographic range, consistent with high gene flow despite fragmentation by dams." Alo and Turner (2005) do state that the effective population size is greatly reduced from the historical levels, possibly due to habitat fragmentation or habitat loss, but do not suggest that there are genetic bottlenecks to population recovery.

**Q.5. When there are gaps in the information or data, are such gaps identified clearly? Are there unidentified data gaps that (if addressed) might improve future analysis and decision-making?**
All

Pine: If RGSM are "…the primary species of concern to the Program" (page 3-1) and if "Ultimately, the success of habitat restoration efforts in the MRG will be judged by the success to increase the size of the silvery minnow population….(page 3-1) then it is imperative that the methodology behind the monitoring program be clearly detailed such that the presented trends in RGSM catch-rates can be interpreted as trends in RGSM population abundance or are these trends simply confounded by poor monitoring design.

Trends in RGSM populations are a key metric in assessing effectiveness of restoration activities in the Rio Grande. Throughout this document, catch-per-unit-effort of RGSM is apparently used as a surrogate of population abundance (3-17, 3-19, 3-21). For example, regression analyses between hydrologic measures and RGSM are used to document apparent

relationships between spring flow events and RGSM population (3-17). However, catch rate information does not incorporate information on capture probabilities which is the probability of capturing an animal, given that an animal is present. Capture probabilities are influenced by many different factors including type of gear used, habitat sampled, and size of fish targeted. In the document we were provided I was unable to determine how the sampling took place (type of gears used) or understand how the sample locations were determined (systematic sampling, opportunistic sampling, fixed sites, etc.). A worry is that the sampling is conducted "where we can catch fish" resulting in hyperstability in catch rates. This can occur when the sampling continues to take place and shift to the locations of where fish are found which can result in catch rates remaining high even as populations decline. Ultimately the catch rates finally decline rapidly as a result of "the last" population (the one that has continued to be sampled, perhaps because fish aggregate in that spot because of preferential habitat) finally declines. This type of information is critical to interpret the catch per unit information provided. For example on page 3-17 there is a discussion related to how changes in RGSM distribution patterns appear to be a consequence of the decreased populations resulting from channel drying and later changes that could be related to high spring river flows. While these riverine changes could cause fish to change their population distributions, they also change the selective properties of each gear type used. This is repeated at the bottom of page 3-19, are the changes in CPUE reported here a function of changes in abundance, or changes in the CPUE as a function of the sampling program or gear type used? Exhibit 3-6 shows the number of fish collected in three years across a range of spatial locations. Were the same gear types used on each sampling trip? Because different gear types have different selective sampling properties (think of each gear type as a different eye glasses lenses in which to view the world) changes in gear type through time create different views of how the population may look. Presenting the information in Exhibit 3-6 standardized by gear type would be beneficial to interpret trends in catch for a single gear type (which would have a single type of bias).

To try and determine more information about the sampling methods used to collect RGSM, I examined the Science Work Group Fishery Survey 2007 report

http://www.middleriogrande.com/LinkClick.aspx?fileticket=NcmUbpqWIVo=&tabid=218&mid=565

This document presents information on fish surveys that took place during 2007. Information is provided on the spatial location of samples and gear types used for this year only. However, I am not sure from this document or the document we are charged with reviewing whether or not gear types and spatial locations of sampling have been standardized between surveys for RGSM. From the fisheries survey report it is clear that at least five gear types are regularly used: seine nets of two different mesh sizes, back pack electrofishing, raft electrofishing, and kick nets. It also appears that sampling may occur opportunistically within larger geographic reaches depending on hydrologic conditions – i.e. when there is enough water to use the raft based electrofishing that gear type is used, when water levels are

lower, backpack electrofishing or seining is used. This type of information should be presented in the report we are reviewing.

**Q.6. Similarly when there are uncertainties in the information, are these uncertainties identified and presented clearly?**
All

Pine: No I do not think the uncertainties are clearly identified.

Q.7. Does the adaptive management and monitoring section of the document address these data gaps and uncertainties?
Tyre

Q.8. Are the risks, in terms of longevity and sustainability of proposed projects accurately addressed and analyzed?
All

**Q.9. Does the adaptive management and monitoring section of the document address these risks?**
All

Pine: If the monitoring program does not accurately track trends in abundance then the monitoring program should be revised. Once the monitoring program were on track, then "natural" experiments such as high or low flow events could possibly be used in a "passive adaptive management framework". Drew may or may not be interested in commenting on this.

Q. 10. Is the adaptive management and monitoring section of the document thorough and well-based in quantitative and experimental approaches? Are the feedback loops to decision-making explicit?
Tyre

Q. 11 Can you identify any additional restoration issues and opportunities for the San Acacia Reach?
All

## *Drew Tyre*

**Initial comments on Chapter 6, Adaptive Management Monitoring Criteria, and information gaps**

Definition of Adaptive Management: "Adaptive Management provides established processes to link project implementation, monitoring, and assessment to provide key information and knowledge on which to base future resource management decisions."

Comment: This is consistent with current thinking in the DoI and elsewhere on what adaptive management is.

**1. What is adaptive Management?**

Gregory et al 2006 is incorrectly cited - should be ecological applications. seems trivial but lack of attention to detail?
Adaptive management is iterative doing and learning, involving multiple hypotheses. Nothing outstanding here.

**2. Relationship between monitoring and adaptive management**
Monitoring is inseperable from AM and tied to management objectives - no argument there.

**3. Program's position regarding AM and monitoring**
This says it all:
For example, how monitoring results would ultimately be translated to changes in management has not yet been clearly described or referenced in their Long-Term Plan.
So while there is "committment" it hasn't translated into a plan for change.

**4-8 more boilerplate**

regurgitates the standard set of process diagrams, defines management objectives as distinct from monitoring or sampling objectives. Examples of management objectives are largely "means objectives" - e.g. "Removing accreted islands will contribute to an x% increase in bedform heterogeneity". These are not the fundamental reasons for the program - responses in threatened species. Why do we care about bedform heterogeneity? What if I could find a restoration project that provided millions of minnows but had zero bedform heterogeneity?

Plenty of descriptions of draft monitoring plans and references to reviews on why monitoring matters - but its all moot if there isn't a clear description of the fundamental objectives.

**9 What are the monitoring criteria for restoration projects recommended in this report?**

Rightly points out that specific projects can only be discussed in conceptual terms because

there is a substantial level of detail needed to design a project in particular. Seems to indicate the the primary decision at this stage is to "fund" the proposed projects.

key question: what decision is going to be repeated in order to make use of learning? funding projects?

Remainder of this section outlines hypothesized effects of three different types of projects, and "placeholder" management and sampling objectives. The three types of projects are
Channel Widening and Diversification - between RM 111 and 79? all possible locations? some?
Channel Relocation projects - 2 proposed locations
Willow Swale and Backwater habitat construction - 3 proposed locations
The objectives listed under each of these are "SMART" - specific, measurable, achievable, relevant, and time limited. I like the fact that the sampling objectives will specify both power and a false positive probability for a given magnitude of change. However, these are all "means objectives" not fundamental - where are the hypotheses that connect these measurable attributes of the river to change in the species of interest?

**10 Who should monitor silvery minnow and flycatcher presence at the restoration project sites?**

References the draft monitoring plan that will focus on project level responses. Points out that the response of the species to recovery actions has to be monitored at a "higher level" - how high? recovery program as a whole? Essentially punts on the fundamental objectives, but not clear who's on the receiving end.

**11 What are the most glaring data gaps that need to be filled in support of further project design and baseline monitoring?**

Highlights the lack of data on groundwater, soils, and sediment transport for this reach. However, without understanding how each of the different projects is expected to contribute to the fundamental objectives (species responses) it is premature to prioritise data collection or modelling that could be very expensive and possibly unnecessary.

**12 What are some other important research, monitoring, and information needs for long-term restoration of the San Acacia Reach?**

Evaluating options for reducing seepage losses to the LFCC -
This is an entirely seperate action - really is another option to be evaluated alongside the 3 types of options listed above. How important is this for the minnow compared with habitat heterogeneity?

setting up managed flow scenarios

This is a great idea - because any experiment involving managed flows depends on snowpack and other conditions, a range of options must be developed in advance so that if particular conditions arise, the plan for how to maximise the information / restoration gained is already available. Doing this effectively would require 1) clear fundamental objectives, and 2) clear hypotheses for how different components of the hydrograph are expected to affect biological responses.

An example hypothesis is provided:
Managed flows that achieve a peak snowmelt discharge of at least 4,000 cfs at San Acacia Gage and maintain flows above 2,000 cfs for the next 25 days will result in significantly higher October silvery minnow catch rates than in comparable water-years where these criteria were not met.
this is good - but could probably be reformulated to be able to forecast a wider range of conditions - how do catch rates increase as the duration of flows above 2000 cfs goes from 0 to 40 days? Why are managed flows not evaluated alongside the construction projects as possibilities?

Take home messages from chapter 6
Narrow focus on construction projects as the only options
Means objectives that are not clearly connected to fundamental objectives
No clear iterated decision - how will learning be capitilised on?

**Workgroup Update Summary**
**Middle Rio Grande Endangered Species Collaborative Program**
**Executive Committee Meeting**
**March 18, 2010**

## Project Management Team

The PMT continues to meet weekly to follow up on action items from the Coordinating Committee (CC) and the Executive Committee (EC), and to discuss and implement improvements to the Program.

*Revised LTP Development*
In keeping with the revised Long Term Plan (LTP) schedule, the second working CC meeting to develop future Program activities was held on March 4. The CC also met with the PMT and several workgroup members on February 26, and a regular CC meeting took place on March 10. A long list of future Program activities to meet recovery plan priorities, elements, and Biological Opinion (BiOp) requirements has been developed, reviewed, revised, and is a work in progress. The U.S. Fish and Wildlife Service (FWS) Rio Grande Silvery Minnow (RGSM) Recovery Plan, 1st revision, was posted under the Library/Revised LTP Development weblink and is being used to update the revised Table 7.0 list of future activities of the LTP. The Program has contracted additional administrative and technical support through GenQuest and TetraTech. Jean Burt and Barbara Portzline, GenQuest, continue to work on past Program activities and are capturing this information in a consistent format. The revised LTP development will be the priority of the CC, the PMT, the workgroups, Water Consult and GenQuest for the next few months. A regular CC meeting will take place on March 31, and the next working CC meeting will be on April 14 from 10 am – 4 pm at Reclamation.

*Adaptive Management*
The PMT and the CC were tasked to work together to determine how the Program should move forward with an adaptive management plan. An FY10 activity summary to develop an adaptive management plan was presented to the CC and $50K was recommended for approval on November 4, 2009. The CC is reviewing a draft statement of work (SOW) for this activity based on the solicitation for Habitat Restoration Monitoring Plan Development Assistance. This task will be further defined during the working CC meetings for LTP development and the EC will be informed of the progress. A new Program website module has been created under "Library/Adaptive Management" and has been populated with the following links and documents: North American Waterfowl Management Plan; U.S. Geological Survey (USGS), Designing Monitoring Programs in an Adaptive Management Context; Glen Canyon Adaptive Management Program (GCAMP) Website; GCAMP Strategic Plan; Platte River Recovery Implementation Program (PRRIP), Executive Summary, Strategic Science Plan for Adaptive Management Plan Implementation, and Adaptive Management Plan; Lower Colorado River Multi-Species Conservation Program, Final Science Strategy.

Information on workgroups' 2010 annual work plans and 2009 workgroup accomplishments was provided to the CC on March 10. The CC also reviewed charters for the San Acacia Reach, PHVA, and Monitoring Plan Team (MPT) ad hoc workgroups. Jericho Lewis has been updating requisition packages for on-going projects, issuing requests for proposals (RFPs), and advising workgroup members on contractural issues. Diana Herrera continues to monitor Program expenditures, provides regular updates, and assists with compiling quick turn-around information for upper management. Monika Mann is assisting the Habitat Restoration (HR) workgroup with future activities for the LTP, and helping to compile information on acreages restored in 2009. Amy Louise continues to work with the Species Water Management (SWM) workgroup and the San Acacia Reach (SAR) ad hoc workgroup, provides regular updates on snowpack measurements to the PMT, and is busy preparing for the non-federal appropriations request trip to Washington, D.C.. The FWS has filled the term position for the PMT Liaison (for the Science, PVA and MPT workgroups) and Stacey Kopitsch has already made solid contributions to many Program efforts. The term 10(j) experimental population biologist should start at FWS in mid-April. Susan Bittick has proposed sponsoring team building training for the PMT on April 16 and has provided a list of U.S. Army Corps of Engineers (USACE) past activities to include in the revised LTP. The Program continues to receive much needed contracted support for Program administration from Jenae Maestas, GenQuest, and Cassie

Brown, Marta Wood and Rachelle Schluep, TetraTech. On a sad note, beginning on March 29, the PMT will be losing the historical knowledge, dedication, enthusiasm, work ethic and helpful attitude of Kathy Dickinson as she prepares to take on new duties at Reclamation as a Planner in the Program Management Group. Kathy has been involved in the Collaborative Program for over 6 years and most recently served as the PMT Liaison for the PHVA, as a technical member of the Monitoring Plan Team (MPT) and the Database Management System (DBMS) workgroups. Kathy has consistently provided critical support in many Program areas and has been instrumental in the advancement of the LTP. Thank you, Kathy, for all of your contributions to the Program and best of luck in your new position!

**Habitat Restoration Workgroup**

The HRW was updated on an approved grant reallocation for Santo Domingo Pueblo to use leftover funds towards plantings in the spring 2011. The HRW continues to give input into the LTP by developing future activities, prioritizing them, and assigning lead workgroups for Table 7.0. The HRW has the second most number of LTP future activities to prioritize and further develop into activity summaries. Both the Velarde Reach A&R and the River Mile 83 Reports were recommended for Peer Review by the workgroup. The HRW is still looking for a volunteer to be a new co-chair. The next meeting is April 20 to further discussions on the LTP future activities and ongoing HR Reports.

**Monitoring Plan Team ad hoc Workgroup**

Proposals for the monitoring Indefinite Delivery Indefinite Quantity (IDIQ) contract are due by March 22. Members of the MPT workgroup will participate in a Technical Proposal Evaluation Committee (TPEC) review which is scheduled for a full day on March 24 and 25. An award date is tentatively set for the first week in April, with a start date depending on whether the awardee has a FWS permit or not, and whether that permit is adequate. Other project-specific monitoring work that can be done in the mean time has been discussed. A MPT meeting took place on March 16, and a meeting to prep for the kick-off with the IDIQ contractor is scheduled for April 5. The actual kick-off meeting with the contractor is set for April 7.

**Science Workgroup**

The ScW met on March 16 to discuss progress and completion of the LTP future activities Table 7.0. The ScW has by far the most extensive list of LTP future activities to prioritize and further develop into activity summaries. A Community Sampling/Gear Evaluation presentation by SWCA has been scheduled for April 6. The next ScW meeting will be on April 20.

**Species Water Management Workgroup**

The SWM workgroup met on March 3and discussed the LTP and San Acacia Reach Analysis and Recommendation Peer Review Presentation. SWM continues to provide information for the LTP future activities and is currently prioritizing its future activities. SWM is happy to have a FWS additional participant, Cyndie Abeyta. The next meeting is scheduled for April 7at BIA from 10:00 am – 12:00 pm.

**San Acacia Reach ad hoc Workgroup**

The SAR ad hoc workgroup met on March 2and set a regular meeting day and time for the 4$^{th}$ Thursday of every month from 12:30 – 3:30 pm, with every third meeting in Socorro. SAR continues to provide information for the LTP future activities and is currently prioritizing its future activities. SAR members will review and clarify "Agency Response to Themes" for finalization at the April 22 meeting in Socorro.

**PVA/Biology Workgroup**

The PVA workgroup met for a full day on March 3 and half a day on March 4. The meeting focused on the workgroup's continued development of the PVA models and how they should be used. The issue of fish passage was also discussed and how it could be considered in a modeling context. Rich Valdez gave an updated presentation on age, growth and survival of the RGSM. The assignment of new co-chairs was discussed, as Jim Wilber and Reclamation have stepped down. Volunteers and suggestions for a new co-chair will take place over email. The draft PVA annual workplan and charter will also be reviewed by the workgroup via email. The next PVA meeting is all day May 4 and half a day on May 5.

**PHVA/Hydrology ad hoc Workgroup**

The PHVA workgroup met on March 2. They agreed to develop a summary of the URGWOM modeling process, including calibration of the model, post-processing, and discussion of the "safety factor" for use by the PVA workgroup and the ESA consultation team. Craig Boroughs presented the results of the Pre-ESA Water Management Scenario model runs using the latest (01/29/10) planning module of URGWOM. There are no flow tools and no flow targets in this scenario, just Cochiti deviations through 2013. In general, the results are very similar to results from previously completed runs for the non-front loaded scenario done last July. The difference is mostly seen in the drying in the Albuquerque Reach when MRGCD is in a shortage situation. Nabil Shafike presented an approach for completing continuous 40-year or longer model runs. The 40-year sequences are four 10-year blocks using a different hydrological sequence for each 10-year block. Any combination of the five available 10-year synthetic hydrologic sequences can be used. The ending conditions of a single 10-year simulation are used as the initial conditions for the next 10-year simulation to create one continuous simulation. A summary of the 2009 River Eyes data was presented by Valda Terauds. The next meeting will be held on May 18 from 1:30 - 3:30 pm at Reclamation. The workgroup is waiting for guidance on the consultation process before starting additional model runs and analysis.

**Public Information and Outreach Workgroup**

The PIO workgroup met on March 10 and overlapped with the PMT for about an hour. PIO is preparing for the congressional trip and are compiling information from Program participants to include in an informational packet. The PIO is drafting a press release for the Program video release and posting on the website. They are also working on their future activities development and prioritization for the LTP. The PIO will be providing input to the design and layout of the upcoming Annual Report and other outreach materials. Program participants are reminded to coordinate information and activities with the PIO so they can support your workgroups' efforts. The next PIO meeting is April 8 from 9-11 am at ISC.

March 18, 2010

**<u>Request for Funding</u>: MRG ESA Collaborative Program -- Spring 2010 hydrologic overbanking opportunity to utilize the 5-YEAR BRIDGING STRATEGY FOR DEVIATIONS FROM NORMAL OPERATIONS OF COCHITI LAKE AND JEMEZ CANYON RESERVOIR**

This year's NRCS March forecast for the Rio Grande allows us to consider an overbanking action at Cochiti through the Corp's approved deviation. The basin has the required volume to store at Cochiti and can provide a pulse that would create overbanking from Isleta Diversion Dam through Belen.

Pending confirmation with USFWS and BOR regarding the biological need for the action, the volume needed to be stored at Cochiti to achieve the pulse would be around 35,000 acre-feet for a peak flow at Albuquerque 5,800 cfs for 5 days. As part of our agreement with our stakeholders regarding this deviation, any depletions that would occur as a result of storage and release for any action would have to be paid back to the state of New Mexico.

An overbank action would create an estimated depletion of 900-1,200 acre-feet based on the depletion calculations approved by the Corps and NMISC.

The 2003 Biological Opinion, RPA V states:

*"Each year that the NRCS April 1 streamflow Forecast is at or above average at Otowi and flows are legally and physically available, the Corps shall bypass or release floodwater during the spring to provide for overbank flooding. The overbank flooding will be used to create an increased number of backwater habitats for the silvery minnow and flycatcher. The timing, amount, and locations of overbank flooding will be planned each year in conjunction with the Service and may be conducted in coordination with compact deliveries."*

Conversations with stakeholders have indicated that water donations to cover the depletions are not available. The option to pay for depletions would be estimated to cost ~$120,000 (going rate for leasing water is $100/ac-ft).

We are proposing to use unobligated collaborative program funds to support this deviation if the need is determined. Discussions from the state of New Mexico indicate that water could be purchased under the Emergency Drought Water Agreement.

A decision by the Executive Committee is requested by the Corps on March 18.

# Fish Passage at San Acacia Diversion Dam
# Results of Design, Estimating and Construction (DEC) Review

## Progress to Date on Fish Passage Drawings, Specifications and Cost Estimate

- Feasibility-level (30%) engineering drawings, project description, preliminary construction schedule, and cost estimates were completed in December, 2008.
- Seismic testing was performed in March 2009 in an attempt to better understand site conditions within available budget constraints.
- 50% engineering designs were completed in March 2009
- 95% engineering designs and draft specifications were completed in July 2009.
- The 95% designs and draft specifications are currently being reviewed by Albuquerque Area Office (AAO) staff.
- Potential fish passage facility features include: Sediment management features (automated and manual sluice gates), trash and debris removal system, monitoring equipment, and avian predator control features.
- The fishway can be extended as the river bed degrades, resulting in a longer route.
- A revised construction cost estimate of $6.5 Million was received in January 2010 and the non-contract cost estimates were also updated, based on recommendations included in the DEC Review.
    - The Total Project Cost is still estimated to exceed $10 million.

## DEC Review Process

- Required by Reclamation's internal regulations, D&S FAC 10-01, for projects with total cost estimated to be more than $10 million.
- Purpose: To support successful project accomplishment, ensure high quality, and maintain credibility with stakeholders.
- A DEC review includes full and comprehensive reviews of all components and details of the project designs, construction considerations and cost estimates.
- Conducted to verify that all major risks and uncertainties inherent in the project have been identified and effective measures and activities to manage these risks and uncertainties have been established.
- DEC Review conducted from September 14 – 18, 2009

## DEC Review Recommendations and Responses

- 3 "Essential" recommendations and 8 "Significant" recommendations were made
- Action Plan developed to respond to the recommendations, including rough cost estimates and timeframes
- 10 tasks are planned for FY2010, 4 of these have been completed, with a total cost estimated at $132,000.
- Approximately 10 more actions are planned for FY2011 and FY2012, with a total preliminary cost estimate of $750,000.
- Several additional tasks will occur during initial operations and maintenance of the fish passage facility to ensure that the facility is successfully allowing silvery minnow to move upstream.

RECLAMATION
*Managing Water in the West*

# San Acacia Diversion Dam

# Fish Passage Facility

# Design, Estimating, and Construction (DEC) Review

U.S. Department of the Interior
Bureau of Reclamation

March 18, 2010

## DEC Review

- Required per Reclamation Directive and Standard FAC 10-01, Identifying Design, Cost Estimating, and Construction Projects for which Independent Oversight Review is Required, and Performing those Reviews
- For projects that will have a total cost, at completion, greater than $10 million
- PUPOSE: To support successful project accomplishment, ensure high quality, and maintain credibility with stakeholders.

RECLAMATION

## DEC Review

- Performed under the direction of the Senior Advisor, DEC by qualified ad hoc team members (government or contracted staff) who have not directly participated in the project being reviewed.
- Value added and performed in a timely and cost effective manner.
- Full and comprehensive reviews of all components and details of the project designs, construction considerations and cost estimates being reviewed.
- Conducted to verify that all major risks and uncertainties inherent in the project have been identified and effective measures and activities to manage these risks and uncertainties have been established.

RECLAMATION

## DEC REVIEW of San Acacia Fish Passage

- Conducted from September 14 – 18, 2009
- Project Briefing and Site Visit on September 14, 2009
  - The Team was shown areas of concern to this project.
- Preliminary Results Presented on September 18, 2009

RECLAMATION

## Provided Materials

- Bureau of Reclamation, Albuquerque Area Office. July 13, 2005. San Acacia Survey for Petroglyphs and Historic Roads
- Bureau of Reclamation, Albuquerque Area Office. March 15, 2007. *Value Engineering Final Report San Acacia Fish Passage*
- Bureau of Reclamation, Albuquerque Area Office. September 2007. *Draft San Acacia Diversion Dam Left Abutment Access Report (Alternatives) Conceptual Designs with Appraisal Level Cost Estimates*
- Bureau of Reclamation, Albuquerque Area Office. March 25, 2008. Memorandum from Albuquerque Area Office Manager, John Poland to the Upper Colorado Regional Office Federal Co-Chair, Middle Rio Grande Endangered species Collaborative Program, David Sabo. Subject: Requested Information on Middle Rio Grande Facilities, Middle Rio Grande Project, New Mexico
- Bureau of Reclamation, Albuquerque Area Office. September 3, 2008. Memorandum to Files from Rik Arndt, Subject: San Acacia Diversion Dam Area
- Bureau of Reclamation, Albuquerque Area Office. October 29, 2008. *SADD Riprap Apron Removal & Replacement*
- Bureau of Reclamation, Albuquerque Area Office. November 2008. *San Acacia Diversion Dam Field Exploration for Fish Passage Biological Assessment*
- Bureau of Reclamation, Albuquerque Area Office. November 5, 2008. Consultation Memorandum and Response from the New Mexico State Historic Preservation Officer on *Proposed San Acacia Diversion Dam Fish Passage, Socorro County, New Mexico, Middle Rio Grande Project* per National Historic Preservation Act, Section 106
- Bureau of Reclamation, Albuquerque Area Office. November 26, 2008. *San Acacia Dam Core Samples*
- Bureau of Reclamation, Albuquerque Area Office. December 1, 2008. *San Acacia Diversion Dam Fish Passage Draft Summary Construction Schedule – 30% Design*
- Bureau of Reclamation, Albuquerque Area Office. July 23, 2009. *Past Funding and Projected Costs for San Acacia Fish Passage*
- Bureau of Reclamation, Albuquerque Area Office. ?? Marked up photographs showing proposed staging areas for fish passage project including fencing
- Bureau of Reclamation, Albuquerque Area Office and Aimone-Martin Associates, LLC. October 2009. Documentation that pounding in the sheet piles at the SADD fish passage facility project area would not cause damage to the petroglyphs
- Bureau of Reclamation, TSC. August 2005. *Sediment Erosion Analysis of San Acacia Diversion Dam Removal Alternative – Final Report*
- Bureau of Reclamation, TSC. September 18, 2008. *San Acacia Diversion Dam Fish Passage Facility Final Design FY09 Project Management Plan*
- Bureau of Reclamation, TSC or Albuquerque Area Office??. November 28, 2008. *San Acacia Diversion Dam Fish Passage 30% Design Documentation*
- Bureau of Reclamation, TSC. December 18, 2008. Draft Memorandum from TSC to Albuquerque Area Office, Subject: Review of Contractor Report – GPR Surveys at San Acacia Diversion Dam, New Mexico
- Bureau of Reclamation, TSC. April 2009. *San Acacia Diversion Dam: Shallow Soil Sampling on Left Abutment for Proposed Fish Passage Structure, Technical Memorandum No. 74-68-68435-2009-2*
- Bureau of Reclamation, TSC. May 2009. *Technical Memorandum TM-86-68330-2009-07 Geophysical Surveys Seismic refraction San Acacia Diversion Dam Fish Passage Middle Rio Grande Project*
- Bureau of Reclamation, TSC. November 2009. Cost Estimate Worksheets for San Acacia Diversion Dam Fish Passage
- Department of Fishery and Wildlife Biology, Colorado State University, Larval Fish Laboratory and Reclamation, TSC. May 2003. *Swimming Performance of Rio Grande Silvery Minnow*
- HDR|FISHPRO for Bureau of Reclamation, Albuquerque Area Office. August 2006. *Preliminary Design Report, Study and Preliminary Design Development of a Fish Passage Facility for San Acacia Diversion Dam*
- MicroGeophysics Corporation for BasePoint Design Corporation. November 26, 2008. Memorandum summarizing the data and results from ground penetrating radar surveys from October 4 to October 7, 2008 in the SADD project area
- Middle Rio Grande Conservancy District. February 2007??. Satellite photo of SADD Fish Passage Facility project area.
- S.S. Papadopulos & Associates, Inc. (for U.S. Army Corps of Engineers—Albuquerque District). December 5, 2003. *Technical Memorandum Exploratory and Shallow Well Drilling Rio Grande Watershed Study—Phase I San Acacia Surface Water/Groundwater Investigation*
- U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office. December 22, 2008. *Biological Opinion on the Effects of the San Acacia Diversion Dam Field Exploration Project*
- U.S. Geological Survey Water Data, Website http://waterdata.usgs.gov/nwis. October 28, 2008. *USGS Surface-Water Daily Statistics for the Nation, 08354900 Rio Grande Floodway at San Acacia, NM, Calculation Period???*
- ??. March 28, 1980. Ownership Land Survey of SADD Fish Passage Facility project area

RECLAMATION

## Findings and Recommendations

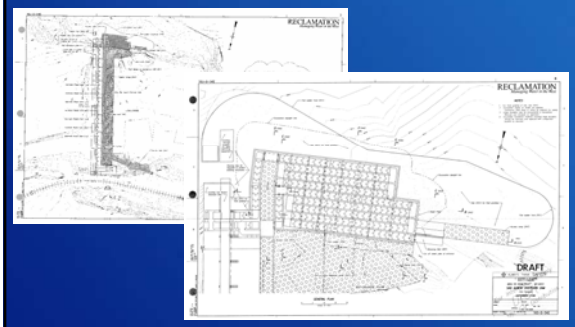
There are a total of:

3 Essential - Potential show stoppers

8 Significant - Potential major cost impacts

RECLAMATION

## Project Background



RECLAMATION

## Findings and Recommendations

DECSADFP – 01 (Significant) Recommendation:

- Update the feasibility cost estimate to include an allowance for procurement strategies rate of 10%.

DECSADFP – 02 (Significant) Recommendation:

- The allocation and magnitude of the estimated non-contract costs for this project need to be revisited. Update the cost summation spreadsheet prepared by the AAO to reflect the following issues:
  - Re-evaluate the construction management costs
  - Include an estimate of assumed design change efforts
  - Review projected costs to complete the NEPA process.

RECLAMATION

## Findings and Recommendations

DECSADFP – 03 (Significant) Recommendation:

- Provide more detailed site information to the TSC cost estimator to re-estimate the more significant cost drivers. This could be performed in conjunction with the review of the revised work items and quantities.

RECLAMATION

## Planned Actions

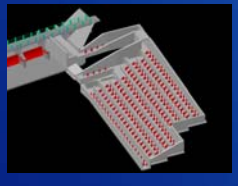
- Seven tasks were identified to address Recommendations 01, 02, and 03.
- A revised project cost estimate was developed in January, 2010, completing 4 of the 7 tasks.
- Estimated costs for future design changes will be refined in FY10.
- A constructability review team will be formed in FY11 to review cost estimates, construction methods and schedule.
- Funding needed to complete environmental compliance will be revisited in FY11.

RECLAMATION

## Findings and Recommendations

DECSADFP – 04 (Significant) Recommendation:

- Re-evaluate the attraction flow to the ladder entrance for the high river flow condition to ensure the best conditions to attract upstream migrating fish. Consideration should be given to providing an auxiliary flow system that would provide additional flow at the ladder entrance.



RECLAMATION

## Response and Planned Action

•4,000 cfs exceedance rate is 6% from 1/90 – 12/04.
•During high flows, the silvery minnow may seek low velocity refuges.
•The location of the fish passage entrance is near the bank where the fish are likely to be during high flows.

•The need for auxiliary attraction flows will be evaluated during initial operations.

RECLAMATION

## Findings and Recommendations

DECSADFP – 05 (Significant) Recommendation:

- Evaluate the velocities at the ladder exit in the vicinity of the radial gates to ensue a safe fish egress from the ladder. In particular, the unchecked high river flow condition may produce high velocities at the gates and ladder exit.

Response and Planned Action:

- The design includes a guide wall that extends approximately 15 feet out from the gates to help guide the silvery minnow to the bank upstream of SADD.
- The optimal setting for radial gates 29 and 30 will be determined during initial operations to provide sediment sluicing and attraction flows while ensuring safe fish egress.

RECLAMATION

## Findings and Recommendations

DECSADFP – 06 (Significant) Recommendation:

- Perform a Geomorphic assessment and perform long-term/short-term degradation/scour analyses to better determine the projected degradation of the river and establish a reasonable depth of scour for design of the fish passage facility.

Gates are nearly buried in sediment

1956 Rehabilitation

> 10-foot degradation downstream of the dam

January 1999

Reclamation file photos

RECLAMATION

## Planned Actions

- A geomorphic assessment will be performed in FY10 to obtain additional information regarding the likely amount of future short-term and long-term degradation.
- This information will be used to determine if design changes are needed.

RECLAMATION

## Findings and Recommendations

DECSADFP – 07 (Essential) Recommendation:

- Perform consultations with New Mexico State Historic Preservation Office and the effected tribes presenting the projects proposed use of the area north of the diversion dam. Consultation should include the transportation and disposal of waste material as well as placement and construction of the upstream cofferdam

RECLAMATION

## Planned Actions

- Determine where excavated material can be spoiled.
- Include this location and proposed haul routes in the Public Draft EA.
- Reconsult with NMSHPO.
- Conduct government-to-government consultations with potentially affected tribes.
- Revise cost estimates to include the agreed-upon spoil location(s.)

RECLAMATION

## Findings and Recommendations

DECSADFP – 08 (Essential) Recommendation:

- The question of ownership, rights, interests and title to the needed lands needs to be determined before the award of contract or issuance of an RFP.

Response:

- Reclamation believes it has the necessary rights and interests to construct this project as affirmed by the July 2005 New Mexico District Court Decision.

RECLAMATION

## Findings and Recommendations

DECSADFP – 09 (Significant) Recommendation:

- Evaluate the benefits and risks of breaking the work into two contracts. The first contract would include constructing the access; performing the geologic investigations, testing and reporting. The second contract would contain all of the other work for the fish passage facility.

Planned Actions:

- Award contract for an amphibious-mounted drill rig to conduct sub-surface explorations in FY11.
- Finalize the foundation design based on the findings.

RECLAMATION

## Findings and Recommendations

DECSADFP – 10 (Significant) Recommendation:

- In view of the potential problems with constructing the sheet pile wall using the slurry trench method , the design team should re-evaluate the cost of doing this work in potentially difficult ground conditions and a constrained work area.
- These costs were re-evaluated and updated in the revised project cost estimate, January 2010.

RECLAMATION

## Findings and Recommendations

DECSADFP – 11 (Significant) Recommendation:

- This recommendation is two fold,
  - First, a Project Management Team (PMT) be formed to better coordinate the multitude of activities that must be done to ensure the project is successful in purpose and within budget.
  - Secondly, when the design and draft specifications are in the final stages of development, conduct a comprehensive constructability review. The constructability team should include an individual who has experience as a construction contractor.

RECLAMATION

## Planned Actions

- An interdisciplinary, chartered Project Management Team will be formed in FY10 with clearly defined roles and responsibilities.
- As mentioned above, a constructability review team will be formed in FY11 to review cost estimates, construction methods and schedule.
- Designs, specifications, and cost estimates will be updated as needed prior to issuance of the construction solicitation.

RECLAMATION

## Conclusions

- The DEC review recommendations will help this project be implemented successfully
- We received a lot of value for the money we spent
- Every component of the project plan, cost estimate, and design must be considered carefully

RECLAMATION

## Questions?

RECLAMATION