

August 28, 2002

**San Juan River Basin
Recovery Implementation Program
Hydrology Committee
May 7, 2002
Conference Call Summary**



| | | |
|--------------------------------------|-------|--------------------------------|
| Members/Alternates Present: | _____ | Representing: |
| Ray Alvarado | | State of Colorado |
| Rick Cox | | Water Development Interests |
| Dave Frick | | Jicarilla Apache Nation |
| Mike Hamman | | Jicarilla Apache Nation |
| Steven Harris | | Water Development Interests |
| Bill Miller | | Southern Ute Indian Tribe |
| Pat Page | | U.S. Bureau of Reclamation |
| Randy Seaholm | | State of Colorado |
| John Simons | | U.S. Bureau of Reclamation |
| Pat Turney | | State of New Mexico |
| Brian Westfall | | U.S. Bureau of Indian Affairs |
| John Whipple | | State of New Mexico |
| Others present: | _____ | Representing: |
| Dave King | | U.S. Bureau of Reclamation |
| Marilyn Greenberg, Program Assistant | | U.S. Fish and Wildlife Service |
| Shirley Mondy, Program Coordinator | | U.S. Fish and Wildlife Service |

Welcome and Review of Agenda Items by Pat Page.
New Mexico comments regarding the Hydrology Committee September 26 Meeting Summary, Dave King's Model Development Summary, Baseline Depletions, and FY03 Work Tasks were added to the agenda. Navajo Dam flow flexibility and interpretation of whether flow recommendations are being met were added to the Discussion of Current Navajo Reservoir Operations and Flow Conditions agenda item. The agenda was approved as amended.

New Mexico Comments Regarding the Hydrology Committee September 26 Meeting Summary

John Whipple had not received, nor had a chance to review, the most current draft of the September 26, 2001 Hydrology Committee Meeting Summary prior to the March 26 2002 meeting, when the summary was approved by the rest of the Hydrology Committee. At that time, Whipple indicated that he would bring up any questions or concerns that he had regarding the September 26th meeting summary at this meeting. John Whipple objects to the approved September 26, 2001 Meeting Summary, and agreed to send his comments to Marilyn Greenberg to be attached to the final meeting summary.

Review and Approval of March 26, 2002, Draft Meeting Summary

Discussion: There were amendments to the meeting summary. Much of the discussion revolved around New Mexico's comments that the meeting summary was not fully accurate and did not properly attribute comments as being the views of the Committee or views of individuals.

Action: Marilyn Greenberg will update the summary with the amendments that were presented by the Committee, and then forward the summary to John Whipple for his input. The revised summary will then be sent out to the Committee.

Discussion: There was also discussion about the format of the meeting summaries.

Decision: Change the format of the meeting summary. Each agenda item will have a "discussion" section, a "decision" bullet, and/or an "action" bullet.

Review of Action Item Log (attached to 3/26/2002 Draft Meeting Summary)

Discussion: The Action Item Log was reviewed and amended.

Action: Marilyn Greenberg will update the Action Item Log and forward to the Committee for review with the Draft May 7, 2002 Conference Call Summary.

Budget Reporting

Discussion: Dave King summarized the status sheet (4/29/02) and explained the percent completion column and agreed to add a percent expended column. It was explained that the expenditures to date do not include Keller-Bliesner expenditures. King has spent about 10 days so far on the budget.

Decision: Put the percent expenditures column next to the percent completions column. There was a suggestion to call this a status report, rather than "Estimated Staff Days and Corresponding Costs", and to put "status report" in the subject line of the memo when it is sent out.

Status Report

There was a lot of discussion regarding the use of original Blaney-Criddle versus modified Blaney Criddle. Keller-Bliesner wants to use the cropping pattern data submitted by the State of New Mexico to facilitate their disaggregation into daily values. Dave King took the data provided by New Mexico and incorporated it in the model configuration to provide draft acreage data to Keller-Bliesner.

New Mexico stated that the Bureau of Indian Affairs and the Jicarilla Apache Nation had indicated that they would provide comments to New Mexico on its draft historic irrigated crop acreage. New Mexico has received comments from the Navajo Nation. If no further comments are forthcoming, New Mexico will proceed on providing the irrigated acreage information to Dave King. Dave King indicated that he received provisional cropping patterns and acres from New Mexico a few weeks ago.

Discussion: There was a long discussion about the model development summary. New Mexico did not feel that their comments were incorporated into the April 2nd draft, and had not had a chance to review the May 7th draft that was sent out prior to this telephone conference. Dave King had specified that comments on the April 2nd draft were needed prior to April 15, and stated that New Mexico's original comments were incorporated into the April 2nd draft. No further comments were provided by New Mexico prior to April 15. New Mexico stated that they did not feel that further comments would have been incorporated, and added that they have several concerns and questions on items that they are not fully comfortable with. One item of concern is that StateMod is the basis for RiverWare, and StateMod respects Colorado water rights, but not New Mexico water rights. It appears that New Mexico is junior to Colorado in the RiverWare model. StateMod gives every use in New Mexico a 1995 priority, so uses in New Mexico are always junior to Colorado. At this point New Mexico is not comfortable with the approach and the direction that the model is taking. New Mexico is concerned about whether StateMod respects interstate compacts, in particular, the La Plata River Compact. Use of StateMod to compute historic naturalized flows should be distinguished from its use in interstate operations.

Dave King asked Ray Alvarado if he would put together a one page summary of how StateMod gets back to gage.

Brian Westfall commented that the LaPlata contribution/effect to the San Juan is minimal; so the effect on the model as far as affecting Navajo Dam is going to be minimal as well.

Pat Page stated that in order for Dave King to continue work on the model, he needs to make some assumptions and asked if New Mexico would prepare a written statement that lists their objections so that King can add them to the model documentation.

One member suggested that this model development summary could be used to

proceed and interstate water issues can be discussed later.

Action: John Whipple will provide a written statement of New Mexico's concerns. Based on that, Ray Alvarado will provide a written description of StateMod.

Ray would like to wait until he receives Whipple's concerns so that he can try to address them. **The Committee would like to receive both documents by the week prior to the June 25th meeting, so as to be prepared to discuss them.**

Baseline Depletions

Discussion: There was considerable discussion regarding baseline depletions and the use of original versus modified Blaney-Criddle. New Mexico felt that there were inconsistencies between how depletions are handled in New Mexico and Colorado and in Indian and non-Indian projects. New Mexico feels that the Hydrology Committee is charged with reviewing the baseline depletions for the San Juan Basin. They questioned why full water rights would be considered for NIIP and not for non-Indian projects.

Colorado uses modified Blaney-Criddle for 'official' (Consumptive Uses and Losses reports) basin depletion computations, while New Mexico uses original Blaney-Criddle for official depletion reporting. NIIP depletions are computed using measured headgate diversions, measured and estimated return flows, and estimated ground water recharge. Therefore, precedent exists to use varying methods to compute depletions. The NIIP project has gone through section 7 consultation, and it is BIA's stand that those depletion figures should be included in the baseline. It is New Mexico's position that actions of the FWS and an action agency are not binding on other participants in the Recovery Implementation Program. Mike Hamman commented that New Mexico is raising legitimate concerns and suggested that this discussion be raised above the level that it is now, and not pit water users against each other.

There was a comment that NIIP has full water right usage in the baseline non-Indian irrigation projects in New Mexico. Non-Indian uses should not be treated differently. John Whipple suggested that if the model is based on everyone's full water rights, we might forget modeling, because there will be no water left to model.

There is no one here from the Navajo Nation to participate in this discussion.

Randy Seaholm asked if what the tribes are asking for is outside of what they would be allowed to ask for in terms of existing compacts? The Committee can look and see if what is in the model is a reasonable depiction of what will happen, based on compacts.

Mike Hamman acknowledged that there is frustration with the rules of the consultation process. Settlement talks have to progress to where New Mexico's issues are addressed in terms of how NIIP is really going to be developed. Navajo Nation is

required to go forward with their consultation. This Committee can ask if there is a better way to proceed in the future in this process. Shirley Mondy indicated that this is a policy issue that would have to go to the Coordination Committee. John Whipple reiterated that this Committee needs to evaluate and recommend (to the Coordination Committee) what the baseline should be. Randy Seaholm suggested that this be discussed and reviewed at the next meeting with a table that describes how depletions are handled in New Mexico and Colorado. Pat Page commented that our recommendations to FWS do not affect our current decisions about the development of the third generation model.

Action: John Whipple made a motion, that was not seconded, for the Hydrology Committee to evaluate the baseline depletions for the San Juan Basin throughout the model.

Decision: *This topic will be included on the June 25th meeting agenda. Further discussion was tabled until then.*

Review of Revised Third Generation Model Development Budget and Schedule

Discussion: Pat Page indicated that the model will not be completed in FY02. There is a request in this budget proposal for \$32,444 for model development in FY03. There is no money shown for coordination and administration. That will be requested separately from the model work.

Coordination time budgeted for FY02 was not sufficient for the amount of time that Page has spent on coordinating the model development. Durango staff was budgeted for \$3,500 - which only included the day before and the day of the meetings. Including Simons, Jensen, and Page, about \$28,000 has actually been spent to date. In order to not impact technical model work, \$11,000 of this has been backed out and charged to non-Program funds.

To further reduce the impact of overspending on coordination, Page proposed that \$10,000 from the FY02 Proposal 3 (Model Runs) be moved to model development. Since the model is not going to be complete this year, this money can be used now to help offset the additional coordination expenses. There has not been an increase in the technical work budget, other than additional documentation that may be required/requested and New Mexico work being done.

Some Committee members indicated that Page's budget proposal makes sense and was exactly what they wanted him to do.

Decision: The Committee agreed to use the \$10,000 from Proposal 3 to cover over-expenditures on coordination.

Review of Proposed Full-time Modeler Position

See discussion under "Review of Draft Long Term Budget (FY2004 and beyond)".

Review of Draft FY2003 Budget Request

A. Model Development

Discussion: The Committee was asked if they concur on Item A, Third Generation Model, for \$32,444 in FY2003. John Whipple stated that the estimated model development costs have gone from \$480,000, to \$535,500, to \$575,000. Pat Page indicated that the jump from \$535,500 to \$575,000 takes into account the additional New Mexico work and additional documentation work that had not been foreseen or accounted for previously. Steve Harris concurred that the time line and budget seems to keep extending. Page noted that the bottom line for technical model development work originally identified has not increased from the FY02 estimate, and that the \$32,000 proposed for FY2003 can be attributed to new or additional work not identified in the FY02 budget.

B. (Modeler) Model Maintenance and Operation

Discussion: There is \$30,000 budgeted in FY03 for 1/4 FTE (full time equivalent) for a Modeler or Hydrologist in Reclamation's Western Colorado Area Office. Items 3 & 4 on the proposed budget do not count toward the modeler's salary.

Pat Page stated that if the Program can identify the need for a full time modeler, Reclamation will do that. Is there sufficient work for a full-time modeler? If the Hydrology Committee justifies it, and the Coordination Committee approves it and provides funds, then Reclamation will staff the position based on current staffing coverages and needs.

Brian Westfall questioned the \$30,000 = 1/4 FTE? Will the Program pay for 1/4 of a modeler as a full time person that is already on board, or an additional person hired the 4th quarter of next year? Pat Page stated that it could be either, but it would be dependent upon current staffing needs.

Steve Harris stated that he could not support the FY2003 proposed budget without the commitment that a full-time modeler be brought on board.

C. Coordination and Support

Discussion: This section of the proposed budget would include Denver time for Dave King's meeting attendance and conference calls, and for Pat Page's time.

Decision: There was a motion that the FY03 section of this budget proposal be approved. New Mexico and Water Development opposed the proposed FY2003 Budget, but the rest of the committee was in favor of it and it was approved by a vote of 8 - 2.

Review of Draft Long Term Budget (FY2004 and beyond)

Discussion: Steve Harris indicated that the model is as important as fish by-passes and augmentation. The model has to be working to accommodate future section 7 consultations. A new modeler's first priority would be to take care of section 7 consultations for the Program - a good investment for water users throughout the basin.

Some members questioned how much time it takes to keep a model like this going. The consensus seemed to be at least ½ time - and the modeler should be located in Durango, so that the focus can be maintained on the basin and the water users. Harris suggested this person can do low flow model and temperature modeling also. Water quality monitoring and GIS database maintenance could also be added.

Some members commented that petitioners have to develop their own NEPA documents. Is it envisioned that the Program itself would bear the costs of running the model for these petitioners? Some clients are too small to run this model on their own. Larger organizations could do model runs on their own.

Bill Miller stated that it is good to have a modeler who is up to speed. There are concerns that if this is funded by the Program, then there needs to be stability and not a constant refilling of this position. This should be a precondition. It will take two years to train and develop someone, so we cannot have them leaving every 6 months or in a year. Pat Page indicated that Reclamation would determine the need for a modeler, how to get this work done, and the funding that is needed.

Steve Harris explained that the "SJRIP Request for a Full-Time Modeler" document is a Scope of Work with conditions. Are there contractors outside the Basin who are familiar with this work? The purpose of having a full time modeler is to keep Reclamation involved. Pat Page stated that there is someone on board right now (John Simons), in Durango, who could do this modeling work. Brian Westfall questioned whether there was really enough work for a full-time person. Dave King indicated that there is plenty of data maintenance for at least 1/4 FTE. There are lots of things in the Program that this person could work on also.

Randy Seaholm indicated that Colorado fully supports having someone fully available to run the model. There seems to be more than enough work to justify at least ½ FTE. Seaholm also stated that we just want to be sure that we have expertise and coverage available. Mike Hamman commented that the Hydrology Committee should state its position on the matter, and let Reclamation demonstrate their ability to honor that commitment.

Dave King asked about Denver involvement in 2004. Pat Page clarified that this is mostly transition and that the \$45,000 for 2004 could represent some of King's time and some of Simon's time.

Steve Harris commented that there is other Program work that could be added to the

modeling tasks that would make this position full-time. Pat Page stated that the \$30,000 gives Reclamation time to evaluate and decide what is the best way to proceed. Budget proposals for FY04 will come up next year and may include new tasks. The Committee wants to show the FY03 budget, as things stand today, to give to the Coordination Committee.

Steve Harris stated that he does not agree with the FY03 budget without the commitment from Reclamation that a full-time modeler be stationed in the Durango office. Randy Seaholm agreed that we need a full time modeler. Someone is needed who is designated to handle the models that are created in this program and hydrology related issues. There will be at least a couple of models that we will be dealing with. Pat Page indicated that additional work would need to be identified (from what is currently shown) to justify a full-time modeler.

Decision: It is still under discussion whether a full time modeler is needed in out years. Pat Page will submit the revised (5/1/02) long term budget to the Coordination Committee with the footnote that additional hydrologic duties may be assigned in the future, and noting that the Hydrology Committee encourages Reclamation to staff this person in the Durango office.

Discussion: Bill Miller questioned item C showing that Reclamation would be getting compensated for their attendance at Hydrology Committee meetings after the model has been developed, while the rest of the Committee is here as an in-kind contribution. Miller stated that the Committee had approved funding Reclamation's time for coordination during the model development period but thought that, once the model had been developed, Reclamation's attendance and preparation for meetings would be considered in-kind similar to the rest of the Committee (and other committees and their coordinators). Shirley Mondy stated that there could be some of Pat Page's coordination time that would be charged to the Program, such as budget tracking and monitoring the schedule, but the rest of his time should be funded by Reclamation as in-kind contribution. There was also a question about the duration of Page's role as Committee Chair. It was foreseen that Reclamation would be the Committee Chair indefinitely.

Decision: Pat Page will revise and send the long term budget out on the listserve for review and approval within the week, and will ask for a one week turn-around. Page will talk with Errol Jensen to see where the money is in the out years.

Review of Status Letter to Coordination Committee

Postponed, due to time constraints, until the next meeting.

Discussion of Long Range Plan

Discussion: In the introduction, section 1, the second paragraph was added about the Hydrology Committee being formed. Steve Harris reviewed the revisions to the Long Range Plan and agreed to change "oversee the task of development" to "will review and

provide recommendations” in section 4.4.

Mike Hamman expressed concern about the way the LRP reads. Statements about “protection of flows” and “in stream flow rights” seem to indicate long term protection. The Hydrology Committee, on page 4, paragraph 3, indicates that the Biological Opinion and the Navajo Dam EIS will provide sufficient protection.

Decision: Steve Harris suggested that the Hydrology Committee submit these edits to the Biology Committee and see if the changes get made. If not, then it can be added to the Hydrology Committee agenda for June 25th. Mike Hamman will send his comments directly to Jim Brooks. The Committee agreed that Pat Page will submit Steve Harris’s edits to Jim Brooks as Hydrology Committee edits. Others may want to submit individual comments to Jim Brooks.

Discussion of Current Navajo Reservoir Operations and Flow Conditions

Discussion: John Simons stated that the Farmington gage generally reads 300 cfs greater than the other stations. Depending on what stations you pick, you either are, or are not, maintaining the flow recommendations.

John Whipple commented that the Biology Committee recognized that there were potential problems at any time with any of the gages. At any time it is a judgement call as to which gages are providing accurate readings. He also stated that Shiprock has to be adjusted for irrigation return flows from below the Shiprock gage. The Shiprock gage reading is usually in between the Four Corners and the Farmington Bluff flows. John Simons stated that it would be good to be consistent rather than picking gages at random each time.

Shirley Mondy commented that the Farmington gage is above most of the diversions. The Committee needs to look at the intent of the flow recommendations; if Farmington is above most of the diversions then we have to question whether or not using this gage meets the intent of the flow recommendations. Bill Miller agreed that the Committee needs to look at the intent, especially in terms of habitat. Which gages seem to be most reliable over the long term? Can USGS discuss that at our October meeting?

Randy Seaholm asked if there was a USGS record of what has actually happened regarding managing the water? The decisions need to be made based on the most recent shift, not based on historic data. The original criteria was to take the average of any two gages. Does the Committee want to run this by the Coordination Committee again?

John Simons commented that the USGS website readings lack the readings for the current shift. Shirley Mondy reiterated what Bill Miller said about needing to look at the intent of the original recommendations and what is good for the habitat. The Biology Committee and Hydrology Committee should look at this and make a recommendation with the intent of maintaining 500 cfs in the critical habitat.

Bill Miller suggested that the Committee make a recommendation for a procedure based on which gages are most reliable, and which to average. Brian Westfall stated that the Biology Committee will discuss this matter and make a recommendation to Reclamation. Westfall also suggested that a record be preserved about what each decision is being based upon. John Simons stated that, since USGS revises their flow readings once the shift is put in place, he has saved the data which shows what the decisions were based on.

Action: *The Hydrology Committee members will come up with ideas of what would be a good recommendation regarding implementation of flow recommendations, and the current flow procedures will be followed for now. Pat Page and John Simons will be at the May 21st Biology Committee meeting to discuss this with them.*

Navajo Dam Operational Flexibility

Pat Page shared with the Committee what he found out regarding Reclamation's inquiry to the Biology Committee regarding Navajo Dam. Reclamation stated that they went to the Biology Committee because they were under the time constraints of the Navajo EIS and needed a statement quickly. There also seemed to be some confusion and misinformation about the purpose of the Hydrology Committee. Pat Page explained to Reclamation managers that the Hydrology Committee was not just about model development, and explained what it says in the Program document. Pat Page also stated that the Biology Committee recommendation will be utilized in the EIS. Pat Page conveyed Reclamation's sincere apologies to the Hydrology Committee about not conferring with them on this issue.

Review New Action Items

Pat Page reviewed his tasks. Marilyn Greenberg will send the March 26th Meeting Summary to John Whipple in WordPerfect format for his edits. Marilyn will include the other action items in this meeting summary and action item log, and send out to the Hydrology Committee for review. The new format of noting "discussion" and "decision" areas will be used in the format for this meeting summary.

Decision: The Committee agreed to meet in Durango on June 25th, meeting location to be announced. It was noted that a larger meeting space will be needed if the Biology Committee joins us at that meeting. Shirley Mondy indicated that the next meeting should be in Farmington, if this meeting is held in Durango. ***Bill Miller will ask the Biology Committee to join the Hydrology Committee at one of its next two meetings.*** Currently, August 20th is planned as a conference call. This will be changed to a meeting if the Biology Committee cannot meet jointly on June 25.

April 30, 2002

Memorandum

To: SJRBRIP Hydrology Committee

From: Pat Page, Chairman

Subject: Proposed Revised Budget and Schedule for the SJRBRIP 3rd Generation Hydrology Model and Data Development

The 3rd Generation model development budget and schedule have been revised to reflect; 1) additions to the anticipated work load to complete the model development work; 2) staff availability for the remainder of FY2002; 3) refinements to the estimated time to complete the work; and 3) an anticipated rollover of work into FY2003. The attached spreadsheet includes the following tabs :

1. "Comparison" - Comparison of the previously approved budget and this proposed new budget.
2. Table 4 - shows the expenditures, by task, to date.
3. April Status – Status of the model work as of April 29, 2002,
4. Timeline – Schedule timeline showing relationship of tasks

Note that the proposed FY2002 budget shows an increase of \$10,000 (\$363,419 to \$373,419). The primary reason for the increase is that our administrative costs have been higher than what we had programmed. We are proposing that we move the \$10,000 that the committee had budgeted in FY2002 for Proposal 3 – "Additional Model Runs" to Model Development to partially cover this overspending. Other items that have had an impact on the budget include requesting an additional 14 technical days to cover New Mexico data development that will take longer than originally programmed, and an additional 19 documentation days based upon feedback from the last meeting.

This additional work, some of which will be completed in FY2002 using FY2002 funds, causes other FY2002 work to be pushed out to FY2003. This, in essence, makes up the FY2003 "Model Development" portion of the FY2003 Request, and it amounts to \$32,444. Note that additional tasks, including Model Maintenance and Operation, Coordination and Administration, and Gaging Station Visits, will be added to the Model Development portion of the FY2003 request to make up the entire request (this will be sent out separately).

On the "**Comparison Sheet**" you'll notice that we've identified 3 types of costs: technical, documentation, and coordination and administration. This was done to show you where the increased costs are coming from. I am proposing to show the FY2003 Request using the same format (i.e., getting away from the "letters" and "numbers" format).

Note that the schedule calls for completion of technical work in October, 2002 and to complete a draft of documentation in late calendar year 2002 or early 2003. It uses the first six months of calendar year 2003 to obtain on the documentation and to incorporate comments. At this juncture, we do not know what the FY2003 cost-of-living increase will be.

The percent completion's on the **Status sheet** are an estimate of work completed to date, including the contractor's. However, the expenditures on Table 4 do not yet include any FY2002 contractor costs and are accumulative from FY2002. See the full budget spreadsheet to see expenditures by year.

If you wish to see additional detail, download the full budget spreadsheet from <http://wcao.uc.usbr.gov/envprog/sjrip/> under the documentation subpage. This spreadsheet includes the conversions from the more detailed work items to the original proposal tasks. The detailed tasks were adjusted between the approved budget and the proposed budget as was the mapping of items to tasks. Therefore, the distribution of FY2001 work to tasks changed some.

If you have any questions, or have any suggestions or comments you'd like me to know about prior to our conference call next week, please call or e-mail me before then.

Pat

San Juan Recovery Implementation Program - Hydrology Model Development
 Tasks By Tasks Status
 04/29/02

| Task | Actual Schedule | Target Schedule | Percent Completion | Status |
|------|-----------------|-----------------|--------------------|--|
| A | Sep-01 | Sep-01 | 100% | Work is complete. Task may be revisited after new model is available. |
| B | | Jul-02 | 90% | Interfacing of monthly time-series data is complete. Node and support data interfacing are partially completed. |
| C | | Jul-02 | 90% | Database interfacing is mostly done but additional database development remains. |
| D | | Jul-02 | 70% | Reconfiguration is nearly completed but time series data development remains. |
| E | | Jul-02 | 50% | Colorado data are completed. Provisional New Mexico irrigated acres and cropping patterns are available to 1929. Utah and Arizona data are being developed. |
| F | | Jul-02 | 35% | Recorded hydrology and diversions are available in usable formats. Work has been initiated on depletion data. |
| G | | Oct-02 | 55% | Reconfiguration is nearing completion but other model adjustment remain. |
| H | Sep-01 | Jun-02 | 100% | StateMod return flow methods are implemented. It was demonstrated that StateMod water rights processing can be duplicated in RiverWare if required. |
| I | | Sep-02 | 25% | Disaggregation methods are being investigated, discussed, and prototyped. |
| J | | Jun-03 | 10% | Some sensitivity testing has been completed but not has been analyzed. Scoping of operation alternatives should occur in spring 2002. Implementation should commence in spring of 2002. |
| K | | Jun-03 | 70% | Ongoing. Work plan, schedule, and budget are updated at least monthly. |
| L | | Jun-03 | 25% | Web page has been implentated that includes links to models, rulesets, and documentation. Links are available to 2nd generation documentation and drafts of several third generation documents. Ongoing. |

[Monthly Log](#)

Additional adjustments were made to the modeling approach and associated documentation to address Hydrology Committee questions and to reflect evolution of the model development. The RiverWare monthly model was modified to use diversion objects in lieu of water user objects for supplemental water cases. This allows easier recognition of them in the model, reduces the size of the model, and separates their management. The code that creates the model was migrated to RiverWare 4.0.4. Reclamation's Blaney-Criddle calculator was modified to compute original Blaney-Criddle and to use some of the data formats developed for SJRIP. Original Blaney-Criddle crop coefficients for New Mexico (which are seasonal) were obtained from the New Mexico State Engineer's Office.

Comparison of Approved and Proposed SJRIP Hydrology Model and Data Development Costs

| Task | Professional time - staff days | | | FY2001 Funds | FY2002 Funds | FY2003 Funds | Total |
|---------------------------------|--------------------------------|-------------|-------------------------|------------------|------------------|-----------------|------------------|
| | USBR | Consultants | Total | | | | |
| | | | 12/2001 Approved | | | | |
| Technical Work | 371 | 161 | 532 | \$114,390 | \$248,602 | \$0 | \$362,992 |
| Documentation | 55 | 30 | 85 | \$13,601 | \$44,484 | \$0 | \$58,085 |
| Administration and Coordination | 57 | 10 | 67 | \$18,939 | \$26,268 | \$0 | \$45,207 |
| Expenses | | | | \$23,173 | \$44,065 | \$0 | \$67,238 |
| Total | 483 | 201 | 684 | \$170,103 | \$363,419 | \$0 | \$533,522 |
| | | | 04/2002 Proposed | | | | |
| Technical Work | 385 | 161 | 546 | \$114,390 | \$241,937 | \$14,992 | \$371,319 |
| Documentation | 74 | 27 | 101 | \$13,601 | \$41,207 | \$12,352 | \$67,160 |
| Administration and Coordination | 93 | 10 | 103 | \$18,939 | \$48,674 | \$0 | \$67,613 |
| Expenses | | | | \$23,173 | \$41,601 | \$5,100 | \$69,874 |
| Total | 552 | 198 | 750 | \$170,103 | \$373,419 | \$32,444 | \$575,966 |
| | | | Differences | | | | |
| Technical Work | 14 | 0 | 14 | \$0 | -\$6,665 | \$14,992 | \$8,327 |
| Documentation | 19 | -3 | 16 | \$0 | -\$3,277 | \$12,352 | \$9,075 |
| Administration and Coordination | 36 | 0 | 36 | \$0 | \$22,406 | \$0 | \$22,406 |
| Expenses | | | | \$0 | -\$2,464 | \$5,100 | \$2,636 |
| Total | 69 | -3 | 66 | \$0 | \$10,000 | \$32,444 | \$42,444 |

NOTES:

1. "Technical Work" includes Work Tasks "A" through "J"
2. "Documentation" includes Work Task "L"
3. "Administration and Coordination" includes Work Task "K"
4. FY2002 "Proposed", total includes \$10,000 moved from Proposal 3.
5. FY2002 costs do not include 44 days of administration and coordination cost that were covered by other programs.
6. In FY2003, "Coordination and Administration" costs will be shown separately from "Model Development" costs.

Table 4. Estimated Staff Days and Corresponding Costs
04/29/02

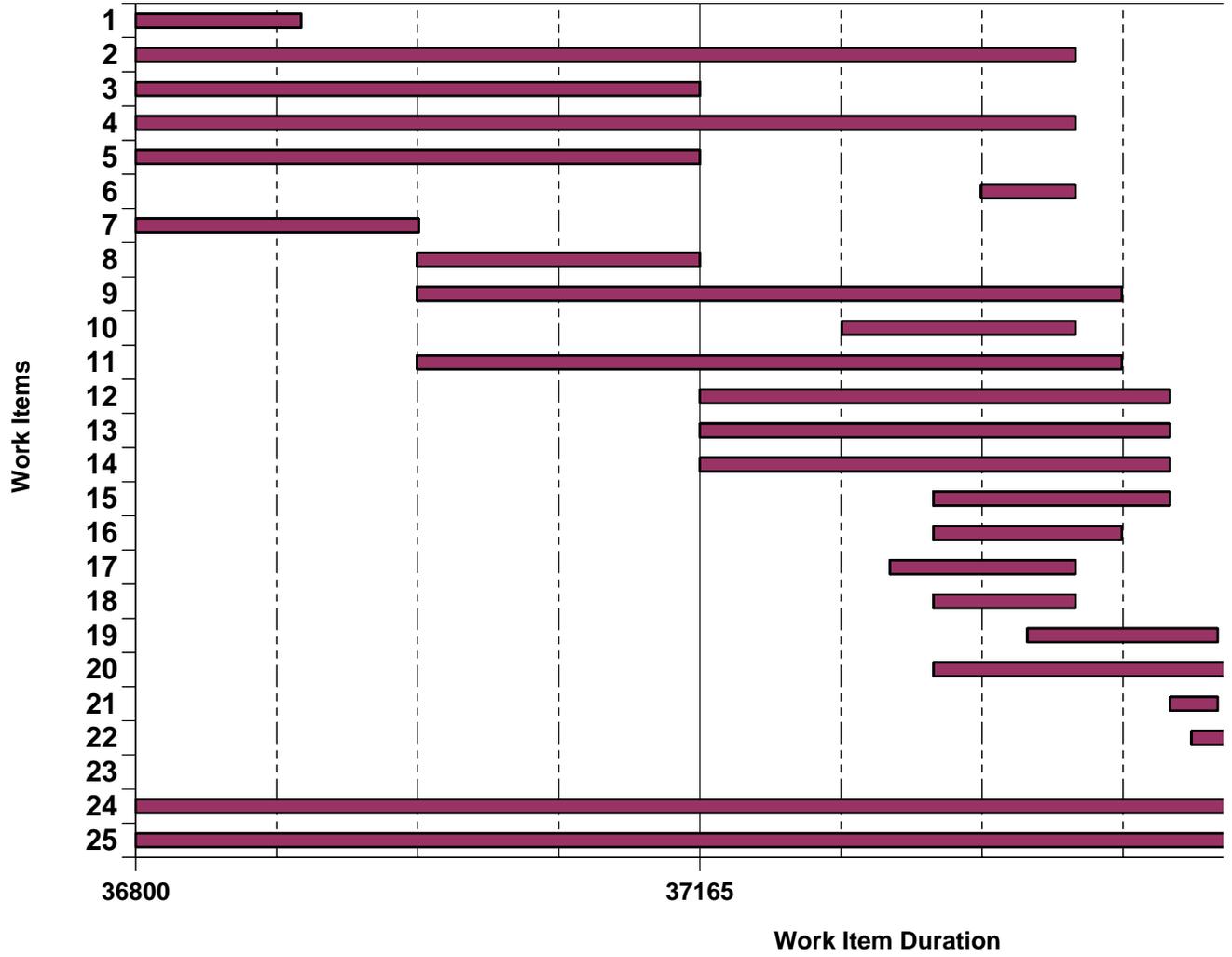
| Task | Staff Days | | | Costs | | | Expenditures | | | Percent Expended |
|----------------|------------|-------------|-------|-----------|-------------|----------------|--------------|-------------|---------------|------------------|
| | BOR | Consultants | Total | BOR | Consultants | Program Budget | BOR | Consultants | Program Total | |
| A | 0 | 20 | 20 | \$0 | \$16,000 | \$16,000 | \$0 | \$16,000 | \$16,000 | 100.00% |
| B | 65.5 | 5 | 70.5 | \$38,979 | \$3,785 | \$42,764 | \$38,651 | \$0 | \$38,651 | 90.38% |
| C | 65.5 | 5 | 70.5 | \$38,979 | \$3,785 | \$42,764 | \$38,651 | \$0 | \$38,651 | 90.38% |
| D | 32 | 0 | 32 | \$19,604 | \$0 | \$19,604 | \$13,661 | \$0 | \$13,661 | 69.68% |
| E | 12 | 0 | 12 | \$7,848 | \$0 | \$7,848 | \$2,835 | \$0 | \$2,835 | 36.13% |
| F | 12 | 0 | 12 | \$7,848 | \$0 | \$7,848 | \$2,835 | \$0 | \$2,835 | 36.13% |
| G | 81 | 8 | 89 | \$53,769 | \$6,056 | \$59,825 | \$36,671 | \$0 | \$36,671 | 61.30% |
| H | 26 | 0 | 26 | \$16,788 | \$0 | \$16,788 | \$16,788 | \$0 | \$16,788 | 100.00% |
| I | 8 | 35 | 43 | \$5,824 | \$26,495 | \$32,319 | \$2,582 | \$0 | \$2,582 | 7.99% |
| J | 83 | 88 | 171 | \$58,944 | \$66,616 | \$125,560 | \$5,429 | \$0 | \$5,429 | 4.32% |
| K | 93 | 10 | 103 | \$60,043 | \$7,570 | \$67,613 | \$47,139 | \$0 | \$47,139 | 69.72% |
| L | 74 | 27 | 101 | \$46,721 | \$20,439 | \$67,160 | \$19,164 | \$0 | \$19,164 | 28.53% |
| Expenses Total | 552 | 198 | 750 | \$47,576 | \$22,298 | \$69,874 | \$35,549 | \$0 | \$35,549 | |
| | | | | \$402,922 | \$173,044 | \$575,966 | \$259,954 | \$16,000 | \$275,954 | 47.91% |
| FY2001 | | | | \$154,103 | \$16,000 | \$170,103 | \$154,103 | \$16,000 | \$170,103 | |
| FY2002 | | | | \$216,375 | \$157,044 | \$373,419 | \$105,851 | \$0 | \$105,851 | |
| FY2003 | | | | \$32,444 | \$0 | \$32,444 | \$0 | \$0 | \$0 | |

Expenditures are through -----> 4/26/2002

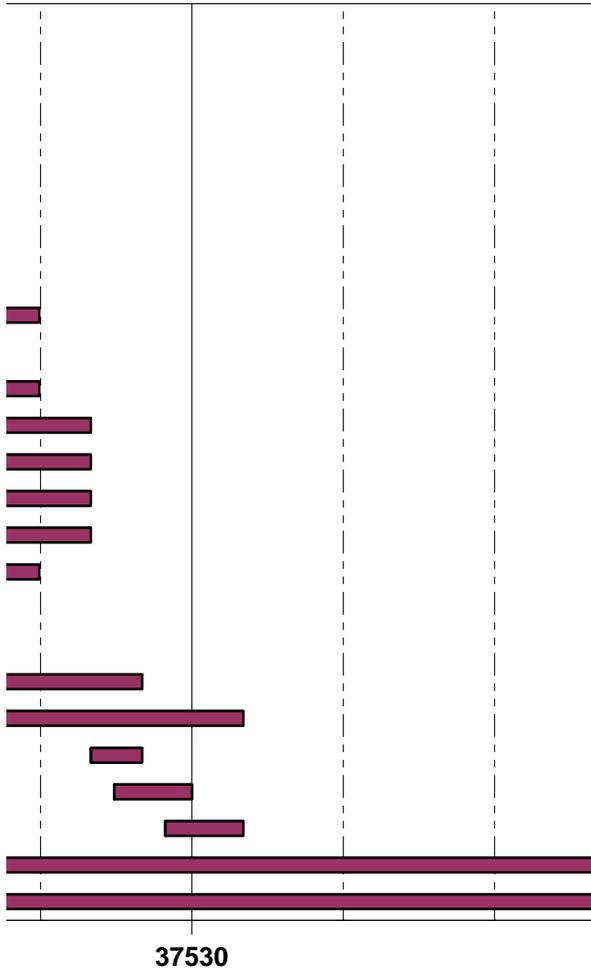
\$60,000 has been obligated by cooperative agreement for work on tasks B, C, I, G, K, and L.

\$99,315 has been obligated by contract for work on tasks I, J, K, and L.

SJRIP Hydrology Model Development - Detailed Tasks and Schedule



and Schedule Timeline



SJRBRIP Hydrology Committee - Long Term Budget - DRAFT

5/1/2002

| Description | FY2003 | | FY2004 | | FY2005 | | FY2006 | | FY2007 | |
|---|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| | USBR Denver | USBR Durango |
| A. Complete 3rd Generation Model | | | | | | | | | | |
| 1 Technical Work | \$13,800 | \$1,200 | | | | | | | | |
| 2 Documentation | \$6,600 | \$5,800 | | | | | | | | |
| 3 Expenses | \$5,100 | | | | | | | | | |
| B. Model Maintenance and Operation | | | | | | | | | | |
| 1 Data Maintenance | \$5,000 | | \$5,000 | \$5,000 | | \$10,000 | | \$10,000 | | \$10,000 |
| 2 Model Maintenance | \$5,000 | | \$5,000 | \$5,000 | | \$10,000 | | \$10,000 | | \$10,000 |
| 3 Hardware & Software Support | \$2,000 | | \$2,000 | \$2,000 | | \$4,000 | | \$4,000 | | \$4,000 |
| 4 Riverware Upgrades / Tech Support | \$2,500 | | \$2,500 | \$2,500 | | \$5,000 | | \$5,000 | | \$5,000 |
| 5 Model Operation | \$15,000 | \$30,000 | \$15,000 | \$45,000 | | \$30,000 | | \$30,000 | | \$30,000 |
| C. Coordination and Support | | | | | | | | | | |
| 1 Labor | \$2,500 | \$41,000 | \$2,500 | \$33,500 | | \$33,500 | | \$33,500 | | \$33,500 |
| 2 Travel | \$4,000 | \$4,000 | \$2,000 | \$4,000 | | \$2,000 | | \$2,000 | | \$2,000 |
| D. Improve Stream Gaging | | \$25,000 | | \$25,000 | | \$25,000 | | \$25,000 | | \$25,000 |
| Totals | \$61,500 | \$107,000 | \$34,000 | \$122,000 | \$0 | \$119,500 | \$0 | \$119,500 | \$0 | \$119,500 |
| TOTAL FOR FISCAL YEAR | \$168,500 | | \$156,000 | | \$119,500 | | \$119,500 | | \$119,500 | |

Notes:

- Task A**, includes completing Tasks J and L from the original budget and schedule.
- For **Task B** breakdown, see next sheet.
- Task C** Breakdown:
Assumes 1/4 FTE Durango Coordinator for FY03; Assumes 0.20 FTE Dgo Coordinator for FY04 and beyond
Denver coordination and support includes attending meetings and preparing status reports
- Task D** is identical to Proposal 2 in FY2002.

Task B Description

Data maintenance is to evolve the data set forward through time and make other adjustments to the data.

Model maintenance is to adjust the model configuration or operating criteria to correct for errors or other changes.

Program support is to make and analyze all model runs that are associated with Section 7 Consultations or to do special runs for the Coordinating Committee. The above computation assumes that 3 consultations per year will occur, requiring 5 model runs/consultation. It also assumes that the Coordinating Committee will request 2 special runs/year. A consultation run will usually require a model reconfiguration and operating criteria implementation and testing. Special runs may also require some setup time. The cost estimate assumes that a consultation run will require 3 days of setup time, 1 day to run and analyze each run, and 3 days to report the results. Therefore, each consultation run will take approximately 11 days. It is assumed that special runs will require 2 days of setup time, 1 day to run and analyze, and 1 day to report results.

USBR Denver TSC - Cost breakdown

Cost per day = \$728

Cost per consultation = \$8,008

Cost per special run = \$2,912

Consultation costs/year = \$24,024

Special run costs/year = \$5,824

Total Model Operations costs/year = \$29,848 \$30,000

* Because the 3rd Generation Model work won't be completed until June 2003, it is assumed that only 1/2 the year would be available for "Model Maintenance & Operation" in FY2003.

* Durango Costs assume 1/4 FTE "New Hydrologist/Modeler" in addition current hydrologist thru FY04 (shadowing)

* New Hydrologist/Modeler 1/4 FTE = \$30,000/yr (approx); shown in "Model Operation" only but would also be involved in data and model maintenance.

d

ir

Notes: The major changes to this version are to generalize the responsibilities of the Modeler from solely "keeper" of the Model but to include all water related models and data for the SJRBRIP. Also the position would no longer be just for the Hydrology Committee but for use by all committees. The position is still proposed to be a full time person with at least half time for the Model and the remainder for the other water related models and data. Overall, the attempt is to establish an institutional structure to assure that water related models and data are maintained for at least two decades.

This proposal will be discussed at the May 7th conference call to determine if there is Hydrology Committee support to recommend the Modeler position, with whatever modifications the committee may want, to the Coordination Committee. In FY2003, the key recommendation is the inclusion of \$30,000 for a modeler.

HYDROLOGY COMMITTEE OF THE SJRBRIP
REQUEST FOR
FULL TIME MODELER
(April 30, 2002 draft)

The recovery of the endangered fish under the SJRBRIP will require at least 15 to 20 years based on the proposed Recovery Goals and the stocking plans being considered by the Biology Committee. Therefore, the operation and maintenance of water related models and data should be institutionalized to assure that the information is available in the future. Funding an employee within the Bureau of Reclamation to "keep" the models and data is logical and appropriate because of the expertise and long term commitment of the agency.

In order to provide for the long term maintenance and operation of models and data, the Hydrology Committee recommends to the Coordination Committee that a full time "Modeler" (engineer/hydrologist) be included in the SJRBRIP budget for FY2003 and continuing indefinitely. The Modeler will be a Reclamation employee and be stationed in the Durango Office of the Western Colorado Projects Office. The Modeler would be responsible for operation and maintenance of the San Juan Basin Hydrology Model (Model) and other water related data and modeling such as temperature, water quality, GIS databases, etc. The Modeler would provide expertise to all committees of the SJRBRIP.

The FY2003 budget request is \$30,000 for the fourth quarter of FY 2003 because the position could not be filled until the fourth quarter of FY2003. Budget requests beyond FY2003 would be about \$120,000 per year, depending on the salary of the person.

The Modeler would have the responsibility to improve, operate, and maintain the Model, other models, and data according to procedures developed by the SJRBRIP. The

Modeler would be funded by the SJRBRIP and therefore SJRBRIP activities would be the first priority of the Modeler; if time is available, the Modeler could work on other USBR priorities within the Durango Office if funded by other sources.

Technical Justification

Currently Reclamation is planning to use three modelers in three different offices to develop, operate and maintain the Model because the expertise and time is not available in one office. This has proven to be inefficient as reflected by the delay of over one year in completing development of the third generation Model. The inefficiency occurs because:

- (1) the three modelers are constantly attempting to balance multiple and conflicting work assignments and are not able to provide the attention and time necessary to perform the Model work and
- (2) the Model is complicated requiring the full attention of one person rather than partial attention of three people.

Discussions with USBR modelers in Denver and people responsible for the Colorado Decision Support System indicate that approximately one person for about half time is needed just for the Model operation and maintenance. (Note: Previous experience indicates that time regarding the Model is usually under-estimated.) Operation and maintenance of the other water related models and data used in the SJRBRIP would utilize the remaining time.

Budget Justification

The cost of a full time FTE is expected to be in the range of \$110,000 to \$120,000 per year depending upon the grade.

The preliminary FY2003 budget included \$30,000 for one quarter of an FTE in the Grand Junction office. This proposal includes the \$30,000 in the FY2003 for a full time person in the Durango Office beginning in the fourth quarter of FY2003. The assumption is that a position cannot be developed and a person hired until the fourth quarter of FY2003.

The preliminary out-year budgets indicate that at least \$50,000 is needed for Model operation and maintenance, which is about one half FTE. These funds had been planned for the three part time modelers in Denver, Grand Junction, and Durango. This proposal involves using the \$50,000 already projected in out years plus adding other water related models and data as described below.

The FY2002 SJRBRIP budget included \$7,360 for temperature monitoring, \$25,350 for water quality monitoring, \$28,246 for GIS database maintenance, \$19,240 for water temperature analysis, and \$22,960 for Navajo/San Juan Temperature Model. Some or all of these tasks could be assigned to the Modeler. For instance, the Temperature

Model already is assigned to USBR but will not be initiated in FY2002 as planned and could easily be assigned to the Modeler in later fiscal years.

Modeler Duties

Operate, maintain, monitor, develop, log changes, and refine water related models.

Maintain, collect, update, correct, refine, and monitor water related data.

Model Duties:

Operate and Maintain the Model for USFWL Section 7 consultations and as requested by Hydrology, Biology or Coordination Committees, and other needs.

Include new data as available.

Integrate refinements and improvements as appropriate.

Evaluate hardware and software potential upgrades.

Evaluate if and when the next generation Model should be developed.

Assist the Chair of the Hydrology Committee in development of annual budgets, plans, and other management tasks relating to the Model.

Attend meetings and coordinate with SJRBRIP Committees, particularly the Hydrology Committee.

Responsible for other types of models needed for the SJRBRIP, such as low flow, temperature, GIS databases, etc.

Review water related tasks in the SJRBRIP LRP and annual budget currently being performed by other entities that might be performed by the Modeler and make appropriate proposals to perform the tasks.

DRAFT - MAY 1, 2002

To: San Juan River Basin Recovery Implementation Program (SJRBRIP) Coordination Committee

From: Pat Page, Chairman, SJRBRIP Hydrology Committee

Subject: Status of the San Juan River Basin Hydrology Model

The following status report on the SJRBRIP Hydrology Model has been developed pursuant to the June 14, 2001, Final Proposal entitled SJRBRIP Recommendation for Hydrology Committee, and now included as Section 5.1.3. of the SJRBRIP Program Document.

BACKGROUND:

The SJRBRIP Hydrology Committee was created as a formal committee of the SJRBRIP in 2001. The purpose of the Hydrology Committee is to review and evaluate all hydrology-related information pertinent to the SJRBRIP. The Hydrology Committee provides advice to the Biology Committee and the Coordination Committee regarding hydrologic aspects of the SJRBRIP for endangered fish and evaluates proposed changes to the San Juan River Basin Hydrology Model and the flow recommendations.

In September 2000, the Hydrology Committee submitted a budget to the Coordination Committee of \$400,000 for the purposes of developing a third generation model. The third generation model is being developed to repair known deficiencies with the existing model and to create a more robust decision model. The initial schedule was for completion of work by September of 2001. For a variety of reasons, including a delay in receiving WAPA funds, unavailability of Reclamation staff to carry out the work, and additional tasks not considered in the initial estimate, the schedule and budget were revised. The new budget was revised and included a budget request of \$533,500 (\$170,100 in FY2001 and 363,400 in FY2002). It was anticipated that development of the third generation model could be completed in September 2002.

STATUS

Work that was completed in FY2001 includes: migration to rules to RPL; development of StateMod data management interfaces; implementation of StateMod return lagging in RiverWare; testing of StateMod procedures in RiverWare; GIS and other data evolution; development of SJRIP database to support StateMod/RiverWare interfacing; development of SJRBRIP Hydrology Model web page; and the design of a modeling system that integrates StateMod and RiverWare models.

Work that has been completed in FY2002 includes: evolution of data management interfaces and SJRBRIP database; evolution of main stem reconfiguration and associated data; development of depletions spreadsheets; specification and

implementation of flow recommendations performance computations in RiverWare; and evolution of StateMod and RiverWare models

Also in FY2002, Keller-Bliesner Engineering has been contracted to assist Reclamation and the Hydrology Committee in reconfiguring the model. Tasks contracted for include assisting in the following: identifying and quantifying incidental losses, identifying and developing disaggregation methods and support data, identifying and quantifying off-stream depletions, formulating operating criteria for the model, and developing documentation for the work completed.

OUTLOOK

To date (as of ____), approximately ____% of the funds for Fiscal Year 2002 have been either expended by Reclamation or obligated through contract or agreement. It is anticipated that all of the funds received by the Hydrology Committee in Fiscal Year 2002 will be either expended or obligated through contract. This includes the \$363,400 for 3rd Generation Model Development, \$23,000 for Improving Stream Gaging and Flow Measurements, and \$10,000 for Additional Model Runs. (Note: The \$10,000 for Additional Model Runs was used to partially cover additional coordination and administration expenses incurred as a result of a new chairman coming on board in the second quarter of the fiscal year.)

The majority of the technical work on the development of the 3rd Generation model will be completed by the end of Fiscal Year 2002. Some technical work originally scheduled for Fiscal Year 2002 did not get completed due to a variety of reasons including unforeseen additions to the work load and staff availability. Work that will carry over into Fiscal Year 2003 includes completing the building and testing of the revised decision model, analyzing runs of the revised decision model, and completing full documentation of the model development.

The request for Fiscal Year 2003 funding will include the following (the formal request for Fiscal Year 2003 funding will be forthcoming):

| | |
|---|-------------------|
| Proposal 1 - Completion of 3 rd Generation Hydrology Model | = \$32,500 |
| Proposal 2 - Model Maintenance and Operation | = \$59,500 |
| Proposal 3 - Coordination and Support | = \$51,500 |
| Proposal 4 - Improve Stream Gaging and Flow Measurement | = <u>\$25,000</u> |

TOTAL REQUEST FOR FY2003 = \$168,500

It is anticipated that the 3rd Generation Model development work will be completed by June 2003. The new model will contain improved data consistency and better modeling methods, it will have more complete documentation, and it will have been developed with better coordination and more input from stakeholders, which should improve the confidence in the results of model runs. If you have any questions regarding this report, please contact me at (970) 385-6560, or ppage@uc.usbr.gov.