

June 26, 2003



San Juan River Basin Recovery
Implementation Program
Hydrology Committee
Conference Call Summary
June 3, 2003

Members/Alternates Present:

Pat Page, Chairman

Ray Alvarado

Ron Bliesner

Dave Frick

Mike Hamman

Steve Harris

John Leeper

Bill Miller

John Simons

Bernadette Tsosie

Pat Turney

Brian Westfall

Others present:

Dave King

Chuck Lawler

Marilyn Greenberg, Program Assistant

Shirley Mondy, Program Coordinator

Representing: _____

U.S. Bureau of Reclamation

State of Colorado

U.S. Bureau of Indian Affairs

Jicarilla Apache Nation

Jicarilla Apache Nation

Water Development Interests

Navajo Nation

Southern Ute Indian Tribe

U.S. Bureau of Reclamation

Navajo Nation

State of New Mexico

U.S. Bureau of Indian Affairs

Representing:

U.S. Bureau of Reclamation

Southern Ute Indian Tribe

U.S. Fish and Wildlife Service

U.S. Fish and Wildlife Service

Introductions and Review and Approval of Agenda Items

Pat Page welcomed the conference call attendees, who then introduced themselves. The agenda was approved without changes or additions.

Review of April 1, 2003, Draft Meeting Summary

This meeting summary was approved as amended.

Review of Action Item Log (attached to 04/01/2003 Draft Meeting Summary)

The action item log was reviewed and updated.

Model Documentation Outline

Dave King emailed the model documentation outline on June 3, 2003. Dave King expects to have the model documentation posted to the model website in late June or early July, 2003.

Committee members are asked to get comments regarding the draft model

documentation outline to Dave King by June 13, 2003. A draft user manual is on the website for anyone's review (seeking in house comments only at this time).

Budget, Schedule, and Status Report

Pat Page and Dave King clarified dates and schedules on the budget and status reports. Dave King stated that it is likely that all technical work will be completed in FY03; however documentation may carry over into FY04. Money is available in FY04 for model operation and maintenance that can include model documentation work as well. Model operation and maintenance is part of the continued/ongoing model programming.

Ray Alvarado inquired about going over budget for model development. Dave King explained that it is still speculative as far as how much time will be needed for analysis and that they may be able to complete everything on time and on budget. Pat Page stated that we still have 3 - 4 months to continue work on the model and documentation.

Ray Alvarado questioned and received clarification that if the model work goes over budget, it is due to unforeseen circumstances. The scope of work was well-defined originally; unforeseen circumstances just delayed the process.

Currently the budget is balanced with percent complete tasks. Most Committee members felt that additional money is not needed for model documentation in the FY04 scope of work.

Pat Page explained that if the FY04 money budgeted for model runs is not needed for the estimated 3 consultations per year (to include 5 model runs per consultation, with 2 additional runs allotted for the Coordination Committee [17 total model runs]), it can be given back to the Program for other needed tasks, but it cannot be carried over to the next fiscal year.

Dave King stated that if disaggregation and the natural flow regime are resolved pretty easily, the model will be completed by the end of September. Dave King will be working on the model full time from June until the model is complete.

FY04 Draft Scopes of Work: Model Maintenance and Streamflow Improvement

Model Maintenance: It was agreed that "and documentation" be added under objective #2. Shirley Mondy suggested that the estimated consultations and model runs projected per year be included in the scope of work. One Committee member suggested that item # 6 is Program administration rather than model operation and maintenance. Shirley Mondy suggested that this budget item be taken out and added to Tom Chart's Program Management scope of work. Pat Page stated that the new FY04 budget total, without this item, would be \$73,250. **Pat Page will add the documentation under objective #2, add the specifics about the estimated/projected model runs that are budgeted for FY04, and will take the administration tasks out of this scope of work. This will also be noted in the out year funding. It was moved and seconded that this amended budget be approved by the Hydrology Committee.**

Streamflow Improvement: Pat Page introduced the USGS Gaging Scope of Work and explained that the additional gaging trips were charged to the Program, while normal gaging trips were a cost share agreement between USGS and Reclamation. **Pat Page will invite Mike Roarke to the August Hydrology Committee meeting to get an update report on the effectiveness of additional gage readings. Pat Page will also call USGS and verify that**

the FY04 budget for the additional gage readings will cover the work. Pat will clarify with the Albuquerque Reclamation office whether there is a reporting requirement implicit in their contract with USGS. Pat Page will add this to the scope of work this week. It was moved and seconded that this scope of work be approved as amended.

Trigger for Declaring “Extreme Conditions” – Response To Request For Criteria and Thresholds Used in Determining Extreme Conditions
Pat Page explained that Tom Nesler, State of Colorado Biology Committee member, had requested a written response regarding the criteria and thresholds used by the Hydrology Committee to create their FY03 trigger for extreme conditions. It was suggested that two or three Hydrology Committee members draft a response. ***Pat Page and Steve Harris agreed to clarify the 2003 decision and get it out to the Hydrology Committee for review.*** Shirley Mondy stated that it was important to clarify for the Coordination Committee why the Hydrology Committee determined that 2003 was an extreme year. At the next Hydrology Committee meeting, a subcommittee will be formed to develop definitions and parameters to use for defining extreme conditions for future years.

Due to extreme conditions this year, the Hydrology Committee recommends that the Program support the shortage sharing agreement for 2003. This motion was seconded and approved by the Hydrology Committee.

Navajo Reservoir Operations, Shortage Sharing Update, Hydrologic Conditions Update

Pat Page explained that the shortage sharing agreement has been endorsed by all 10 parties. The Office of the State Engineer, the Service, and Reclamation are not signatories to the shortage sharing agreement, but do support the plan. A letter from the Reclamation Regional Director’s Office will be sent to the Navajo Unit Contractors, and all parties involved in the agreement, stating that Reclamation acknowledges the agreement and will incorporate this in the 2003 operations.

Pat Page also explained that the agreement incorporates limiting water users diversions and sharing equally in the shortages. Prior to this, there has not been any river administration. This agreement was adopted in lieu of strict river administration this year which would likely lead to litigation.

Pat Turney stated that the latest measurement equipment installation date is mid-July, satellite systems are ready to be switched on as soon as the rest of the equipment comes in and gets installed. Pat Turney stated that Wallis Island downlink raw satellite data is available. The State Engineer’s Office will not be adding the analyzed data to a website. Ron Bliesner asked whether there might be a weekly email report disseminated to other users? Pat Turney was unaware of whether any of this information would be disseminated outside the State Engineer’s Office.

John Simons discussed the most probable inflow forecast. He stated that inflows are higher than predicted for May, yet the April-July volume is essentially the same. Reclamation is estimating that 120,000 af will likely be in storage in Navajo Reservoir by the end of September, 2003. Pat Page added that Reclamation is currently releasing 450cfs out of Navajo Dam, and hopes to maintain that through mid-June. The shortage sharing agreement states that the

release will be 500 cfs starting in June, however, after discussions with the San Juan Flyfishing Federation, the minimum release will be 450 cfs this summer. The target base flow will be computed using the three gage method developed by the Biology Committee.

Update on Subcontracting Subcommittee

Shirley Mondy sent the draft contract procedures out on May 19th. This is a draft proposal for contracting new starts for the Program. The Coordination Committee would like to vote on this at their July 17th meeting and wants to receive feedback from all Committee members before then.

Ray Alvarado asked about whether there would have to be a peer review line item for each scope? Shirley Mondy stated that the Biology Committee has a scope of work that covers all peer review. This draft contract procedure is more about how to handle new starts. Once new starts are established, then requests for proposal (RFP's) could be developed. RFP's or independent work would then go through a peer review process for ranking and technical merit. It would probably be most appropriate for the peer review costs to be included in the Program administration or coordination budget. **Please get comments to Shirley Mondy, Pat Page, or Bill Miller by the end of June, including feedback on how the peer review process should work, so they can be forwarded to the Coordination Committee for discussion at their July 17 meeting.**

Outstanding Data Needs to Complete Modeling Work

Dave King needs the 1994 - 2000 perturbations. Ron Bliesner emailed these to Dave King on June 2nd.

Review New Action Items

New action items were reviewed and will be added to the Hydrology Committee Action Item Log.

Next Meeting

The next meeting will be held on August 5, 2003, at 8:30 am, at the Farmington Civic Center. *The Committee will be notified once the location is confirmed.*

Table 2. San Juan Hydrology Model - Data and Model Development Costs
April 2003 Budget

Task	FY2001 Proposal Schedule	Professional time - staff days			FY2001 Funds	FY2002 Funds	FY2003 Funds	Estimated Cost	Target Schedule
		USBR	Consultants	Total					
A. Analyze and correct gage errors.	Nov-00	0.0	20.0	20.0	\$16,000	\$0	\$0	\$16,000	Sep-01
B. CDSS interface	Nov-00	76.5	7.0	83.5	\$28,321	\$23,451	-\$804	\$50,968	Nov-02
C. Data systems development	Jan-01	76.5	7.0	83.5	\$28,321	\$23,451	-\$804	\$50,968	Nov-02
D. Correct 1970 -1993 database	Mar-01	33.0	0.0	33.0	\$4,088	\$16,377	\$1,099	\$21,564	Nov-02
E. Extend data sets to 1929	Apr-01	16.0	0.0	16.0	\$0	\$9,471	\$1,781	\$11,252	Nov-02
F. Extend data sets from 1993 to 1999	May-01	16.0	0.0	16.0	\$0	\$9,471	\$1,781	\$11,252	Nov-02
G. Configure and Calibrate to CDSS	Jun-01	89.0	11.0	100.0	\$20,873	\$33,484	\$13,203	\$67,560	Nov-02
H. Implement functionality in Riverware	Jun-01	26.0	0.0	26.0	\$16,788	\$0	\$0	\$16,788	Sep-01
I. Daily disaggregation	Aug-01	25.0	35.0	60.0	\$0	\$36,855	\$8,320	\$45,175	Oct-02
J. San Juan Model upgrade / calibration	Sep-01	70.5	80.0	150.5	\$0	\$73,307	\$38,666	\$111,973	Feb-03
K. Coordination with stakeholders	Throughout	84.3	13.0	97.3	\$18,939	\$44,300	\$2,822	\$66,061	Jun-03
L. Develop complete documentation	Nov-01	77.0	25.0	102.0	\$13,601	\$28,329	\$27,156	\$69,086	Feb-03
Expenses					\$23,173	\$41,004	\$3,500	\$67,677	
Total		590	198	788	\$170,103	\$339,500	\$96,720	\$606,323	Feb-03

Expenses include travel, contracting costs, software, work station procurement and training, work station support, and RiverWare modifications. FY2002 funds include \$108,465 of consultant work to be performed in 2003. Negative FY2003 costs also reflect contractor carryovers.

April 2003 Budget

Task	FY2001 Proposal Schedule	Professional time - staff days			FY2001 Funds	FY2002 Funds	FY2003 Funds	Estimated Cost	Target Schedule
		USBR	Consultant	Total					
A. Analyze and correct gage errors.	Nov-00	0.0	20.0	20.0	\$15,335	\$0	\$0	\$15,335	Sep-01
B. CDSS interface	Nov-00	74.0	4.5	78.5	\$28,321	\$21,558	\$678	\$50,557	Jul-03
C. Data systems development	Jan-01	74.0	4.5	78.5	\$28,321	\$21,558	\$678	\$50,557	Jul-03
D. Correct 1970 -1993 database	Mar-01	33.0	0.0	33.0	\$4,088	\$16,377	\$1,356	\$21,822	Oct-02
E. Extend data sets to 1929	Apr-01	16.0	0.0	16.0	\$0	\$9,471	\$1,356	\$10,827	Oct-02
F. Extend data sets from 1993 to 1999	May-01	20.0	0.0	20.0	\$0	\$9,471	\$3,676	\$13,147	Jul-03
G. Configure and Calibrate to CDSS	Jun-01	87.0	11.0	98.0	\$20,873	\$33,484	\$10,856	\$65,213	Jun-03
H. Implement functionality in Riverware	Jun-01	26.0	0.0	26.0	\$16,788	\$0	\$0	\$16,788	Sep-01
I. Daily disaggregation	Aug-01	27.0	35.0	62.0	\$0	\$36,855	\$9,312	\$46,167	Jun-03
J. San Juan Model upgrade / calibration	Sep-01	73.5	83.0	156.5	\$0	\$75,578	\$41,700	\$117,278	Aug-03
K. Coordination with stakeholders	Throughout	84.3	13.0	97.3	\$18,939	\$44,300	\$0	\$63,239	Sep-03
L. Develop complete documentation	Nov-01	69.9	30.0	99.9	\$13,601	\$32,114	\$23,608	\$69,323	Sep-03
Expenses					\$23,173	\$41,004	\$3,500	\$67,677	
Total		585	201	786	\$169,438	\$341,771	\$96,720	\$607,929	Sep-03

Expenses include travel, contracting costs, software, work station procurement and training, work station support, and RiverWare modifications. FY2002 funds include \$108,465 of consultant work to be performed in 2003. Negative FY2003 costs also reflect contractor carryovers.

April 2003 Budget

Tasks By Tasks Status
06/02/03

Task	Actual Schedule	Target Schedule	Amount Expended	Percent Expended	Percent Completion	Status
A	Sep-01	Sep-01	\$15,335	100%	100%	Initial analysis is complete. Task may be revisited after new model is available.
B		Jul-03	\$53,323	105%	100%	Interfacing of daily and monthly time-series data is complete. Node and support data interfacing are partially completed.
C		Jul-03	\$53,323	105%	100%	Database interfacing is completed.
D		Oct-02	\$23,954	110%	100%	Provisional data set exists.
E	Jan-03	Oct-02	\$11,407	105%	100%	Provisional data set exists.
F		Jul-03	\$11,987	91%	93%	Provisional data set exists.
G		Jun-03	\$65,801	101%	100%	Reconfiguration is essentially complete. Verification continues
H	Sep-01	Sep-01	\$16,788	100%	100%	StateMod return flow methods are implemented. New RiverWare requests types are implemented. It was demonstrated that StateMod water rights processing can be duplicated in RiverWare if required.
I		Jun-03	\$45,618	99%	95%	Data, models, and methods to support disaggregation are completed. Incorporation of output remains
J		Aug-03	\$40,920	35%	34%	Some sensitivity testing has been conducted and analyzed. Initial scoping of operation alternatives is complete. Scoping, testing, and implementation is ongoing.
K		Sep-03	\$61,751	98%	95%	Ongoing. Work plan, schedule, and budget are updated at least monthly
L		Sep-03	\$40,256	58%	50%	Web page has been implemented that includes links to models, rulesets, and documentation. Links are available to 2nd generation documentation and drafts of several third generation documents. Ongoing.
Expenses			\$51,196			
Total			\$491,659	81%	82%	Monthly Log
<p>Differences exist between percent expended and percent completed due to work funded by other sources of funds and other reporting factors. Percent completions are based upon all work to complete project whereas percent expended are based upon program funds that are budgeted to respective tasks.</p>						<p>A draft user's manual was completed that includes documentation of data, DMI scripts, data updating instructions, and model updating instructions which includes all of the monthly models. Additional second generation functions were converted from UDF's (User defined functions) to compiled RPL (RiverWare Policy Language) functions and the last second generation model was created to facilitate comparisons to the third generation model. Configuration of the bridge model was completed and the DMI's were added. A daily version of the ALP rules and functions were developed. The draft hydrology model table of contents was reviewed. Arizona and Utah historic data were revised with revised CU&L data. Models were updated with revised StateMod data that include the revised Arizona and Utah data, small configurations changes, and other minor adjustments. The revised naturalized flows are being reviewed.</p>
Expenditures are through -----> 5/31/2003						

FY2002 funds include \$108,465 of consultant work to be performed in 2003. Negative FY2003 costs also reflect contractor carryovers.

April 2003 Budget

06/02/03

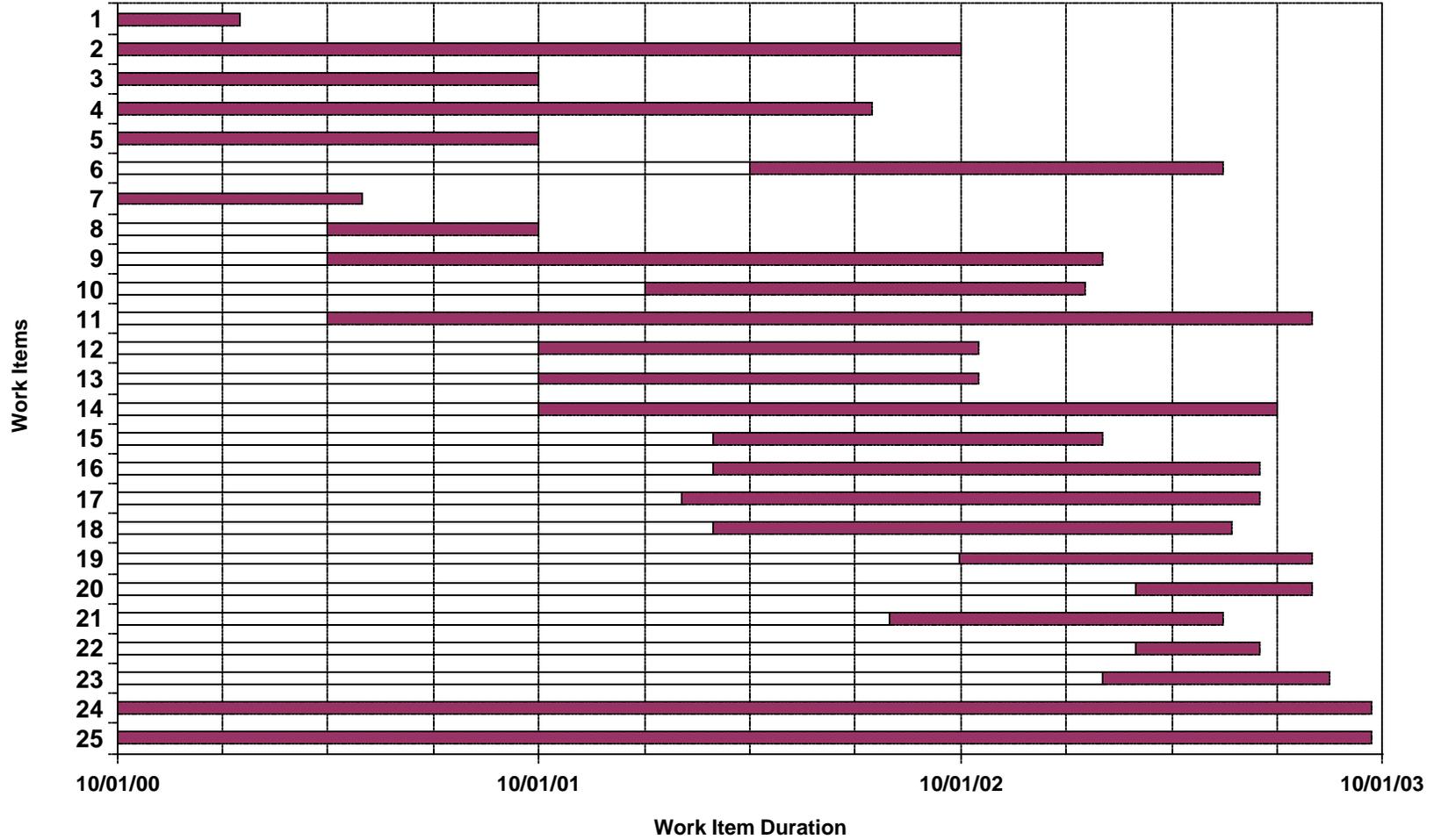
Task	Staff Days			Costs			Expenditures			
	BOR	Consultants	Total	BOR	Consultants	Program Budget	BOR	Consultants	Program Total	Percent Expended
A	0	20	20	\$0	\$15,335	\$15,335	\$0	\$15,335	\$15,335	100%
B	74	5	79	\$47,150	\$3,407	\$50,557	\$48,024	\$5,299	\$53,323	105%
C	74	5	79	\$47,150	\$3,407	\$50,557	\$48,024	\$5,299	\$53,323	105%
D	33	0	33	\$21,822	\$0	\$21,822	\$23,954	\$0	\$23,954	110%
E	16	0	16	\$10,827	\$0	\$10,827	\$11,407	\$0	\$11,407	105%
F	20	0	20	\$13,147	\$0	\$13,147	\$11,987	\$0	\$11,987	91%
G	87	11	98	\$56,886	\$8,327	\$65,213	\$57,474	\$8,327	\$65,801	101%
H	26	0	26	\$16,788	\$0	\$16,788	\$16,788	\$0	\$16,788	100%
I	27	35	62	\$19,672	\$26,495	\$46,167	\$19,672	\$25,946	\$45,618	99%
J	74	83	157	\$54,447	\$62,831	\$117,278	\$25,163	\$15,757	\$40,920	35%
K	84	13	97	\$53,398	\$9,841	\$63,239	\$53,398	\$8,353	\$61,751	98%
L	70	30	100	\$46,613	\$22,710	\$69,323	\$30,047	\$10,209	\$40,256	58%
Expenses				\$45,379	\$22,298	\$67,677	\$44,196	\$7,000	\$51,196	
D&MD	585	201	786	\$433,279	\$0	\$607,929	\$390,134	\$101,525	\$491,659	81%
Other									\$43,963	
Total									\$535,622	
FY2001				\$154,103	\$15,335	\$169,438	\$154,103	\$15,335	\$169,438	
FY2002				\$182,456	\$159,315	\$341,771	\$198,016	\$86,190	\$284,206	
FY2003				\$96,720	\$0	\$96,720	\$57,275	\$0	\$57,275	

Expenditures are through -----> 05/31/03

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

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

SJRIP Hydrology Model Development - Detailed Tasks and Schedule Timeline



SJRIP Hydrology Monthly Log

The following is a monthly log of work on third generation San Juan Basin Hydrology Model (SJBHM), associated data development, and operation and maintenance of SJBHM. The SJBHM is used to support the San Juan Recovery Implementation Program (SJRIP). Additional information is available from the SJRIP Hydrology Committee web page at <http://wcao.uc.usbr.gov/envprog/sjrip>.

May, 2003

A draft user's manual was completed that includes documentation of data, DMI scripts, data updating instructions, and model updating instructions which includes all of the monthly models. Additional second generation functions were converted from UDF's (User defined functions) to compiled RPL (RiverWare Policy Language) functions and the last second generation model was created to facilitate comparisons to the third generation model. Configuration of the bridge model was completed and the DMI's were added. A daily version of the ALP rules and functions were developed. The draft hydrology model table of contents was reviewed. Arizona and Utah historic data were revised with revised CU&L data. Models were updated with revised StateMod data that include the revised Arizona and Utah data, small configurations changes, and other minor adjustments. The revised naturalized flows are being reviewed.

April, 2003

The primary activities during this month were coordination, creation of additional DMI scripts to facilitate maintenance, adjustment of StateMod model, and development of a draft User's Manual.

March, 2003

The primary activities were a closer examination of the StateMod natural flows and model runs, documentation, budgeting and scheduling. In addition, scripts were developed to facilitate long-term operation and maintenance models.

February, 2003

The primary activities were continuation of the validation process and completion of the migration model configuration and rules. Debugging of the disaggregation model unearthed a StateMod bug that was corrected. Additional technical transfer was provided to field personnel. RiverWare DMI's were modified to support platform independence using latest RiverWare and perl scripts. Work has commenced on the bridge model.

January, 2003

The primary activity was continuation of the validation process. The validation required additional configuration adjustments in StateMod and RiverWare, additional DMI's, and creation of a ruleset to compute aggregated values and to compensate for differences between StateMod and RiverWare. Additional knowledge of StateMod was also acquired to complete the validation. The other activities were technical transfer from Denver to Durango, moving the publicly available data, models, rulesets, and documentation to <ftp.usbr.gov>, updating the daily disaggregation configuration, and creating an initial configuration of the daily decision model.

December, 2002

Several iterations of provisional StateMod output were obtained from CWCB that were used to validate the daily disaggregation model and the monthly migration model. The daily disaggregation model has been completed except data updates and testing the migration to the daily decision model. The monthly validation model was used to complete development of static data DMI's (elevation area tables, elevation volume tables, stage discharge tables, lagging coefficients), initial conditions DMI's (lagging and reservoirs), and time-series DMI's. The primary validation activity has been to do configuration adjustments and node mapping adjustments related to StateMod carried water cases. A regression that was used to forecast San Juan Chama diversions was updated. Data are being collected to update the forecast error regression.

November, 2002

The provisional data set was documented for the Hydrology Committee. Static and dynamic (time-series) data DMI's were added to the validation and migration models. Static data were evolved into RiverWare format that included stage-discharge tables, area-capacity tables, and evaporation tables. Revised StateMod gains distribution coefficients were incorporated into the daily historic gains model. Some testing of new RiverWare data types and RPL functions was done to investigate their potential use in the new model. An initial StateMod data set was obtained for the historic scenario. This model was tested and reviewed and use of the data in RiverWare data stores and models was initiated. Alternatives were investigated to replace the web site's ftp services. Animas forecasting options were investigated.

October, 2002

A daily natural flow model to support the daily decision model was built and partially populated. DMI control, mapping, and scripts were completed for this model. A ruleset to disaggregate extended monthly gage flows and historic depletions was developed. Daily flow fractions were developed for mainstem gages and tributaries. Model will compute daily gains for the mainstem gages that will be used by daily decision model. Static data DMI's were updated.

Provisional New Mexico, Arizona, and Utah historic and baseline data sets were provided to CWCB in StateMod format.

September, 2002

Second generation documentation was completed except for some loose ends. Completed updating of historic gaged flows through water year 2000. Conducted technical transfer to new person with focus on support of long-term data maintenance. Improved DMI's, control files, map files, and run scripts to facilitate long-term data maintenance. Created initial documentation of data stores, scripts, control files, map files, and DMI's to facilitate long-term data maintenance. Adjusted schedule and budget to reflect actual FY2002 work, expenditures, and schedule. Worked on daily natural flows model, DMI's, and rulesets. Spreadsheet aggregation utilities were developed.

August, 2002

Preliminary power depletions and system efficiencies were obtained from NMISC. NIIP historic and baseline depletions were developed. Reclamation updated their historic streamflow data and Reclamation reservoir operations data. Reclamation operations data were provided to CWCB. Jicarilla hydrology node information (precipitation and area) was obtained. SJC data set was extended through 2000 and daily flow fractions for the tributaries were developed. An improved SJC configuration and ruleset was tested with the second generation and implemented in the migration model. Rules were tested to support migration of forecasts data from the migration model to the decision model. First draft of revised operating criteria for Navajo was formulated.

July, 2002

Discussions were held with NMISC regarding the mainstem configuration. The irrigation nodes are established but acreage adjustments remain. The non-irrigation configuration is nearing completion. NMISC needs to provide efficiencies, capacities, and non-irrigation depletions. The Jicarilla nodes were located and a hydrology node provided for their water. Daily depletion disaggregation fractions were obtained from the contractor and their usage was tested in RiverWare. A forthcoming version of RiverWare will compute diversion requests of user provided depletion requests. The ability to use user provided frost dates was added to Reclamation's Blaney-Criddle model. A data management interface (DMI) was developed for StateMod daily data to facilitate future data updating. DSS DMI's were also developed to facilitate data archiving.

June, 2002

The RiverWare model and SJRIPDB were modified for known configuration changes. New Mexico non-irrigation configuration remains. Return flow apportions were computed for the known configuration. The ET spreadsheets were adjusted and a New Mexico irrigation spreadsheet was prototyped. Additional climate data were obtained or developed including daily data for all of New Mexico. Disaggregation data and procedures were evolved. Options to implement the disaggregation data and procedures in the RiverWare models were scoped. Additional data management utilities were developed and long-term options to maintain and update data were investigated. Available historic USGS and reservoir operations data were obtained.

May, 2002

Daily climate data were obtained to support daily evapotranspiration estimates that will be used to facilitate disaggregation of irrigation depletions. Monthly climate data for the entire basin were updated through 2000 except for 3 stations that not yet available. Climate station weights were developed for the anticipated New Mexico irrigation depletion nodes. NMISC cropping patterns and acres were extended from 1929 through 2000 by depletion node in Blaney-Criddle format. The cropping patterns are being used for the daily evapotranspiration computations as well. The ability to optionally compute irrigation depletions using original Blaney-Criddle was added to the code and a comparison run was made. Work was done on other disaggregation data development as well. Hammond historic data were obtained and integrated with historic estimates. Considerable work was done on the StateMod and RiverWare models for the mainstem reconfiguration.

April, 2002

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.

March, 2002

An initial cut was made to map New Mexico's irrigation depletions to StateMod and RiverWare nodes. After adding expected non-irrigation nodes, an initial cut was made on return flow distribution. The configuration is being negotiated with NMISC. A discussion was held with CWCB regarding supplemental hydrology

nodes (gains between gage nodes) on the main stem of the San Juan. The latest version of CWCB's San Juan StateMod model was obtained to use as a starting point for the main stem reconfiguration. The RiverWare model will be built consistent with the StateMod although some configuration issues remain in both Colorado and New Mexico.

February, 2002

The database and software that are being used to create the monthly model from the StateMod natural flow model was extended to support multiple versions of models. In addition, the ability to distinguish and create water objects by RiverWare depletion request types was provided. This will enable optional use of acres and rates versus user provided depletion requests. The latest San Juan StateMod model was obtained to begin reconfiguration of the main stem San Juan nodes. Provisional acres and cropping patterns were obtained from New Mexico for computation of historic depletions. Initial work was begun on historic Arizona and Utah depletions including obtaining revised data from Utah. The flow recommendations performance spreadsheet was evolved in anticipation of daily model output. RPL (RiverWare Policy Language) functions were specified to compute the flow recommendation statistics within a model run so that they can be used to optimize releases. This implementation will be funded by research funds because it has application in other basins.

January, 2002

Technical work was limited due to other obligations but a few data management support items were completed that include development of DMI's to import into RiverWare and export data from RiverWare in a format that is consistent with the spreadsheets produced by a RiverWare data file (RDF). These DMI's will enable us to make model updates using output of previous runs. In addition, the ability to optionally include html targets to objects and slots was added to selected DMI's. These formats will be used to provide data access via the internet to stakeholders. A spreadsheet and documentation were developed to facilitate computation of equivalent RiverWare depletion slots from equivalent StateMod data. Another spreadsheet was developed to convert and store the previous model's climate data in the new model's monthly format.

December, 2001

Technical work was limited due to vacation, other obligations, development of the budget, and preparation of contract specifications. However, a few small items were completed. An application was created to create and update a table of model runs that provides links to data and plots. These tables will be added to the web site when an appropriate data format is available. Technology were obtained from another project that has developed a way to create and post a set of plots to an Acrobat (pdf) file from a standard RiverWare output file (RiverWare Data File (RDF)). An inconsistency on use of the minimum pumping to ALP was

corrected and posted to the web site rulesets. The process to create a RiverWare model from StateMod was evolved to be more usable as the respective models are reconfigured.

A cooperative agreement was prepared with Kelller-Bliesner to assist with work plan items 10, 16, 20, 23, and 24. Work under this cooperative agreement has not commenced

November, 2001

Technical work was limited due to vacation, other obligations, and development of the budget. However, a few small items were completed. A utility to convert StateMod area-capacity data to RiverWare format was developed and a DMI was created to import the area-capacity data into RiverWare. Documentation of static data DMI's was drafted and added to the web page. Some adjustments were made to the web pages for consistency and to prototype inclusion of data and plots from models. An outline of documentation needs was provided to CWCB. Configuration and data issues were discussed with NMISC. A disaggregation needs document was drafted and provided to Keller-Blisner for review and extension.

October, 2001

Minimal technical work was done due to vacation, other obligations, work station procurement, and development of the budget and contract specifications.

September, 2001

1. Task H – Completed testing of StateMod water right procedures. This required fixing of RiverWare bug that was discovered in late August.
2. Task L – Slightly revised web page and scoped means to link to model visualization pages. Improved SRJIP database software to facilitate posting of data to web site.
3. Task K – Prepared background material and met with Hydrology Committee subteam and full team.
4. Task A - Gage errors were analyzed and correction options were evaluated.

August, 2001

1. Task L – Official web page was posted and slightly revised.
2. Tasks H and J – Additional testing StateMod water right procedures was conducted.
3. Task C - New Mexico Interstate Streamflow Commission was asked for clarification on irrigated lands identified by their GIS coverage.
4. Task H - CADSWES completed incorporation of lagged return flows into decision functions. Reclamation verified that they worked properly.

5. Task K - Revised Plan Of Study to reflect actual progress made in FY2001 and expected rollover into FY2002.

July, 2001

1. Tasks G and J - We fine tuned the programmatic means of creating RiverWare model from a StateMod model. Although this process worked for the Gains model, initially RiverWare would not save the validation model. This problem has been corrected. The validation model with existing main stem configuration was programmatically created using spatial coordinates that were estimated from known latitudes and longitudes. This resulted in some portions of the model being extremely congested. The locations of objects is being adjusted to improve model navigation. The model will be recreated programmatically after the improved visualization and mainstem reconfiguration are completed.
2. Task L – Reclamation Salt Lake web master was contacted to obtain an official site for the hydrology model web page. A numeric site has been assigned but the official name awaits registration. Committee will be posted as soon as site is posted.
3. Tasks H and J – We scoped and tested implementation of StateMod water rights procedures in RiverWare. Testing to date has not included reservoirs because a few additional StateMod procedural questions remain to be resolved. A report of the implementation has been drafted and will be provided to the committee after testing is completed.
4. Tasks H and J – We had a meeting with CADSWES to discuss possibility of using RiverWare's accounting functionality to support water right rules and areas for improved performance. This will consist of creating compiled versions of some of the RPL (RiverWare Policy Language) functions that were written to support water rights rules.
5. Tasks C and L – An automated means of creating a web page visualization of a RiverWare model has been developed (by another project and borrowed for our use). We will provide a link to the gains model when the official web site is posted. We will use this mechanism to provide access of model data to those committee members that do not have access to RiverWare.

June, 2001

1. Developed programmatic means of creating RiverWare model from StateMod model. This will facilitate updating of RiverWare model as reconfiguration changes are made to StateMod model. Using software to create the RiverWare

model also reduces the chances of making linking errors. We used this program to create first version of validation model.

2. Met with CWCB to clarify additional StateMod data and methods.
3. Created Piedra Validation model. We intend to use this model and a calibration model of same subbasin to verify DMI's, compare basic items to StateMod, and to prototype water rights emulation in RiverWare. After our meeting with CWCB, this model is matching nicely with StateMod to the extent that it has been checked.
4. Developed a means of visualizing a RiverWare model on a web page. The technology was developed by another project and borrowed for our use in SJRIP. This will provide non RiverWare user's access to RiverWare data with visualization on a web page that appears similar to an actual RiverWare model.
5. A number of utilities were developed to support RiverWare model creatio, and visualization.
6. Researched options to implement water rights emulation in RiverWare.
7. Updated plan of study data and responded to comments to plan of study.

May, 2001

1. Developed log of first and second generation models and rulesets and created web access of same. Included in this structure are a model and ruleset naming convention, links to models and rulesets, links to scenario model runs, and links to documentation.
2. Created a Hydrologic Database (HDB) in Denver to support data access of model input and output data.
3. Met with CADSWES to discuss modifications to HDB to support depletions datatypes. The modifications are minor and non program funded.
4. Met with Ray Bennet of CWCB to clarify how CDSS StateMod water right's algorithm works and to discuss StateMod implementation of the variable efficiency method.
5. Made initial San Juan main stem reconfiguration after discussions with NMISC. Additional discussions with NMISC to clarify some items.
6. Completed software to support mapping of RiverWare nodes to CDSS and DMI's.

7. Built validation model of Piedra basin. Still need to populate and test.
8. Obtained and tested a newer version of RiverWare that corrected a problem with initial conditions for multiple lagged return flows. This version of RiverWare also has a new rules function that should help in SJRIP. It does not yet have the ability to see lagged return flows when estimating reservoir releases. That modification should be available by June 22.

October, 2000 through April, 2001 Activities

1. Previous generation of RiverWare model rules were migrated to run entirely in "new" rules environment. Previous generation of rules was a bridge between "new" and "tcl" (old) rules system. Although actual rules in new model may vary considerably from the previous generation, individual functions may still be used in the new model. Completion of this task enables us to eliminate most compatibility issues between model generations. This task was completed before SJRIP funds became available using other sources of funding.
2. All comments from previous generation of model were incorporated to the extent possible. It was important to complete this documentation before the modelers became too involved in the new model development. This task was mostly completed without SJRIP funds.
3. Two sensitivity runs were made with the previous generation of model to better understand how the system responds. These runs have not been analyzed (post processed) but could provide some information to improve the next generation model.
4. A contract has been arranged for analyzing and correcting gage errors.
5. Reclamation GIS sets have been updated with Colorado, New Mexico, and USGS coverages. In addition, research funds were used to develop a methodology to estimate the portion of return flows that return to subbasins generated using GIS technology. Return flow proportions are important when estimating water supply of individual water users in StateMod. Some programs funds were used to apply this technology to the San Juan basin. The technology has been provided to Colorado Water Conservation Board to use as they see fit to improve the SJRIP StateMod model.
6. Reclamation have acquired all necessary CDSS (Colorado Decision Support System) software, existing San Juan StateMod model, support data, and documentation. Reclamation staff have worked with CWCB to clarify StateMod methods, data, and operating criteria.

7. DMI's (Data Management Interfaces) have been developed to move data between StateMod and RiverWare, between StateMod and two common Reclamation data formats, and between StateMod and HDB (Hydrologic Data Base). A prototype HDB has been installed in Denver.

8. StateMod return flow methods have been created in RiverWare using research funds. The methods have been tested but additional modifications needs to been completed before the return flow methods can be seen by rules when lagging is invoked.

9. Mapping of CDSS nodes to RiverWare nodes is nearly complete. A validation model will be built initially to verify that water moves through the RiverWare model as it does in StateMod. This model should be completed and tested by mid May.

HYDROLOGY COMMITTEE ACTION ITEM LOG FY03

	<i>Action Item</i>	<i>Meeting/ Origination Date</i>	<i>Responsible Party</i>	<i>Due Date</i>	<i>Revised Date</i>	<i>Date Completed</i>
4	Add model runs and other information to the permanent hydrology website: http://wcao.uc.usbr.gov/envprog/sjrip/ .	7/25/01	Dave King	Ongoing		Continues to Update
5	Model modification briefings.	7/25/01	Reclamation and Keller-Bliesner	Ongoing		
12	Any new data or methods incorporated into RiverWare or State Mod will be shared with the Hydrology Committee.	7/25/01	Keller-Bliesner and Reclamation	Ongoing		
33	New Mexico will work on developing data on non-irrigation depletions starting in March. [10/29/02] New Mexico has provided provisional data on the prior depletions. Staff will not be available for the next few months to work on this. <i>Dave King has extrapolated pre-1970 non-irrigation depletions data back to a baseline and will send the spreadsheet to Rick Cox.(completed as of 2/11/03)</i> Dave will provide written explanation of how extrapolation was done to Hydrology Committee. The model is operating with provisional generation II data until New Mexico submits further data.	11/27/01	New Mexico	March 2002	Extended	
34	Gage error analysis discussion: the Hydrology Committee still needs to determine whether big losses are due to daily disaggregation. The Committee has the option to re-evaluate losses once the 3 rd Generation model is complete.	11/27/01	Hydrology Committee		When the Model is complete	
58	John Whipple will provide a written statement of New Mexico's concerns re: State Mod. Based on that, Ray Alvarado will provide a written description of StateMod. New Mexico's comments have not yet been received. [10/29/02] Still on New Mexico's back burner.	5/7/02	John Whipple Ray Alvarado	6/17/02	Extended	

	<i>Action Item</i>	<i>Meeting/ Origination Date</i>	<i>Responsible Party</i>	<i>Due Date</i>	<i>Revised Date</i>	<i>Date Completed</i>
63	In the development of the model, if another data set is found that disagrees with the data provided by the state (or anyone else), then that information needs to be discussed at a Hydrology Committee meeting.	6/25/02	Modelers Hydrology Committee	Immediately Ongoing		
78	The Committee agreed to fund add'l trips by USGS, and suggested that USGS fund the necessary improvements (new cableway) at Shiprock. Pat Page will talk to BOR contract people to get a contract going for USGS for 2003 (done Dec. 2, 2002). Ron Bliesner will talk with John Leeper to see if there is anything that can be done from Navajo Nation to assist USGS in obtaining access. Jerry Thomas at BIA in Shiprock manages those access contracts - he may also be able to help.	10/29/02	Hydrology Committee Pat Page Ron Bliesner		April 1, 2003	
81	Add peer review discussion to next summer's meeting agenda when Amy Cutler comes back to present progress and findings. Invite Amy to the August meeting and discuss whether her model needs peer review.	10/29/02	Pat Page Shirley Mondy	April 1, 2003	August 5, 2003	
91	John Leeper agreed to get a letter to USGS and to whomever controls the locations to ease access for USGS.	4/1/03	John Leeper			
93	The Hydrology Committee agreed to add a discussion of hydrologic conditions to the agenda of each meeting or conference call to determine whether extreme conditions exist.	4/1/03	Hydrology Committee Pat Page		Ongoing	
98	Dave King will have a documentation outline available in time to be discussed at the June conference call. Documentation outline will be added to the June 3 rd conference call. This documentation was emailed to the Committee on June 3, 2003. The Committee should get comments to Dave King by June 13, 2003.	4/1/03	Dave King Pat Page	June 3, 2003	June 13, 2003	

	<i>Action Item</i>	<i>Meeting/ Origination Date</i>	<i>Responsible Party</i>	<i>Due Date</i>	<i>Revised Date</i>	<i>Date Completed</i>
101	Under the model maintenance scope of work, Pat Page will add the documentation for objective #2, add the specifics about the estimated/ projected model runs that are budgeted for FY04, and will take the administration tasks out of this scope of work. This will also be noted in the out year funding.	6/3/03	Pat Page			
102	Pat Page will invite Mike Roarke to the August Hydrology Committee meeting to get an update report on the effectiveness of additional gage readings. Pat Page will also call USGS and verify that the FY04 budget for the additional gage readings will cover the work. Pat will clarify with the Albuquerque Reclamation office whether there is a reporting requirement implicit in their contract with USGS. Pat Page will add this to the scope of work this week.	6/3/03	Pat Page			
103	Pat Page and Steve Harris agreed to clarify the 2003 extreme condition decision and get it out to the Hydrology Committee for review.	6/3/03	Pat Page Steve Harris			

June 26, 2003

HYDROLOGY COMMITTEE COMPLETED ACTION ITEMS FY02 - FY03

	<i>Action Item</i>	<i>Meeting/ Origination Date</i>	<i>Responsible Party</i>	<i>Due Date</i>	<i>Revised Date</i>	<i>Date Completed</i>
1	Complete 2nd generation model documentation. Reclamation portion was mostly the data. Still being reviewed. Responses to commentators have been written. Done. Needs to be added to the website.	7/25/01	Reclamation Keller-Bliesner	11/27/01	John Simons needs to review 7/15/02 9/30/02	10/29/02
2	Write letter to the water districts.	7/25/01	Reclamation	10/31/01		11/27/01
3	Draft Progress Report using Dave King's information. (See #9) A letter documenting the status of the model will be sent to Hydrology Committee by the end of April.	7/25/01	Pat Page	4/30/02		5/7/02
6	Give Dave King and Ron Bliesner the water allocations information (in particular, non-irrigation return flow locations and depletions) from the meeting with New Mexico.	7/25/01	John Simons			9/26/01
7	Let Brent Uilenberg know what funds will not be used in FY 01.	7/25/01	Errol Jensen			9/26/01
8	Send completed FY 2002 budget to Program Coordinator.	7/25/01	Errol Jensen			9/26/01
9	Provide Progress Report information to Errol Jensen.	7/25/01	Colorado (Keller-Bliesner has no progress to report)	10/3/01		10/3/01
10	The Hydrology Committee would like to see the proposal on handling water rights before it is implemented.	7/25/01	Dave King	11/27/01		Decided not to do water rights.
11	Forward the GIS methodology and information to Colorado, and notify John Whipple and Pat Turney when that will happen.	7/25/01	John Simons			Done
13	Add a notation to the Work Plan that Items 1 - 16 will be completed (funds obligated/used) in 2001.	7/25/01	Errol Jensen	7/27/01		9/26/01
14	Prepare Tables 1 and 2 for presentation to the Coordination Committee. (Use Table 3 for the Hydrology Committee only.)	7/25/01	Errol Jensen	7/27/01		9/26/01

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
15	Table 2 needs to be revised to update the schedule.	7/25/01	Errol Jensen	7/27/01		9/26/01
16	Verify how the \$237,000 will be spent in 2001, if much of the remaining work will be completed by Reclamation staff.	7/25/01	Errol Jensen			9/26/01
17	Work through the details and update revised target dates for 2001 funding information and get to Program Coordinator ASAP.	7/25/01	Errol Jensen Dave King	7/27/01		9/26/01
18	Once the scopes of work are complete, notify the Hydrology Committee so that people can express interest in performing the work.	7/25/01	Reclamation	Ongoing		5/7/02
19	Incorporate Product Deliverables and Delivery Dates into the Work Plan. Current tables could be updated with 2003 outcomes and a delivery date for each task.	7/25/01	Pat Page	7/02		6/25/02
20	Anyone interested in attending the San Juan Congressional briefing and tour should let the Program Coordinator know.	7/25/01	Everyone	8/3/01		Cancelled
21	The Hydrology Committee will finalize meeting dates and set conference calls.	9/26/01	Everyone	11/27/01		11/27/01
22	When the report on the Navajo Reservoir Operations Low Flow Test is complete, a copy will be sent to Shirley to be sent out or linked to the San Juan website.	9/26/01	John Simons	March or April 2002	5/14/02 7/1/02	7/1/02
23	The July 25, 2001 Conference Call Summary will be updated on the website.	9/26/01	Marilyn Greenberg	12/1/ 01		11/20/01
24	Reclamation will extend Arizona and Utah historic irrigated acreage data back to 1929, in a spreadsheet format, as needed for the model. Provisional data is complete. Summary of provisional data set has been sent out by Dave King. Final data is pending CRSS process (as of 10/29/02).	9/26/01	Reclamation (11/27/01)	mid May 2002	7/15/02 9/15/02 Extended indefinitely	5/5/03

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
25	The Hydrology Committee will vote to determine if it is appropriate to move forward with the model as proposed, and to bring up concerns for the technical subcommittee to work on.	9/26/01	Everyone	11/27/01		11/27/01
26	Ray Alvarado will put the study on how Colorado did their disaggregation for both hydrologic inflows and diversions on the listserve.	9/26/01	Ray Alvarado			2/1/02
27	Dave King will prepare a concise summary report from the technical subcommittee for the Hydrology Committee to take back and review prior to voting at our next meeting. If anyone has questions, contact a subcommittee member and be ready to vote at the next meeting.	9/26/01	Dave King / Hydrology Committee	11/27/01	3/26/02	3/26/02
28	Dave King will talk with folks, one on one, and find out what they think is a reasonable approach for diversion disaggregation, then consolidate comments (pros and cons), and send it out to the listserve (if approved) for comments. This will be discussed at the Nov. 27 th meeting.	9/26/01	Dave King	11/27/01	3/26/02	3/26/02
29	Keller-Bliesner Engineering will put together information on incidental losses for our next meeting, with a review of products for the committee's review.	9/26/01	Keller-Bliesner	11/27/01	Add'l comments to Bliesner and BOR by 4/29/02	3/26/02
30	The San Juan website will have a link to the model website soon: http://wcao.uc.usbr.gov/envprog/sjrip/	9/26/01	Marilyn Greenberg	12/1/01		11/20/01
31	Pat Page and Bill Miller agreed to schedule a Biology/Hydrology Summit to sort out the data, impacts, and extent of our flexibility.	3/26/02 9/26/01	Pat Page Bill Miller	June or August 2002		6/25/02
32	Reclamation is tasked with tracking and managing the Committee's time and money. A percent complete and percent expended table will be provided by Reclamation and Keller-Bliesner and available for a budget and schedule review at the March 26 th meeting. Pat Page and Dave King will work together to send out a monthly expenditures report.	11/27/01	Dave King Reclamation Keller-Bliesner	Monthly March 26 Ongoing		2/11/03 - process is standardized. Move to completed log.

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
35	John Whipple suggested that the June 14, 2001 version of the Hydrology Committee Model Disclaimer, as approved at the June 19, 2001 Coordination Committee Meeting, be used on Model documentation. Shirley will mail it out on the listserve.	11/27/01	Shirley Mondy			5/1/02
36	Please get comments regarding the September 26, 2001 draft meeting summary to Marilyn Greenberg by 12/7/01. FWS will send out a revised copy.	11/27/01	Everyone Marilyn Greenberg	12/7/01	Revisions still needed. Dave King will assist	1/29/02
37	The Hydrology Committee would like to quantify the benefits of continuing to fund USGS for additional gage readings on the San Juan beyond 2002. The Committee decided to allocate the funds for the additional gage readings and the allocation can be removed later if it needed after the re-evaluation in #34.	1/15/02	Hydrology Committee	after Oct. 29, 2002 Hydrology meeting		10/29/02
38	A Long Term Hydrology Committee Budget Proposal was requested by the Coordination Committee. Please provide your comments to Pat Page. Pat will put the long term budget into a format that is compatible with the work plan and send it back to the Hydrology Committee for comment.	3/26/02 11/27/01	Pat Page Hydrology Committee	3/26/02		5/7/02
39	The final summary of the November 27, 2001 Hydrology Committee conference call will be mailed out to Committee members when revised.	1/15/02	Marilyn Greenberg			1/29/02
40	Dave King will review the budget and progress report targets and address the impacts of missed targets. Dave King and Pat Page will include more details, such as impacts, in the progress reports.	1/15/02	Dave King Pat Page	Ongoing		3/26/02 Format has been established. Ongoing Reports
41	Dave King and Reclamation will develop and add a statement about not using water rights in RiverWare in the model documentation. Statements regarding water rights have been removed from the model documentation.	1/15/02	Dave King			3/26/02

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
42	The Committee is requested to provide additional comments on Keller-Bliesner's 1/11/02 "Draft Plan of Approach" to Ron Bliesner or John Simons by 1/29/02.	1/15/01	Hydrology Committee	1/29/02		3/2/02
43	The January 15, 2002 Conference Call Summary was approved as amended. Marilyn Greenberg will send out the final version to Committee members and post it on the website when revisions have been completed.	3/26/02	Marilyn Greenberg			5/1/02
44	The Committee agreed to talk with USGS, or invite them to come to the Committee and give us a report at the end of the calendar year - around October 22 Hydrology Meeting? (See # 37) USGS has been contacted and they have indicated that they will attend the HC Oct. meeting.	3/26/02		10/22/02		6/25/02
45	The Hydrology Committee voted to recommend moving forward with the "Key Model Input Draft Plan of Approach" dated 3/22/02. New Mexico was the only vote not in favor.	3/26/02	Dave King			3/26/02
46	John Whipple will try to get some written technical comments regarding the Draft Plan of Approach (3/22/02), that was approved, out to Keller-Bliesner and the Hydrology Committee within the next month.	3/26/02	John Whipple	4/26/02 Ongoing	6/7/02	5/22/02
47	The SJRIP 3 rd Generation Hydrologic Data and Model Development plan of approach (3/23/02) will be revised and sent out to the Committee in a couple of days. It should be reviewed by Committee members and comments forwarded to Dave King prior to April 15.	3/26/02	Dave King Hydrology Committee	4/15/02		5/7/02
48	Pat Page and Steve Harris agreed to create a budget and status report with a conversion column to ensure that tasks A-L remain associated with the \$535,500 that was allocated.	3/26/02	Pat Page Steve Harris			5/7/02

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
49	Pat Page will create a reasonable schedule, with a bar chart, to show where we are in terms of completion of tasks and budget that has been utilized/allocated. The chart will also show which tasks can be done concurrently and which work must be completed in order for other work to begin. Work that John Simons was going to do, but cannot do, will be included; as well as the work that needs to wait for John Simons to complete.	3/26/02	Pat Page	4/30/02		5/7/02
50	Steve Harris and Pat Page will send out a long term budget revision. The Committee should review and be ready to discuss at the May 7 Conference Call.	3/26/02	Steve Harris Pat Page	4/30/02		5/7/02
51	The Committee is seeking direction from FWS on whether running the model for 500 acre feet is worth it. Steve Cullinan will check into this and find out what has been approved under the two different 3000 af blocks. Shirley Mondy reported that a few hundred af has been used out of the 2 nd 3000 block of minor depletions so far. 100 af or less is covered by the 2 nd 3000 af of minor depletions, so 500 af is not covered.	3/26/02	Steve Cullinan	4/30/02	6/25/02	6/25/02 Baseline Discussion
52	The Committee will add Hydrology Committee tasks into the LRP. Pat Page and Steve Harris will send a version out for the Committee to review prior to April 30.	3/26/02	Pat Page Steve Harris	4/30/02	5/14/02 Biology Comm. meets 5/21/02	5/7/02
53	Pat Page was asked by the Committee to inquire as to why the Hydrology Committee was not asked, in addition to the Biology Committee, about the flexibility of operations recommendations.	3/26/02	Pat Page	4/30/02		5/7/02
54	The Committee will decide on the FY03 budget request, and whether there is any FY02 give up on 5/ 7/02 conf. call.	3/26/02	Hydrology Committee	5/7/02		5/7/02

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
55	The March 26, 2002 Draft Meeting Summary will be updated with the edits from 5/7 and forwarded to John Whipple for his input. The revised summary will then be sent out to the Committee. The May 7 draft meeting summary and the updated action item log will be sent to the Committee for review. The March 26 th and the May 7 th draft meeting summaries will be reviewed for approval on June 25, 2002.	5/7/02	Marilyn Greenberg John Whipple Hydrology Committee	June 25 for final review/ approval by Committee		6/25/02
56	The Committee agreed to change the meeting summary format to include "Discussion", "Decision", and "Action" sections.	5/7/02	Marilyn Greenberg	Effective Immediately		6/25/02
57	The Committee requested that the Status Report be titled "Status Report" and that the percent expended column be placed next to the percent completions column.	5/7/02	Pat Page			6/25/02
59	There was a motion for the Committee to evaluate the consistency of baseline depletions for the San Juan Basin throughout the model. Further discussion was tabled until the next meeting.	5/7/02	Hydrology Committee	6/25/02		6/25/02
60	Pat Page will revise and send the long term budget out to the listserve for review and approval within the week. Page's time for the rest of the year will be paid for with non-Program funds. Once comments have been received and the Committee approves, the long term budget will be submitted to the Coordination Committee.	5/7/02	Pat Page Hydrology Committee	5/14/02		5/14/02
61	The Committee members will come up with suggestions regarding the target base flow as it relates to the flow recommendations prior to the next meeting. These suggestions will be offered to Reclamation. Page and Simons will attend the May 21 Biology Committee meeting to discuss this item. Reclamation is utilizing a more strict interpretation of flow recommendations because of current drought conditions, and the Farmington gage is being used.	5/7/02	Hydrology Committee Pat Page/John Simons	6/25/02		6/25/02

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
62	Pat Page and Dave King will add a total percent expended and completed line at the bottom of the monthly status report.	6/25/02	Pat Page Dave King	Immediate Ongoing		8/2/02
64	Reclamation will compare their Hammond Project irrigated acreage data with New Mexico's data. Dave King will send an email out to the Hydrology Committee indicating if any discrepancies are found. No discrepancies were found (8/20/02 meeting).	6/25/02	Dave King			7/1/02
65	The discussion on zero flows, on handout #2 from Keller-Bliesner, needs to be strengthened to describe the need for spreading flows out over a month instead of showing several days of zero flow. More description of the magnitude of the missing data would make it easier to understand the methodology. Alvarado & Westfall will discuss (per 8/20/02).	6/25/02	Keller-Bliesner			10/29/02
66	Shirley Mondy will see if Joy Nicholopoulos is available to be on the next Hydrology Committee conference call to answer consultation and baseline questions.	6/25/02	Shirley Mondy		10/29/02	10/29/02
67	Baseline depletions will be discussed further at the 10/29/02 Hydrology Committee meeting.	6/25/02		August 20 conf. call	10/29/02	10/29/02
68	New Mexico water users will meet to discuss strategy for dealing with depletions in the baseline.	6/25/02		Ongoing		Cancelled
69	Jim Brooks would like comments on his revision of the LRP by August 1 st . Steve Harris and Pat Page will review the LRP and put together Hydrology Committee comments and send them out to the Hydrology Committee prior to 8/1/02.	6/25/02	Steve Harris Pat Page Hydrology Committee	August 1		7/10/02
70	The Hydrology Committee will request to be included in the peer review process for the temperature analysis model. Shirley Mondy will send Amy Cutler's status report out to the Hydrology Committee.	6/25/02	Shirley Mondy			6/27/02
71	Shirley Mondy will talk with Brent Uilenberg about the proposed grow out ponds to see what the capital expenditure implications would be.	6/25/02	Shirley Mondy		9/25/02 Coordination Meeting	10/29/02

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
72	Ron Bliesner will send NIIP demands for next year to John Simons, so that information can be included in the Hydrology Committee's flow recommendation memo to the Biology Committee/FWS/Reclamation.	6/25/02	Ron Bliesner John Simons			10/29/02
73	John Simons, Dave King, and Keller-Bliesner agreed to formulate some new operating criteria for the model by August 6, to be discussed at the HC conference call on August 20, 2002.	6/25/02	John Simons Dave King Keller-Bliesner	August 6		8/19/02
74	John Simons will meet with John Whipple on July 11 to discuss the New Mexico data still needed for the model.	6/25/02	John Simons John Whipple	July 11		7/11/02
75	Pat Page will incorporate John Whipple's comments on the "Status Report to the Coordination Committee" in redline and send it back out to the Hydrology Committee for review.	6/25/02	Pat Page Hydrology Committee			7/18/02
76	Hydrology Committee members should email their comments on the Third Generation Navajo Draft Operating Criteria, dated 8/19/02, to Dave King, Ron Bliesner, and/or Brian Westfall by September 13, 2002.	8/20/02	Hydrology Committee	9/13/02	Ongoing	2/11/03
77	Discuss the need for peer review for Hydrology Committee work. Committee members should bring ideas and suggestions to the next meeting. [See #86]	8/20/02	Hydrology Committee	10/29/02	April 1, 2003	4/1/03
79	Ron Bliesner will get the Program temperature data to Amy Cutler, but it may only be data from one location.	10/29/02	Ron Bliesner			11/1/02
80	Marilyn Greenberg will send a copy of this meeting summary to Amy Cutler, per her request.	10/29/02	Marilyn Greenberg			11/1/02
82	John Simons will prepare a risk analysis on the effects of the current drought year to the water supply. This information will be given to Bill Miller to give to the Biology Committee.	10/29/02	John Simons			November 2002
83	Ron Bliesner will extract language out of the flow report to add a section on base flow into the 8/19/2002 operating criteria.	10/29/02	Ron Bliesner	2/15/03		3/31/03

	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
84	Ron Bliesner will notify the Hydrology Committee when the presentation on habitat hydrology will be given in the Biology subcommittee meeting. August 5, 2003 Hydrology Committee meeting (added 2/11/03). Bliesner will present it today if there is time.	10/29/02	Ron Bliesner	May 2003 subcommittee meeting in Logan, UT		4/1/03
85	Defining triggers for extreme conditions - add to agenda for conference call in February.	10/29/02	Pat Page Shirley Mondy			2/11/03
86	The Committee agreed to discuss the need for a peer review panel to oversee all Hydrology Committee work at the April 1, 2003 meeting.	2/11/03	Committee	April 1, 2003		4/1/03
87	Reclamation will revise the budget schedule and report at the next meeting to indicate that work will be complete this fiscal year and within budget. Dave King and Pat Page will set up a conference call with Ron Bliesner and Brian Westfall to determine the plan for the rest of 2003.	2/11/03	Dave King Pat Page Ron Bliesner Brian Westfall			4/1/03
88	Ron Bliesner will revise the entire base flow discussion and get it out to the Committee by Feb. 14, 2003.	2/11/03	Ron Bliesner	Feb. 14, 2003		3/31/03
89	Pat Page will reserve the 4 th floor conference room for the April 1, 2003 Hydrology Committee meeting	2/11/02	Pat Page			2/30/03
90	John Simons will take a look at the USGS data before Ron Bliesner presents at the Biology Committee meeting	2/11/03	John Simons	Feb. 23, 2003		2/23/03
92	The scope of work for model operation needs to be circulated by the June 3 rd conference call.	4/1/03	Pat Page	June 3, 2003		5/28/03
94	The Hydrology Committee determined that hydrologic conditions indicate that extreme dry conditions exist at present, and that the Program should consider appropriate water conservation measures. Shirley Mondy will transmit this information to the Coordination Committee.	4/1/03	Shirley Mondy			04/10/03

95	Dave King will add draft documentation on model data sharing and will add it to the model website.	4/1/03	Dave King			04/02/03
	Action Item	Meeting/ Origination Date	Responsible Party	Due Date	Revised Date	Date Completed
96	John Simons will sent a letter requesting permission for Reclamation to maintain and FTP site so they can continue to do the modeling work.	4/1/03	John Simons			5/29/03
97	Dave King will add "draft" documentation to the documents on the website so that it will be clear to everyone that these are working documents, not final documents.	4/1/03	Dave King			4/2/03
99	Ron Bliesner will email the revised Operating Criteria to the Committee	4/1/03	Ron Bliesner			4/2/03
100	John Whipple and/or Shirley Mondy will take the Hydrology Committee's recommendation of no need for third party peer review to the next Coordination Committee.	4/1/03	John Whipple Shirley Mondy	May 23, 2003		4/10/03

June 26, 2003

Improve Stream Gaging and Flow Measurements
San Juan River Basin Recovery Implementation Program - Hydrology Committee
Fiscal Year 2004 Project Proposal

D-R-A-F-T

Principal Investigator: Pat Page
Bureau of Reclamation
835 E. 2nd Avenue, Suite #300
Durango, CO 81301
(970) 385-6560 ppage@uc.usbr.gov

Background:

There are five USGS streamflow gaging stations on the main stem of the San Juan River that are very important to the operation of the river and play an important role in the implementation of the flow recommendations. Stream gaging data on the San Juan River are needed to attempt to reliably develop and implement flow recommendations.

Study Area:

San Juan River Basin in New Mexico

Objectives:

1. Provide funding to the USGS to take one additional flow measurement per month at the four San Juan River gages in New Mexico. (Note: Base cost for operation of the stations is paid for by non-Program funds.)

Products:

Improved flow measurement and more accurate gage readings.

Budget FY-2004:

Objective	Staff days	Labor	Travel	Equipment and supplies
Objective 1				
Personnel	36	21,350		
Travel			4,900	
Equipment and supplies				
Total				\$26,250

Estimated Outyear Funding (Based on 5% allowance for inflation)

Fiscal Year 2005	\$27,560
Fiscal Year 2006	\$28,940
Fiscal Year 2007	\$30,390
Fiscal Year 2008	\$31,900

Maintenance and Operation of the San Juan River Basin Hydrology Model
San Juan River Basin Recovery Implementation Program - Hydrology Committee
Fiscal Year 2004 Project Proposal

D-R-A-F-T

Principal Investigator: Pat Page
Bureau of Reclamation
835 E. 2nd Avenue, Suite #300
Durango, CO 81301
(970) 385-6560 ppage@uc.usbr.gov

Background:

The model will be made available to generate and analyze runs associated with Section 7 Consultations and/or special requests from the Biology or Coordination Committees related to the flow recommendations or other hydrological aspects of the Program. In order for the model to be available for such requests, the model and data must be maintained to adjust configurations, correct for errors, and evolve the data set forward through time. Additionally, Reclamation will coordinate and manage the hydrology-related tasks performed by the Hydrology Committee, including administering cooperative agreements and contracts with consultants, accounting for expenditures, developing and providing status reports, and coordinating work items to ensure work is completed as planned.

Study Area:

San Juan River Basin

Objectives:

1. Maintain data to evolve the data set forward through time.
2. Maintain the model to adjust model configuration, methodologies, data, or assumptions.
3. Provide hardware and software support.
4. Implement Riverware upgrades and receive technical support.
5. Generate and analyze model runs associated with Section 7 consultations or special requests from the Biology and/or Coordination Committees.
6. Coordinate and manage the hydrology-related tasks performed by the Hydrology Committee, including administering cooperative agreements and contracts with consultants, accounting for expenditures, developing and providing status reports, and coordinating work items to ensure work is completed as planned.
7. Provide technology transference to Reclamation's Western Colorado Area Office staff in the details of maintaining the data and models, and in operating the models.

Products:

1. Hydrological analysis of water development scenarios or other scenarios as requested by stakeholders or Program committees.

2. Monthly status reports showing work completed and funds expended will be provided to the Hydrology Committee. A report addressing the status of the model and documenting changes to it will be prepared and submitted to the Coordination Committee. Another report documenting hydrological conditions and Navajo Dam operations, and updating hydrological statistics for water year 2002 will also be prepared and submitted to the Coordination Committee.

Budget FY-2004:

Objective	Staff		Travel	Equipment and Supplies
	Days	Labor		
Objective 1				
Personnel	15	\$11,000		
Travel				
Equipment and Supplies				
Objective 2				
Personnel	15	\$11,000		
Travel				
Equipment and Supplies				
Objective 3				
Personnel				
Travel				
Equipment and Supplies		\$5,500		
Objective 4				
Personnel				
Travel				
Equipment and Supplies				\$5,000
Objective 5				
Personnel	46	\$32,750		
Travel				
Equipment and Supplies				
Objective 6				
Personnel	17	\$12,000		
Travel			\$1,500	
Equipment and Supplies				
Objective 7				
Personnel	10	\$8,000		
Travel				
Equipment and Supplies				
Subtotal	103	\$80,250	\$1,500	\$5,000
Total				\$86,750

Estimated Out Year Funding (Based on 5% allowance for inflation)

(Note: Out year budget could be increased if additional hydrological Program duties are identified and assigned to the Reclamation modeler. The Hydrology Committee encourages Reclamation to staff this person in the Durango office.)

Fiscal Year 2005	\$82,700
Fiscal Year 2006	\$86,800
Fiscal Year 2007	\$91,100
Fiscal Year 2008	\$95,700