DRAFT
Science Plan Coordination Workshop
July 18-19, 2002
Comments on Two-Year Science Plan for Experimental Flow Treatments and Mechanical Removal Activities in WY's 2002-2004 (Ver. 3.0, dated 7/16/02)

Acting GCMRC Chief, Dave Busch provided background on the Experimental Flows science planning process. It was pointed out that there is no decision yet from the Department on the AMWG / BuRec recommendation regarding treatment scenarios. Funds for research related to the Experimental Flows have not been made available either. Focus for this discussion should be directed toward conceptual aspects of the draft science plan rather than on plan details. The recently-concluded AMWG meeting dealt with the flows per se (i.e., the *treatment*); the science plan workshop is being held to concentrate on hypotheses, methods, and analyses related to the *effects* of the proposed treatments. GCMRC program managers Ted Melis, Ruth Lambert, Steve Gloss, and Mike Liszewski made presentations and fielded questions about the science plan. The following are comments provided by attendees at the science plan workshop as well as preliminary GCMRC responses to each comment.

PLAN SECTION OR REFERENCE	COMMENT/NEED	RESPONSE/RECOMMENDATION
General Comments		
	Plan is a little confusing. Break out the Project Names, Hypotheses, and MO's and IN's and make a table of them.	GCMRC will make the plan more clear in the next iteration.
	We need reports showing the LSSF results.	GCMRC recognizes and is working to address the need to get reports from PIs and contractors. Reports on all projects are currently due to GCMRC by the end of September.
	See how the bars change laterally after a BHBF. What would be the cost? (From a manager's perspective.)	We don't have existing MO's & IN's on this. Idea seems reasonable if it can be funded.
	We need a budget in the upcoming version (ballpark is ok).	Estimates have been added for the August meeting.
	Will there be a prioritization process if the program needs to be scaled back? What would we do different if we don't do a BHBF? We might want to develop 3 different contingencies based on the 3 different scenarios.	Priorities have been added to the budget table for the TWG's consideration. GCMRC would not conduct associated studies if a particular condition or flow did not happen. Fish removal is somewhat independent of sediment inputs.

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	BOR needs to be able to do future EIS's using GIS as a tool. Can we do a system-wide record at the peak flows? .	GCMRC doesn't have a photo record at 41,000 cfs or 45,000 cfs. The 96 flood overflight data was not orthorectified. We can get orthorectified images for .25 million.
	Will there be another meeting?	August TWG meeting will consider results of the science workshop and seek approval of the plan concept.
PHYSICAL / SEDIMENT		
	We need to know about grain size (what good are fine sediments) besides cohesiveness and bar stability. (There is a possible fish impact related to increased turbidity.)	A component will be added to the Science Plan to address this. Turbidity is being measured.
	Do we have the power to detect the difference between how the resource responds under a steady 8k cfs (7-9k cfs) and flows between 6500-9500 cfs?	GCMRC feels that significant differences would be detected if they occur.
	Come Nov. 1st, what are the decision criteria about making a change in steady and low fluctuating flows? There is a benefit of low fluctuating flows over steady. What are the other benefits?	If no difference is detected, fluctuating flows would continue. A 10% greater rate of export is enough to go with more conservative flows.
	Ramping rates hypotheses need to be developed. The 2.5k cfs downramp may be an opportunity to test erosion.	This could complicate and make scientific investigations more complex. There would be other opportunities to look at ramping.
	What is the influence of vegetation in preventing rate of sand movement? Increase growth of vegetation to protect the sand bars? Management action to preserve cultural sites (sand deposition into arroyos).	Topography can be incorporated in the sand transport model.
	Why are there no null hypotheses for Treatment 2	GCMRC is still working on Treatment 1.
	We want to know about this grain size as it relates to sand bar stability--overall number of beaches that are benefited by BHBFs over the entire system. The question is always asked about which one will get bigger, the overall increase, etc.	GCMRC has adopted a sampling approach not a census of beaches. This is consistent with past scientific advice. Costs would be a factor in adopting a synoptic approach.

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	Discussion re: archaeological sites or cultural resources sites up on the terrace. Sand must be deposited close to or into the arroyo mouths. It has direct management impact and implications on frequency of doing higher flows and margin deposits. These areas need to be re-supplied with fine sediments; they need to keep the sites protected.	It is the primary objective of the PA program to preserve these sites in situ. The management linkage is if you can show that larger bars preserve sites, then large sand bars are worth more than just camping sites.
	The reason we are interested in fines is because of the adhesive quality? Need to see if management can change the distribution of grain size - for a given change in size. Add a Fines Hypothesis to the document	We are tracking the grain size but not whether different combinations of grain size affect cohesion or durability. GCMRC is to see what they might add to the budget and provide the TWG or AMWG.
BIOLOGICAL		
Mechanical Removal of Trout	There is a problem with killing fish & dumping them in the river. We want the dead trout flown out. They will just increase other non-natives' survival.	Fly or boat them out. Costs involved. We will evaluate in situ disposal if that occurs.
- Disposal of Fish Carcasses – Monitoring of Effects (human health, recreation, river stewardship)	Human health issue about chopped up, decomposing fish in the river during low flows (illnesses reported during 2000 low flows). Can we fly the carcasses out instead of dumping them in the river (dumping will probably increase survival of other non-natives)? NPS has minimum impact regulations in place. Will there be any downstream water quality measurements? What about people at the gages? It seems some downstream water quality monitoring should be done.	We are not prepared to monitor. Chemical analysis could be done. Possible; it will cost more money. NPS may need to decide. Not currently planned. However, we may evaluate water quality near disposal site(s). We can do that if TWG prioritizes.
	Continue studies beyond Diamond Creek and not stop there?	Some temperature impact possible. Not a priority for these treatments. Should be addressed in routine monitoring.
	We need to see if there is a linkage in drift (we have already done foodbase work).	We will look at measuring drift during fluctuating flows.
	Need to know about backwaters temperatures. What distances will the temperature measurements be to the chub?	Project on backwaters will evaluate.

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	Mixing: will you be doing anything regarding is there any difference in stream in quality, what is the value of that information?	Document what the differences are. There will be foodbase work in the Lees Ferry reach but it is not looking at impact to the community.
BIOLOGICAL PROJECTS		
Monitoring of Stranded Adult RBT	Should we physically make a trough for the fish to get out instead of slowing the downramp rate during the last 3,000 cfs? Or is it a change in agnitude of flows and not the downramp rate? What about adding river otters?	Although it is labor-intensive, AGFD is working on the issue of stranding and reconnecting waterways. This could be a form of heavy-handed management in a natural environment. GCMRC is waiting on that issue until the AMWG agrees on Goal 3.
Mechanisms Accounting for Reduced Recruitment	"Caged" fish experiment: should this be reevaluated? What about small sonic tags to track the movement of fish? What about doing experiment in a flume in a lab (that's rather artificial)?	We are trying to address stakeholder information request, but we are unsure of the best process. Working with AGFD on this, but it may prove impractical or cost-prohibitive.
	It would be good to identify a specific habitat type for the redds and make that distinction throughout the corridor.	We will get the collective mapping information about distribution of redds at Lees Ferry or below Paria.
	With these fish projects occurring only around the fluctuating flows, how to discern the effects from fluctuating flows vs. BHBF – the effects from the low flows is the river bottom gets covered with fines and it could have an effect on fish (spawning). You may want to extend it below the Paria. How thick a sediment layer might impede spawning?	GCMRC doing them during steady flows and will look at what the changes during the fluctuating flows will be. Extending it could have some complementary effects of spawning habitats.

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	We do not have a way to test where brown trout are coming from. We need migratory info. You may have to go to an individual tag. This effort is to see if we were effective about removing brown trout.	We can discuss that. We are adding a hundred pit tagged brown trout every year; eventually we will pick up data on movement of tagged trout. Our original proposal included that.
	Electrofishing impacts on humpback chub	Our empirical experience and studies conducted show that these impacts are minimal.
	Will we be doing backwater fish assessments during the fluctuating flows experiment?	Seining will be conducted.
CULTURAL		
	Site Selection – tribes expressed an interest in involvement	GCMRC will work with tribal reps to address this.
	The Hualapai Nation is not funded to do analysis or report for experimental flows.	Tribal reps will meet with GCMRC to determine what resources would be required beyond what is currently provided as part of the AMP, changes have been made to provide an expanded monitoring effort.
Aeolian Sediment Transport at Archeological Sites	Will there be integration of this project with the arroyo deposition work?	Attempted to integrate arroyo and sediment transport projects.
Monitoring of Traditional Tribal Resources	Hypotheses need to be formulated in this area that these projects are intended to address.	Hypotheses listed in project. Tribal reps will be consulted to develop additional hypotheses and study plans.
RECREATION / RECREATIONAL USE STUDIES		
Economic Impacts to anglers and boaters – both commercial and private	A baseline for use needs to be established Two NRC reviews say we need to develop this recreational program.	Agreed. GCMRC will work to pull all existing data together. Longer-term efforts are being made to develop additional recreational project activities.

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	Safety of upramp/downramp rates to anglers and boaters in the Lees Ferry reach and downstream	Safety Study added to projects.
Changes in Campable Beach Areas	FIST reaches sample only 25 miles and overflights of the entire canyon corridor are needed.	Cost would be a factor.
	Illness reported among down river recreationalists	Characterizations of stream biota may help address.
INFORMATION TECHNOLOGY		
	USBR wants a photo record (41 – 45,000 cfs) to write EA's (especially vegetation inundation). They need data layers for future flows. They want to use GIS as a tool for future EIS's.	It would require $.4 million to get it orthorectified. An assessment of what else would be gleaned from this information (1 meter DEM) would be useful.
	We need a second multi-beam unit to collect all the bathymetry data requested.	Buy or lease one is question. $365k to buy. Lease cost is very high $200k to lease for 1 year; $1500/day just for the transducer.