

Document Title FY 2009 GCDAMP Work Plan and Budget
 Document Date: June 20, 2008

Page Number	Line	Reviewer Name	Affiliation	Reviewer Comments (Be specific)	Identify Action Requested	Response Requested	GCMRC Response/Action Taken
1		Barger	WAPA	General: Please include a table of all proposed river trips with possible dates	Add table	y	This requested table is currently being developed by the GCMRC's Logistics and Survey Program Manager and will be incorporated into the annual work plan during the revision toward final.
2		Barger	WAPA	General: incorporate the \$1,000,000 into the costs of each project in order to show the actual cost of the project. Do not show it as a line item not incorporated.	Make correction to costs	y	We don't see value in this proposed itemization. The actual cost of the project is shown in the work plan and reflects the reduced overhead rate being charged to the AMP program by USGS. The reduce rate is made possible by the ~\$1M USGS contribution. Without this contribution the cost would increase by \$1M (or the work effort would need to be reduced by \$1M).
3		Barger	WAPA	General: This is the 09 Work Plan and should include all 09 work to be accomplished by USBR and GCMRC regardless of when the money is allocated. This would include the HFE work, any work funded by previous years and carried over. This should show on the table as well as in the narrative. The HFE work is linked to numerous projects and needs to show up in the narrative for linkages.	Make corrections in both table and narrative	y	This is a new request that should be discussed at the beginning not the end of the work planning process. Integrating all HFE studies and past studies will require a major revision to the work plan. We will document linkages to HFE work in the Linkages section of each SOWs to ensure that they are

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								complete.
4			Barger	WAPA	General: for carry over monies, it needs to be clear if it was obligated and unspent, not obligated, or regular carry-over. All of this should show as expenses totaled, at least in the comment section. Are these carry-over monies showing up in actual expenses for the midyear report?	Make table corrections and narrative corrections	y	Unclear what is meant by "regular" carryover or what is being specifically requested. "Carryover" refers to funds that have not been obligated in previous fiscal year. Carryover funds are included in mid-year update lines 101-107.
5			Barger	WAPA	General: please include status of reports for 08 in project discussions; if none is planned for 08 but would be in 09, please state this.	Add information	y	Unclear why we would include the status of 08 reports in the 09 work plan. These reports will be specified in each work plan
6			Barger	WAPA	General Work plan: please put numbers in the blank tables	Complete tables	y	This will be done in the AMWG version of the work plan. The number can be found in the budget spreadsheet
7			Barger	WAPA	The table sequence doesn't follow the sequence in the work plan. Please correct the narrative to match the sequence.	Correct sequencing	y	OK
8			Capron	WAPA	It is difficult to evaluate most of the proposed projects. Many of the projects include only a few sentences of proposed work in the next year. Where are the past results? If GCMRC was presented with this level of detail in a proposal from an RFP I doubt the project would be funded. Our ability to review these proposals is extremely limited with little or no information on the projects. Information should be provided which describes data previously collected, successes, lessons learned, revisions and expectations. If it is GCMRC's opinion that more detail is not necessary, then I question the validity of the reviews and the review process and whether the TWG should complete the review and a budget recommendation. I understand that 09 was a difficult year, but 08 was as well. We	Please describe how GCMRC plans to respond next year. Work with the TWG to develop an outline for necessary information required in the work plan and	y	The current format and level of detail was previously discussed and approved by the TWG. These work plans are not meant to serve as RFPs or detailed work plans that will guide project implementation. GCMRC has proposed an annual reporting meeting in late fall/early winter to provide for more detailed discussion of each project in the work plan. This

Comment Number	Page	Line	Reviewer Name	Affiliation	Reviewer Comments (Be specific)	Identify Action Requested	Response Requested	GCMRC Response/Action Taken
15	47	28-30	Capron	WAPA	<p>using fish data collected from surveys. The list of publications expected echoes this - the subjects include descriptions of results from food base studies, with only one that seems to mention the implications to fish. I suggest the goals may be overstated and that this proposal is likely to lay the foundation for future projects to link what we learn about primary and secondary production to fish. References are made to isotope analyses and fish samples, but from my experience these isotope analyses are complicated and time consuming. Is it really likely to be able to determine trophic relationships and energy transfer in this study? Perhaps some parts of this are really trials for future studies which will expand on the work here.</p> <p>This project is hard to distinguish where it separates from BIO 1.R1.09. It also talks about various experimental flow regimes, but there are no descriptions of what experimental regimes will be requested? It is my understanding that this project is more focused on continual or hourly samples of drift and production, but it is hard to see in this proposal how this is being accomplished and how the two projects differ. Where is the experimental component?</p>	<p>able to relate native fish health to primary and secondary production.</p> <p>Revise project plan</p>		<p>This project describes the more detailed, more frequent work requested by WAPA. GCMRC does not intend to advocate for experimental flow regimes, though we are pleased to advise on request. This project is intended to study the flows that are delivered. Greater frequency and detail of sampling are part of this project, distinct from BIO 1.R1.09.</p>
16	49-50		Capron	WAPA	<p>Project goals seem inflated compared to the specific objectives on page 24. Essentially this projects provides for population estimates, yet the goals seem to go well beyond that.</p>	<p>Revise goals</p>	Y	<p>Goals are intended to provide overview. The data collected in this project support the goals, but may not entirely complete each goal. Objectives are intended to be more specific.</p>
17	50	21	Bill Persons	AZGFD	<p>Goal 2: Native Fish Does "stock assessment models" mean ASMR? If so, perhaps say ASMR rather than stock assessment models.</p>	<p>Replace text</p>		<p>Title has been maintained for consistency, but we can change.</p>

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9			Capron	WAPA	<p>need to come to an understanding of the level of detail necessary in these proposals and work together to provide that without undue burden to the PIs while allowing the TWG and AMWG to have a robust review of the research program.</p> <p>It is difficult to see how most projects relate to answering the SSQs, it is easy to provide a list of SSQs addressed. I would like to see each project describe how it expects to answer these questions, and what parts of the SSQ that it will not address. My read of these proposals is that they seem to overstate their abilities to address SSQs and their stated goals.</p>	Revise proposal	y	This would greatly expand the length of the annual work plan. Suggest this issue be examined in the annual project reporting meetings and updates provided to the TWG.
10	5	Table	Bill Persons	AZGFD	Was DOI burden charged in 2008 but not other years? Same comment for other BOR pages. Editorial omissions?		Y	BOR should respond; not GCMRC. (BOR portion of budget)
11	9	Table	Bill Persons	AZGFD	Fill in detail on budget table for FY09	Finish table	N	OK
12	38	Fig. 1	Bill Persons	AZGFD	Can you show burden in this chart?	Show burden		Estimated burden could be broken out separately for both FY08 and FY09.
13	23	4	William Werner	AZWater	NPS should be NP			OK
14	40		Capron	WAPA	<p>General comment regarding BIO 1.R1.09. In the project goals, and throughout the plan, the stated goal is to "determine the role that food is playing in the distribution, condition, and abundance of fishes throughout the entire system." Page 16 line 32, describes use of stable isotopes and diet analysis of invertebrates and fish to determine ... it is unclear what the plan goes on to discuss in general a potential relationship between food, trophic pathways of energy, and fish production and density. It is unclear how this project will succeed in the ultimate goal stated above to elucidate the role of food in the health of native fishes. Clearly this is a study designed to better understand primary and secondary productivity, but it is not clear how that gets rolled up to being able to say much about the relationship to fish, except for simple correlations</p>	Modify proposal to change goals if appropriate, or provide further information on how those goals are to be met with information on work completed to show how we will be	y	Project was specifically modified to include fishes, including addition of a PI to investigate fish. Project plans to determine sources of food in the CRE and how those sources are used or not used by higher trophic levels. Usually use more than one method, as in case of fish are using both gut contents and isotope analyses. Emphasis on developing shared "unit of currency", i.e., ash-free dry matter, intended to

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					HBC during spawning that may have negative consequences. HBC are handled in the main-stem, at the confluence, during spawning, then if they stay in the LCR later in the fall in the LCR. Is there evidence that handling and repeated sampling results in no negative impacts to HBC? I think we should seriously consider handling impacts during the 09 PEP and how we might reduce those impacts without compromising the assessment program.			
22	52-53		Capron	WAPA	Translocations, Chute Falls: A description is provided for what will occur generally in 09 but no information is provided about how this program has evolved and what the current goals are. Information should be provided describing the success seen in Chute Falls as a grow-out area and the potential based on recent data which suggests juveniles have migrated down-river with a relatively high survival rate and that it appears very few fish still reside above Chute Falls. Thus, it may be an excellent grow-out area but unlikely to remain as a static population above Chute. Given these changes, the likelihood that it is just a grow-out area, what are the implications to the LCR HBC population?	Revise project plan	Y	To date the numbers of HBC coming into the LCR and mainstem populations have been limited, but this appears likely to change quickly if the existing levels of survivorship continue. Protocols to be subjected to exterior peer review in the 2009 protocol evaluation panel for fishes.
23	53	11	Bill Persons	AZGFD	Is the genetics report/recommendation referred to regarding translocation available for reference?		Y	DOI agencies pursuing protocol for completing the GMP.
24	53	15	Bill Persons	AZGFD	Please clarify when the USFWS will draft a management plan. The phrase "once the initial stock assessment has been completed" is unclear. Will it be in 2009 after the PEP and prior to monitoring activities?	Add text with date	Y	Consultation with USFWS necessary to respond.
25	53	27	Bill Persons	AZGFD	Good to see that a Protocol Evaluation Panel is scheduled for early 09 to take a close look at the LCR fish sampling program, among others!		N	We agree.
26	57	30	Bill Persons	AZGFD	Insert "since 2001" after "between Lees Ferry and Lake Mead" to indicate the length of time this monitoring has taken place.	Insert text		Accepted.
27	56	7	Bill Persons	AZGFD	Please specify Roland Scott Rogers, Arizona Game and Fish Department as the PI on mainstem fish monitoring.	Add text.		Accepted.

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18	50	24	Bill Persons	AZGFD	Phrase "A rigorous stock assessment" is used, later an "annual stock assessment" refers to the Age-Structured-Mark-Recapture (ASMR) model. Is a rigorous stock assessment different than the ASMR analysis?		Y	Rigorous stock assessment and ASMR are the same.
19	51	29-37	Capron	WAPA	It is unclear how the fall survey trips are essential to the stock assessment process and the ASMR model. Line 34 states that this survey is a "complementary comparison" of abundance estimates, it is not clear what this means. The spring trip provides estimates from adult spawners and resident juveniles, while the fall trip provides information on residency only and is dominated by juveniles - however, YOY fish are too small to be surveyed so it does not provide current-year class information. Is this really an essential survey worth the added handling and stress to HBC?	written response describing importance of fall survey, how used in the ASMR model to support estimates, and whether this is truly necessary to a robust assessment.	y	The spring and fall trips in the LCR to sample HBC were established by Douglas and Marsh; this project maintains the established protocol. This protocol will be subjected to review by the 2009 protocol evaluation panel.
20	51	16-28	Capron	WAPA	Are annual surveys required for this species in this situation? Has a sensitivity analysis been done to see what the effect of going to biennial surveys would be? Biennial surveys would reduce costs and impacts to fish and habitat in the LCR. It may have been important during model start-up to get as much data as possible on tagged fish, but given the annual surveys since 2000, perhaps the ASMR is populated to a sufficient level that a move to biennial surveys at this point would not be deleterious - yet, goals need to be provided. What amount of change are you expecting to be able to detect over what time period and what survey protocol is necessary in this situation to achieve that detection level?	written response	y	Protocols to be subjected to exterior peer review in the 2009 protocol evaluation panel for fishes.
21	52	1	Capron	WAPA	The program may benefit from some discussion of the importance and necessity of this annual survey. How important is it to the ASMR model (or is the data used in the model)? These long term data sets can be important, but it provides another handling impact to	written response	y	Protocols to be subjected to exterior peer review in the 2009 protocol evaluation panel for fishes.

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35	60	33-34	SA	SA	A concern exists that resolving all three goals is not adequately addressed in the methods section. See general comments for this study.	Section needs revision		We will review to see that goals are addressed or deleted, as appropriate.
36	61	5-16	SA	SA	Although we concur with statements provided on dam operations and future SWD planning, specification is desired on links to existing physical and biotic science projects. Add specific linkages to other projects.	Add project links		We will investigate other linkages, especially with respect to warmer water temperatures.
37	61	2-3	Bill Persons	AZGFD	<u>Nonnative Control Planning and Pilot Testing</u> "The 2009 project will test the effectiveness catfish capture techniques at capturing and monitoring channel catfish". Suggest change to "The 2009 field efforts will build off 2007 and 2008 activities, and may include further research into capture efficiencies of baited hoopnets for channel catfish, movement of channel catfish, or other activities depending on the Short Term Plan, and results to date." This paragraph seems out of place.	Replace text		Accepted.
38	61	5-10	Bill Persons	AZGFD			Check text	Accepted. Appears to be a typo we will correct.
39	63		Capron	WAPA	In preparation for the PEP this project should evaluate the future data needs and our potential ability to move to biennial surveys, curtail the fall LCR surveys, and potentially end or move to biennial lower 1,200 m surveys in the LCR. Perhaps Dr. Coggins could perform a sensitivity analysis to determine the effects of changes in data collection described above and determine our ability to detect trend changes under various survey regimes. Perhaps we could move to a less intensive survey regime now that we have the ASMR model well populated?	Revise proposal	Y	Will be reviewed for 2009 PEP.
40	66	4	Bill Persons	AZGFD	Can we get an update on this project to date? The project is also described as supporting the long-term nonnative control plan. Is the short term nonnative control plan complete?		Y	Current modeling efforts supported ASMR and temperature-dependent growth model developed by Coggins. Documentation can be found in Coggins dissertation and his 2007 open file report. Short term

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28	58	1	Bill Persons	AZGFD	Links/Relationships to Other Projects include collaborating with the Aquatic Foodbase and Bioenergetics Projects to provide fish abundance indices.	Add text.		Accepted.
29	59	8	Bill Persons	AZGFD	Scott Rogers is the Arizona Game and Fish Department PI on the Nonnative Control Pilot Testing.	Add text.		Accepted.
30	59	18-20	SA	SA	Multiple goals are identified, not one goal. Does the third goal specifically reference testing the short term plan? See SAs general comments section in the review report text. What plan will be tested?	Clarify which goal is tested		We will revise. We anticipate a release of the short term plan soon. One or more tasks from the short term plan would be tested in FY 09 following consultation with cooperators and the '09 PEP for fishes.
31	59	22-28	SA	SAs	Minckley work is critical to quote. But other significant work has occurred in both the upper and lower basin as well as other river systems. G. Coggins, 2008.	Add references		We will review and revise
32	60		Capron	WAPA	The best I can understand from this proposal is that some research has been conducted and that GCMRC is working on a plan for sometime in '08. A pilot project is scheduled for '08 - but what is it (catfish?)? How are we going to address non-native concerns? Will there be field work during the fall steady flows to understand if they result in non-native responses?	Revise proposal	y	GCMRC worked with AZGFD to develop a pilot project for 2008 focused on channel catfish control below Diamond Creek. Response from AZGFD on next line provides clarification. The short-term plan for nonnative control should be released before Labor Day 2008.
33	60	10-11	SA	SA	Would this SSQ be better stated by deleting "the potential benefits of" and adding "increased population of native fish associated with"	Revise SSQ		We can clarify in associated text, but we are currently trying to stick to a single list of SSQs to allow everyone to work from a common point of reference.
34	60	19	SA	SA	Change "probably" to "probable"			Accepted.

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					since May.			
47	74	12	Bill Persons	AZGFD	Delete "Initial efforts will focus on capturing native and nonnative fish that will be implanted with PTT tags and released to see if the equipment is effective in detecting tags". We can initially evaluate equipment with a PTT tag on a stick. I would hope we can focus efforts in 2009 on deploying PTT tag arrays designed to determine direction of fish movement with high detection efficiency (Connolly and others 2008). With a well designed project, we can evaluate detection efficiency, and assess the value of PTT tag arrays in light of the entire native fish sampling efforts.	Replace text		Accepted. We will revise.
48	75	1	Bill Persons	AZGFD	I'd like to double check that logistics support is adequate to fund a substantially increased effort on this project in 2009. I anticipate that there could be more helicopter support than originally requested – especially bringing in new people to work on antenna arrays (Connolly and others). Does \$9,000 cover one trip, or two? How many are anticipated? Will this project be evaluated by the PEP?	Add \$ to logistics budget		Accepted. We will review with logistics program.
49	75	?	Bill Persons	AZGFD			Y	Remote PTT tag reading will be reviewed by PEP.
50	76	1	Bill Persons	AZGFD	<u>Near Shore Ecology Study</u> . This looks very well thought out and presented.		N	Thank you.
51	76	14	SA	SA	Add "physical and" between "and" and "ecology"	Add words "physical and"		
52	78	36-46	SA	SAs	Add short statements on 2008 pilot and role of GCMRC in program	Add statements		We did not do this originally because this is the FY 09 workplan and the pilot project will be conducted in FY 08. However, we can add a short statement providing linkage.

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41	70	40-48	Bill Persons	AZGFD	Backwater Seining Project. Please clarify "The mainstem sampling described in this project description will provide an evaluation of the trend of HBC abundance, especially those less than 150 mm". I think the next sentence, that seining is of value for assessing distribution and community composition is correct, but I thought there was general agreement that annual abundance <u>trend</u> information gleaned from seine hauls is of little value. I don't mean to suggest that the project is without value, just that you use care in describing how the data that can be used. I think the data are very useful for describing species presence/absence and distribution.		Y, also see next comment. Suggest delete reference to abundance trend data.	nonnative plan delivered not later than Labor Day 2008. Accepted. We will revise.
42	71	10-30	Barger	WAPA	Links: Shouldn't this be linked to the HFE, the near shore habitat study and the BO? A narrative for this would be good.	Amend narrative	y	Near shore ecology project is what is referred to in second paragraph. We can mention other projects suggested by reviewer. We will revise trend comments.
43	71	4-5	Bill Persons	AZGFD	"Backwater seining has provided relative trend information regarding small-bodied native and nonnative fish use of Grand Canyon backwater habitats for the last 6 years". Perhaps my earlier comment is wrong and I have missed some reports. Any update you can provide would be appreciated.		See comment above.	
44	73	6	Bill Persons	AZGFD	Remote PIT Tag Reading. Are the PIT's listed correctly? Who is the lead on this?		Y	Accepted. We will revise.
45	73	19	Bill Persons	AZGFD	Plans for this project in 2009 only include work in the LCR, change "Grand Canyon" to "Little Colorado River"?	Change wording.		Accepted. We will revise.
46	73	31	Bill Persons	AZGFD	Change "other habitats" to "other, generally smaller rivers". Perhaps add that AZGFD has had some success using remote PIT tag antennas in the LCR and results have been included with our Little Colorado River Lower 1200 annual reports, and will be synthesized and included with our 2008 report. We have 3 antennas deployed now, depending on their fate	Change wording.		Accepted. We will revise.

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59	82	9	Bill Persons	AZGFD	Will part of the evaluation of the project help define a "trigger" to remove trout from the confluence? I suspect that this may not be needed as an annual activity, but it would be good to have at least some general criteria to trigger removal. I can't see spending a lot of time trying to remove fish when they aren't abundant. Do we want to perhaps keep the population levels at approx. the level they were after the 2006 removal?		Y	Initial plan is to keep population at about the level reached in 2006, i.e., about 10% of the 2003 level. This will be articulated in short-term normative control plan.
60	82	7	Barger	WAPA	List AZGFD PI	Add info	Y	Accepted. We will revise.
61	84	7	Bill Persons	AZGFD	Monitoring Lees Ferry Trout Change title to "Core Monitoring of Lees Ferry Trout" (see p. 81). I'd like to identify those projects that have been classified as Core Monitoring.	Replace Text		This project is well established and generally viewed as core monitoring. It will be subjected to another PEP in 2009 for further review. Core monitoring also nearly established for Kanab ambersnai and riparian vegetation.
62	84	13	Bill Persons	AZGFD	Goal 4 Lees Ferry trout fishery. Andrew Makinster is the PI for Arizona Game and Fish Department.	Add text.		Accepted.
63	84	20	Bill Persons	AZGFD	Change "NPS, AZGFD, Hualapai, and Navajo" objectives for the trout fishery" to "AMP objectives for the trout fishery..." (AMP Strategic Plan, August 17, 2001, p. 18).	Change text.		Accepted.
64	84	21	Bill Persons	AZGFD	Change "The management goal of stakeholders" to "The management goal of the AMP"	Change text.		Accepted.
65	85	18	Bill Persons	AZGFD	Information needs were revised at a CMIN Stakeholder Workshop, April 4, 2007 (see below). Should those CMINs take the place of those listed here? If not, I would at least include CMIN 4.1.1 (Determine population estimate), especially in light of p. 60, line 14, statement that we will likely suggest some alternative methods".		Y	Accepted. We will review and revise.
66	85		Barger	WAPA	It is not clear to me, for the NN Control planning/pilot, how the schedule will work for completing the short term response plan, have it reviewed and implemented	Include more information	Y	Short-term plan will be delivered not later than Labor Day 2008.

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53	79	2-9	SA	SA	The SAs applaud the position taken by the biology Program. Mgr regarding focused attention to integrating this program into other physical and biological programs.	Program integration		
54	79	19	SA	SA	The collaborator budget would seem more productive at \$250,000 - \$300,000	Increase budget		This comment has been previously addressed with SAs and BOR. While we agree with this statement, no additional funding is available in FY 09 for the project, so the scope of work for the cooperator has been reduced (will not be required to deliver a complete model). If additional funding becomes available then the assignment can be revisited.
55	81	7	Bill Persons	AZGFD	<u>Mainstem Coldwater Fish Control</u> . Does Game & Fish have a role in this?	Check list of PIs		Needs to be revised to include AZGFD.
56	81	25	Bill Persons	AZGFD	Change "the evaluation" to "the removal" of RBT in the confluence reach	Replace text		We will re-word. Removal is part of the evaluation because it allows for the population estimate (evaluation) in the reach.
57	81		Capron	WAPA	Remote PIT tag readers may be viable in the LCR during low flows, do we really think this could be transferred to the main-stem? What were the initial results from '08?	written response	y	The readers deployed in the LCR have been effective, though they read over a limited area. The LCR seems most practical, but potentially could be deployed elsewhere.
58	81		Capron	WAPA	It would be helpful to provide key findings and results from the previous non-native removal program.	Revise proposal	y	These results have been reported to TWG meetings and in Coggins' dissertation. Manuscript is in preparation.

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72	108	15-17	Bill Persons	AZGFD	Physical program – Core Monitoring of Downstream Integrated Quality of Water – Keep up the good work monitoring quality of water releases from GCD, especially oxygen. Can we get a quick update on anticipated temperature and oxygen releases for this fall (Not in the workshop, either with a brief report, or presentation at TWG)		N	The temperature projections were presented at the May AMWG by T. Ryan. Please review the handout from that meeting. No projections for oxygen have been presented by the Lake Powell modelers at BurRec to our knowledge.
73	134	1	Bill Persons	AZGFD	Goal 7 and 8. Sections on Products/ Reports were useful, and gave me a quick idea of what the projects would accomplish in 09. Would be nice to see this kind of detail in the Biology Program.		N	Thank you for your supportive feedback.
74	139	23	Bill Persons	AZGFD	Recreational Safety Data Nice to see this project getting started.		N	We agree.
75	151	1	Bill Persons	AZGFD	Goal 10: Power Production. Line 23 states that data provided by WAPA to GCMRC will be served through the GCMRC web site. Can you provide the link to this? I couldn't find it on the GCMRC site.	Provide link, or date of anticipated roll-out		Not yet available.
76	167	12	Barger	WAPA	Please include names of personnel. This is inconsistent in the document, some include, some do not, some include contractors, some do not. More information is better than less.	Include information	Y	One reason for the inconsistency is that in many cases, the specific cooperators have not been determined at the time the work plan is being written. To the extent this information is set in advance, we can provide the information.
77	177	21	Bill Persons	AZGFD	Oracle Database Management System. Nice job on keeping the Fisheries data in good shape, up to date, and some great products with tagging information that makes fish cooperators job easier.		N	Thanks for the supportive comments.
78	177	21	Bill Persons	AZGFD	LSSF Synthesis. What is an OFR?	Add text.		Open File Report, a USGS publication containing limited interpretive results that is subjected to external peer review before

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67	86	16	Bill Persons	AZGFD	in 2009. Please include more information on scheduling and what is expected to be done in the field for 09. Add "The PEP planned for FY09 will help address questions related to methods and analysis for this Core Monitoring Project". Am I right that this is on the official Core Monitoring list and is planned for the 09 PEP? Will the Lees Ferry PEP be conducted as part of the Super Fish PEP for 09? Could you include a project that identifies the projects the FY09 fish PEP will review? Bio 2, Bio 3, Bio 4? I know there are a lot, I just haven't tried to tally them up in a list. Might be helpful to have in the FY09 Work plan	Add text	Y	Combined with pilot project results from '07 and '08, these efforts will be discussed among cooperators and at the 2009 PEP to help formulate the pilot project for 2009. The general approach is to direct current efforts at species thought to be of greatest threat to natives. Comment accepted. 2009 PEP for fishes anticipated to address all native and nonnative species.
68	86	22	Bill Persons	AZGFD	Links/Relationships to Other Projects. Should there be a mention/link to the AMWG Lees Ferry Management Plan Group? Core Monitoring, or Ongoing. Budget sheet says COR.		Y	We can mention.
69	87	1	Bill Persons	AZGFD		Change text.		Lees Ferry RBT monitoring was subjected to PEP review in 2001 and will be again in 2009, so is generally thought to be core monitoring.
70	95	7	Barger	WAPA	Shouldn't you list the PIs with AZGFD and FWS?		y	We need to revise some projects to include partner agency PIs.
71	106	2	Bill Persons	AZGFD	Water Quality Monitoring We look forward to seeing the comprehensive report describing the Lake Powell water-quality monitoring, and are especially interested in any biological data (plankton)		N	

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79	177	25	Bill Persons	AZGFD	August 2008 is mentioned as a date for the workshop. The sooner you can provide more information (date, place), the easier it will be for cooperators to attend. Looks like a good approach to the task!	Add specific date.		publication. The LSSF Synthesis workshop will be convened August 12-14, 2008 at the USGS in Flagstaff, AZ. This will be removed.
80	179	3	William Werner	AZ Water	There is some leftover highlighting			
81	?(56/82)	?(7)	Barger	WAPA	List AZGF PI	Add info	y	R. Scott Rogers (Page clarification is needed)
82	Budget Table, App C		Barger	WAPA	Table, line 69, trammel net effects, this shows going through 09, but there is no work plan item and no funding. Was this completed? What is the status of this project?	Include more information	y	Project will be complete in FY 08. Student cooperator will be completing Masters work in fall '08 and thesis will be made available.
83	Budget Table, App C		Barger	WAPA	Table, line 103, please clarify the status of this study using carry over funds, not being deferred and status of reporting. There needs to be a narrative for this in the work plan since it will be work accomplished in 09. Without projects like this in the work plan, there is no way to know status of these ongoing projects.	Include information in table and work plan	y	The project described in the FY08 work plan will continue into FY09 with a portion of the funding that was approved but not expended in FY08. Like many other FY08 projects, completion of this project was delayed several months due to having to reallocate GCMRC and NPS staff time to planning and implementing the HFE. An update on the status of this project was previously provided to TWG in April 2008 as part of the FY08 project update.
84	Budget Table, App C		Barger	WAPA	Table Line 130, include a place holder for money for 09		y	

The following are from general comments from the SAs

The SA Executive Director's review charge to the SAs (Appendix A) implements explicitly the review request of the GCMRC Deputy Chief. This review report relates only to the above three referenced programs of the 2009 Annual Plan of Work.

Science descriptions for programs in the Annual Work Plan are by AMWG and GCMRC agreement very abbreviated. Generally an abstract format is utilized. This practice is necessary to permit managers to grasp the general science direction and budget needs of GCMRCs overall broad based programs. As such SA reviews of these proposed programs must be of an overview nature, focusing on how the described issues or concern are formulated into science questions, goals and objectives, methods and outcomes.

PRESENTATION OF REVIEW FINDINGS

This report first provides overview comments on the requested areas of review under the section, "General Comments". A second section "Specific Comments" focuses on particular points in the plan and are indexed by page and line.

General and specific comments for the three programs reviewed are presented in the following order in the text.

- Nonnative Control Pilot Testing
- Near Shore Ecology/Fall Steady Flows
- Integrated Flow, Temperature and Sediment Modeling

NONNATIVE CONTROL PILOT TESTING

As described, this project has been directed by a full time biologist since October, 2006 to accomplish two tasks:

- Short term response plan (2008)
- Comprehensive non-native control plan (2011)

The specific goals are to:

- Evaluate threats to native fishes resulting from nonnative fishes
- To develop a plan to control species posing the greatest threat
- Test implementation of plan

Additional comments from the Science Advisors

GCD AMP SCIENCE ADVISORS' REVIEW OF THREE NEW PROGRAM INITIATIVES IN THE "GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM BUDGET AND ANNUAL WORK PLAN; FISCAL YEAR 2009"

REVIEW CHARGE AND INTRODUCTION

Annually the GCD AMP Science Advisors review the GCMRC Science Work Plan and Budget, including all research and monitoring activity. Because most of the science programs in the annual plan span multiple years, often 3-5 years, the SA review is only focused on proposed new program activity. Other programs are also generally referenced as regards improving ecosystem science programming, necessary integration of science, cost effectiveness, etc.

The Deputy Chief for Science Planning and implementation, Dr. Melis, charged the SAs in their review to specifically address two new program initiatives for 2009 as follows:

- Near Shore Ecology/Fall Steady Flows
- Integrated Flow, Temperature and Sediment Modeling

In addition the SAs elected to also review the critical new program on Non-Native Control Pilot Testing initiated in FY 2008. Justification for review of this program relates to its critical importance to the overall native fish programs and SAs limited understanding of methods proposed to accomplish listed goals.

¹ The GCD AMP Science Advisor Program is represented by; Lance Gunderson, AM specialist; Don Fowler, anthropologist; Jill Baron, biologist; James Kitchell, fish ecologist; Ellen Wohl, geomorphologist; Harold Tyus, fish ecologist; Virginia Dale, mathematical ecologist; Dale Robertson, limnologist; and Dave Garrett, economist and Executive Director of SAs.

It is also unclear as to what plan will be tested in this program. We assume the 2008 plan, since the long term plan is not complete until the year the program ends, 2011.

The information provided in the links section relates appropriate justification status for the project but provides no specific information on linkages of this project to other projects. We propose it be rewritten to include these linkages. If very limited field science is planned, greater dependence on other projects is expected. Clearly linkages should be developed to temperature modeling programs, near shore ecology programs, the food base project, etc.

The specific budget needs for this project are difficult to determine because it is unclear as to the balance of literature assessment and field science being proposed for the first goal. We assume, based on the budget, that the field science efforts will not be robust. This could be a concern if literature assessments are not productive in reducing uncertainty.

The general content of outputs (reports) from this program are not specified adequately. Will determination of how and to what extent predation impacts HBC be derived for colder versus warmer Colorado River environments? Will this occur on one species, i.e. catfish or several species? Simplistic clarification of outcomes would improve understanding.

NEAR SHORE ECOLOGY/FALL STEADY FLOWS

The SAs have reviewed the RFP for the proposed Near Shore Ecology Program. Several comments recorded in that review are appropriate here.

General Comments

The goals, both assessments and model development, and elements of the related objectives appear appropriate for this program. This program also has opportunity to contribute to parts of all of the information needs specified.

The methods section presents an appropriate approach for GCMRC given the pending RFP. That is, GCMRC should not pre-establish methods or impose unnecessary constraints on this program of research so as to prohibit creative thinking. Two or three sentences could be added to identify target outcomes for the 2008 pilot. Further, a sentence or two should be added to clarify that GCMRC will play an equal role to the outside collaborator in this science effort.

General Comments

The SAs have commented previously on proposed science questions for this program and those are referenced. Generally the questions for the program respond to the issues, established goals and stated information needs.

The goals are well articulated and ordered appropriately. That is, multiple years of science are clearly needed to derive a control plan that can be tested.

The methods section does not provide appropriate definition of how each goal will be addressed, and it is not clear what plan will be tested in the third goal.

The SAs feel this is an important project but the entire abstract reads more like a planning project for management actions, rather than a science program. Even the discussion of the literature assessment receives minor treatment.

We recommend that two to five additional sentences be added to clarify how the author intends to balance literature assessments, i.e. determining existing science knowledge with new field science assessments to improve knowledge so that appropriate control methods can be developed for the current and assumed changing system.

The descriptions lack clarity and only very limited definition is provided on proposed activities. Many questions surface.

For example:

- Will a synthesis be attempted to evaluate non-native related data over the natural warming (water) period of 2001-2005 to determine any association to native fish findings.
- Will this target specific areas or will it involve the entire reach of the river from Lake Powell to Lake Mead?
- What is the geographic scope?
- How many species are involved?
- How will this study link to other ongoing management actions?
- How will nonnative control actions be integrated with the sediment/flow experiments?
- How will the proposed actions interact with the other science projects?

- Criteria for choosing multi-dimensional reaches?
 - Criteria for judging model results to be sufficiently accurate for intended uses?
 - Metrics common to the 1d system model and the multi-dimensional reach model?
 - Specific input and output data, including spatial and temporal resolution, for both models?
 - Range of discharge and sediment supply field data available for model calibration/validation?
 - Unavoidable vs acceptable model uncertainty?
 - Identification of most important model parameters for fish, riparian habitat, etc?
- The overall approach and research methods seem satisfactory, but without the details listed above a full evaluation cannot be made. Similarly, the appropriateness of different outputs cannot be judged without these details. The SAs assume these details are available and request they be provided.

The budget seems reasonable given the general description of the research.

The SAs are familiar with both the quality and applicability of science findings and models from the physical resources group, specifically the scientists listed for this project.

The strong requirements for the collaborator and GCMRC Senior Ecologist to identify and implement linkages to most appropriate ongoing programs to this new study are applauded by the SAs. A strong interest in this area is expressed by several SAs who would appreciate involvement in the review of potential linkages by the Senior Ecologist.

The budget for the collaborator in this program would seem more appropriate at \$250,000 to \$300,000 rather than \$200,000 even when one assumes an equally prominent role of GCMRC exists. A time period for the program of 5 years will be necessary. However, completion of validated predictive models may not be possible, although conceptual models seem possible.

Please reference the SA review of the Near Shore Ecology RFP for related comments.

INTEGRATED FLOW, TEMPERATURE, AND SEDIMENT MODELING

General Comments

GCMRC has a long history of research and monitoring efforts on flows, temperature and sediment. From the beginning of GCMRC plans existed to develop useful predictive models from the extensive observations. The most recent Protocol Evaluation Panel (PEP) encouraged strong pursuit of models to assist both science and management planning.

The FY 2008 and 2009 projects both on one dimensional and multi-dimensional efforts are most appropriate thrusts given the new EA and associated flow regains for 2008-2012.

The defined strategic questions respond appropriately to the goals and information needs characterized for this long term research monitoring and modeling program.

The methods address the key overarching science and management questions in the manner recommended by the most recent physical science PEP. As in most program methods sections, the length/format limitations for this document do not permit sufficient detail to adequately critique a new science effort. This is in spite of the fact that this methods section is much more definitive than most listings in the Annual Work Plan. We assume, knowing the past quality of sediment research that information on the following details exist in the more robust plan.

- Number, spatial distribution along the river corridor and length of multi-dimensional reaches?