

Biology Committee Draft Summary
January 26, 2012, Grand Junction, CO

PARTICIPANTS

Biology Committee: Melissa Trammell, Dave Speas, Dale Ryden, Krissy Wilson, Jerry Wilhite, Brandon Albrecht, Harry Crockett, and Pete Cavalli. Tom Pitts and Bill Davis did not attend.

Other participants: Pat Martinez, Tom Chart, Angela Kantola, Dave Schnoor, Matt Breen, Kevin Bestgen, Kevin McAbee (via phone), Tildon Jones, John Hawkins, Koreen Zelasko, Ed Wick, Paul Badame, Darek Elverud, Trina Hedrick (via phone), Mike Roberts (via phone) and Tom Czaplá.

CONVENE: 8:00 a.m.

1. Follow-up on Walton Creek confluence GOCO funding opportunity – Dave Speas felt this was a difficult call, especially combining biology and management discussions. Dave recommended either sequencing these discussions in the future, or making it very clear we're having a combined Biology and Management committee call. Tom Chart said in this case we needed to make a very quick decision. His intent in inviting the Management Committee to listen in was to facilitate the information exchange – there would have been a separate MC call if the BC had recommended proceeding. In the end, Tom believes the decision was made on a technical basis. Melissa noted it was difficult for biologists to evaluate the diagram of the radical channel realignment, not being geomorphologists. Harry said he does think we're missing an opportunity and that he agrees with Dave that it was difficult to make a biological call in the presence of the management considerations. Tom Chart clarified that he thinks *something* needs to be done at the Walton Creek site (and is biologically justified), just not the current proposal. Melissa agreed that the conceptual plan CPW brought to the Recovery Program was not acceptable based on the available information and if it was to be pursued in the future, it would be better to start from the beginning on a design. Dave Speas agreed that we need to do something at this site. Tom said the letter has been drafted and will be sent to Steamboat Springs soon saying the Program does not want to participate.
2. Review of 2012-2013 contingency list, NNF SOW revisions, and previous cuts to nonnative fish management budgets – The Committee discussed proposed revisions to nonnative fish management SOWs and other contingency projects. In addition to the descriptions below, please also see the FY12-13 budget table (Excel file included in the email that transmitted this meeting summary).
 - New SOWs and revisions (and request for ETS units) are due from >principal investigators directly to the Biology Committee e-mail list by February 2. PI's are requested to attach their revised/new scopes of work and briefly describe the changes in their cover e-mail. >Biology Committee members have until February 9 to provide any comments or questions (all this will be done via e-mail).
 - > Jana will work with Reclamation on the aerial photography SOW.
 - > Jana Mohrman, Tom Chart and Kirk LaGory will work on a SOW to assemble a team to interpret the findings of Project 85f.
 - Larval Trigger related work:
 - >Tom Chart and Jerry Wilhite will work with Argonne on a SOW for the C-6 Hydro work to assist with physical aspects of larval trigger study plan.
 - Matt Breen said that the Stewart Lake sampling schedule/techniques will be modified as needed; there will be four sampling periods at most. Matt also will talk to Nathan Darnell regarding selenium work.
 - Dave Speas asked if Vernal CRFP will do water quality sampling (probably winter) under their floodplain SOW; Tildon said it wasn't identified, but they could add it.
 - Melissa suggested using monitoring funds to purchase additional Hydrolabs (\$7-10K each) under the larval trigger studies (>UDWR & FWS will modify their SOWs for this). Brandon agreed water quality is very important.

- >Tom Czapl, Dave Speas and Kevin McAbee will draft a Tusher Wash mortality study and literature review RFP (or similar).
- Melissa noted that Dinosaur had asked for \$5K for water quality monitoring (for emerging contaminants in light of the fact that 80% of male bass at Maybell show intersex characteristics) and asked if that could be considered under habitat (monitoring). Although this would be ongoing work, NPS would accept a one-time contribution. The Program does have a history of expecting outside sources to address contaminant issues (certainly regarding any remediation). The Committee added this to the power-revenue-eligible contingency list pending a scope of work.
- Pat said our goal is to rig the Program's fleet in a standard way with ETS units. >PIs will review now-available funds to determine if/how much additional funds would be needed to begin converting to ETS units this year. Pat will discuss with ETS the possibility of a "bulk" purchase ordered by different agencies and our need for a large number of units. Not all ETS units ordered this year can be installed this year due to the short time before field season and the need to rewire boats.
- 98a PDO suggests PI's include a contingency (\$10K) to account for additional field time if hydrology is average or drier; >CPW to make changes.
- 98c Upper Yampa pike removal above buffer zone and review of pike sources - >Harry and Tildon will prepare a SOW (to be reviewed by Committee via e-mail, as discussed above), if this can be accomplished logistically this year. John Hawkins suggested traditional gear on off-channel ponds might be a small-scale way to start on it this year (as opposed to shocking the river). Harry said Colorado might be able to augment Billy's work in this way. Chart agreed we don't necessarily have to repeat the 98c study design – it could be focus on source areas this first year.
- In revising nonnative fish SOWs, PI's won't reinstate marking passes where marking passes have already proved inefficient (e.g., on #110 [NPS policy is to remove all nonnative fishes and the population estimate is inefficient, anyway] & #123a [would mark ~35 fish]). Kevin Bestgen reminded the Committee of the power of marked fish. In addition to estimates, it also provides important movement data. On the other hand, Pat and Tildon noted that we've already demonstrated movement. Also, SOWs will maintain any efficiencies that were found in our previous streamlining – the goal is to restore "muscle," not "fat" to the SOWs.
- UDWR will also PIT tag bass marked in Green R reach Duchesne to Tabyago (~200 fish in #123b that are also floy-tagged) so that we can detect them with the White River array if they move into the White River.
- 126b – Dave asked if \$15.3K for Colorado's restored passes would allow reconnaissance of potential nonnative fish sources (this work would be best conducted by Colorado). >Harry will see what's needed and discuss with Dale and the Program Director's office.
- White River nonnative fish removal – Dale and Harry described up-front work that Colorado will require: 1) a public meeting in Rangely (>Colorado and the PD's office will schedule); and 2) landowner permissions (may already have been covered for Colorado pikeminnow sampling, but landowner permission is needed anywhere boats will pull to shore). Melissa asked why a public meeting is needed since: 1) we're already removing bass opportunistically during Colorado pikeminnow estimates; and 2) it could serve to advertise the presence of smallmouth bass. Melissa didn't find any reference to smallmouth in this area on the online fishing forums. Harry said the public meeting is needed because locals are aware of this fishery and we've only informed the public of Colorado pikeminnow estimates. This will be a public *information* meeting, where Colorado will *inform* the public of what we will be doing and why, period. Colorado and the Program will both be a part of this meeting. Krissy recommended that a serious effort be made to alert the affected agency's directorates as they could be contacted by irate public. >Colorado, the Service, and the PD's office will work to make necessary landowner contacts before the public meeting announcement and public meeting. Dave Speas asked why only two passes; Dale said they are in addition to the Colorado pikeminnow passes. Colorado regrets that they couldn't participate in this work this year, but may want to do so in FY13 and beyond. Utah's portion of this work will proceed independently of Colorado public meetings and landowner approval. In Colorado, the stretch between the dam and Douglas Creek will be the highest priority. Tildon said his biggest concern is that access for Colorado pikeminnow estimates could be impacted by our addition of nonnative fish removal (Pat noted we had

the same concerns many years ago on the Yampa River but access wasn't impacted, after all).

- 161 – Tom Chart said the smallmouth bass synthesis wrapping up, but there are some related information needs in working with the model, and possibly the 2011 dataset. Putting additional funds toward this work would not affect currently-expected products, but would allow us to continue these activities. Kevin Bestgen said that he thinks it would be useful subsequently integrate the 2011 information; integrate abundance dynamics model and get folks comfortable with using it. We've also discussed ramping up our database systems and André could be very helpful with this. Kevin thinks adding an additional year at \$70K would be reasonable. >LFL will write the SOW to be flexible on prioritizing what the Committee thinks is most important to address. The Committee agreed to this. Tom Chart confirmed that we expect the products in the timeframes identified in the existing SOWs and this addition would not cause any delays (e.g., to the basinwide nonnative fish strategy). Tom Czapla and others raised items related to other biometric needs that might be addressed under this scope (e.g., razorback population estimates from Colorado pikeminnow estimates), but the BC decided to focus on the aforementioned for the time being.
- 22f larval sampling in White R. discussion (sampling and analysis). >Kevin Bestgen will prepare revised SOW for sampling and analysis. This may not be classic light-trapping (e.g., could be dip-netting, which is more involved).
- Humpback chub analysis - >Kevin and Dale will revise SOW to add additional analysis (from Gary White) with some recommendations for how it would be used in future reporting (from Kevin), that is, how to look at the data in the long-term).
- The RBS larval monitoring line was deleted; it's covered under the larval trigger studies.
- Melissa may submit a SOW at some point for Program review/consideration on Dinosaur's proposal (which would be conducted by LFL) to: 1) "summarize existing data and knowledge and develop long-term research and monitoring recommendations for protection of native fish resources in Dinosaur, with emphasis on characterizing the special values and challenges associated with three distinct river reaches:
 - The Yampa River from Deerlodge to Echo Park (representing relatively unregulated river conditions)
 - The Green River from Browns Park to Echo Park (representing compromised resource conditions strongly influenced by dam operations for five decades), and
 - The Green River from Echo Park to the southwest boundary of the monument (representing a hybrid river suffering impacts from regulation, but receiving benefits/mitigation from the unregulated Yampa)."and 2) "construct an instream flow prescription for the Yampa River that maximizes the likelihood of maintaining existing or improved native fish populations and native fish habitat conditions in Deerlodge Park and the Yampa Canyon from Deerlodge Park to Echo Park." Tom Chart said he likes the multi-disciplinary (fish, geomorph, and riparian) approach the NPS is considering, but thinks that ultimately the strength in any flow recommendation will be its link to endangered fish. Therefore it is best for the Program to be involved in this work. Perhaps we could cost-share something if the Park is interested. The Program has recognized that we need a peak flow recommendation on the Yampa River. Kevin suggested that it might be best for the Park to fund the fish resource part and the Program and the Park share the cost of the flow recommendation portion; others agreed.
- Regarding #138, UDWR proposes to leave it as written with no change to current budget.
- Melissa noted that the Committee has previously discussed looking at the Colorado River inflow of Lake Powell; however, this would be an ongoing study. UDWR will consider proposing this for 2013.
- Flat plate antennas (and potential multiplex box) at the razorback bar would be another possibility if we can use additional O&M funds; Tom Czapla said a SOW may be submitted for this.
- Pat emphasized that we may need to shift resources *among* nonnative fish management projects in 2013.
- In addition to the other specific SOWs mentioned in this list, >PIs will revise SOWs for projects: 110, 123a, 123b, 125, 126a, 126b, 158, and 15. Please see dark green notes in FY2012 comments column (N) of FY12-13 budget table.

3. Complying with new Reclamation reporting guidelines – Dave Speas said Reclamation's agreement number(s) is now be required on annual reports (see example for where to find those numbers in attachment 2). There will be a space for this on the FY12 annual report form. Dave said it would be wise

to put agreement numbers on final reports, also. >Angela will add this to the final report format.

4. Reservoir renovation to remove nonnative fishes (e.g., Red Fleet) – The Committee discussed potential reservoir renovations, issues, and preliminary/regulatory steps. Trina said they believe an EA will be required to treat Red Fleet as for Panguitch Lake. The plan would be similar to that for any treatment, but will take some time to prepare. Trina has begun a conversation with irrigation district, and also will need to discuss this with the County Commissioners. In terms of a timeline, it would likely be 2013 in light of time needed to work with public, work out the plan, address issues, etc. Red Fleet is a drinking water source (potentially June-Sept), so folks may have concerns about that. It's also used for livestock watering. Utah would ask the Recovery Program to cover powdered (reservoir) and liquid (Brush Creek) rotenone and potassium permanganate for detoxification. The powdered rotenone cost \$100-\$200K. Trina thinks the maximum request would be \$350K. Utah would cover all other costs of treatment. The Reservoir would be treated at a volume of ~17,000 af. Trina would like to work with the Program Director's Office (Debbie) in putting together the I&E plan (which Utah would implement). Pat Martinez said he thinks the question for the Committee is how we prioritize these opportunities. Some reservoirs have the potential for allowing nonnative fish escapement that would then to explode onto the landscape, but Red Fleet may not. Of our top three species of concern (northern pike, smallmouth and walleye), walleye has so far shown the lesser potential to explode on its own, but is perhaps showing an increase over recent years. So far, Starvation Reservoir appears to be the most important source of walleye in the Green River. We want to be sure we get the biggest bang for our buck when we apply rotenone, given potential controversies. Trina asked about the screen being installed at Rifle Gap; Pat said he's not sure how secure this approach is. Tom Czapla mentioned Dave Ward's presentation about using ammonia as a potential piscicide; this has the potential to be more palatable to the public (however, it's not yet approved as a piscicide). Dave asked about potential for escapement from Red Fleet; Trina will discuss this with Reclamation. Tildon said based on the reservoir and spillway elevation information, he thinks it spills every spring. Krissy said Utah sees this as a good example and good place to take a stand on illegal stocking. Clearly, this problem is only going to get worse unless we take a stand. Pat said he was very disappointed that Utah pulled the 'must-kill' regulation on Red Fleet Reservoir because it helped to send that message; Pat recommends re-instituting that regulation as a step in the process (whether or not we eventually treat Red Fleet). The Committee encouraged Utah to continue developing the Red Fleet proposal but asked Trina to hold off on further planning discussions until we get the results from the otolith work. Brandon noted that this also could be looked at from a preventative standpoint – preventing walleye from getting into the Green River even if we do not get a clear signal from the otolith work. The Committee also urged Utah to reinstate the 'must-kill' regulation (Krissy said that for the latter, they have to work on the 'wanton waste of wildlife' regulation, which they will pursue). Tom Chart asked about the post-treatment management plan; Trina said it would likely be for bluegill, rainbows, and largemouth bass (as before the walleye). Krissy said they'd also want to incorporate follow-up monitoring and rapid response into the plan. The Biology Committee asked the >Nonnative Fish Subcommittee to put together a list of reservoirs where we have concerns about escapement and try to begin prioritizing those.

5. Final report reviews

a. Westwater humpback chub population estimate (final sent to BC 11/14/11) – Dave Speas expressed concern about the narrow length interval. There is a recommendation to consider implementing an additional project focused on estimating abundance of juvenile humpback chub, recruitment of first-year adult humpback chub and adult survival in Black Rocks and Westwater Canyon. Dave Speas said we still have an inconsistency between the two reports. Paul Badame noted that this inconsistency is not continuing in the new reports, however. Krissy asked if the LFL analysis will help with this question, but Dave said he thinks we'd really need to age some fish. Darek will add a sentence to clarify that 200-220mm length category for first year adults is an index or life-stage, not something determined by actually aging fish. On page 4, data analysis, 2nd paragraph: Darek will fix the "wider" then "precise" error. The Committee accepted the report with these revisions; Darek will finalize the report and post it to the listserver and the Program Director's office will subsequently post it to the web.

b. Deso/Gray humpback chub population estimate (final sent to BC 11/21/11, revised version to address R. Valdez comments sent by Paul Badame on 1/11/12) – Paul said Rich Valdez’ main point was to use actual site estimates in the main table for tracking population over time, so Paul did that. Paul will add 2001 to Table 1 and delete the repeated header. Melissa said that using two different population estimates on the same graph concerns her because it obscures what we believe to be a real decline. Paul will add a few sentences to the caption for figure 2 explaining that the earlier estimates were likely underestimated (and also add this explanation to footnote #2 on Table 1). Paul also will add a similar clarification about the first year adult “index” (see Westwater report, above). The Committee accepted the report with these revisions; Paul will finalize the report and post it to the listserver and the Program Director’s office will subsequently post it to the web.

6. Updates

- a. Stationary PIT-antenna to be installed on the White River – Kevin said that under consultation with FERC on potential direct impacts of an open-trench natural gas pipeline rebuild that crosses the White River in Utah, the project proponent (Questar) has agreed to fund a 120’ passive antenna at RM 59 near the Bonanza Bridge to detect PIT-tagged fish as mitigation for the pipeline. This will be high enough up in the White River to detect fish that likely would be resident. Questar has officially committed to the project at this point. After construction, the project would be turned over to the Recovery Program or one of its partners. We need to determine who will monitor the PIT data. Kevin and Tom Czaplak has suggested that Travis collect the data, and then send it to folks like Kevin Bestgen and UDWR (those entities would then pull the data they need – endangered fish vs. three-species data). Dale said he is willing to try this for a year and see how it impacts their workload. Questar is looking for positive publicity on this. Kevin said they’re planning a site visit in April and installation hopefully in September. Dale noted that according to the BioMark engineer they met with at Price-Stubbs recently, the battery packs for the solar arrays only last ~5 years, and replacements are \$7-11K. >Kevin will ask BioMark about it and determine if it needs to be worked into the negotiation with Questar. The Committee thanked Kevin for his work on this.
- b. Thunder Ranch – Tom Chart said that USBR-Provo has estimated the repair to the entire levee to the newer standard will cost \$384K (capital funds). Conversations with the landowner have ruled out the possibility of a temporary earthen plug in the outlet channel. They are working on a concurrence agreement from Refugees to the landowner right now (the property was sold on January 13, but the property manager, Frank Biggs, has his proxy to sign the letter). The goal is to complete the repair before high flows. >Chart will send a copy of the letter and Reclamation’s SOW to the Biology and Management committees. The new owner is more interested in the alfalfa production aspect of the property than wildlife management, so we may be able to test an earthen plug in some future year. At some point, Krissy would like to know what the easement agreement called for (with a new landowner, it may be a good time to discuss those purposes again).
- c. Price River position paper – Tom Chart said that we were close to approval, but then Tom Pitts submitted significant comments in late November. Program representatives (Chart, Jana Mohrman, Tom Pitts, and Krissy Wilson) discussed Tom Pitts’ concerns regarding the programmatic / Section 7 concerns with the Service (Larry Crist, Amy Defreese, Kevin McAbee, and Paul Abate) on December 16, 2011. The Service agreed with many of Tom Pitts’ concerns and stated that they would not re-consult on Narrows on the basis of this paper. Pitts also had technical questions (e.g., significance 20 fish using the river over two seasons, the analysis, etc.) The Program Director’s office will prepare responses to Pitts concerns and potentially a revision to the position paper for Biology Committee review in the very near future.
- d. White River flow recommendations – Tom Chart said Jana sent these out in September, but hasn’t been able to address comments while she’s been working with Reclamation to put all the Program flow recommendations in a format that the Basin Study can use. Jana is dealing with conflicting

comments on both the peak and base flow aspects of the draft recommendations. >Jana will send out a packet of all the comments received to date.

- e. Humpback chub ad hoc group – Tom Czapla said an ad hoc group was convened in September and Tom provided them with information on the upper basin populations. The group had a call to discuss options, Tom drafted a report from that (and will >remind the group to submit comments on that draft). Draft conclusions were:
- Use a decision tree to make choices of what to do with regards to creating a refuge population and potential need to stock fish into the wild.
 - Use the Westwater Canyon and Black Rocks humpback chub to initially provide a refuge for Upper Colorado River Basin genetics, because they genetically represent most populations in the upper basin.

Draft recommendations were to:

- Maintain Yampa River and Desolation Canyon “humpback chub” currently being held at Ouray National Fish Hatchery, Randlett Unit.
- Have the captive 20+ Desolation Canyon fish genetically analyzed (Dexter will do under an existing contract).
- Collect fin clips from adult humpback chub in Westwater Canyon and Black Rocks, for genetic analysis to confirm the Douglas and Douglas results.
- Bring 200 young-of-year (in June–July, these may be 20–40 millimeters total length) individuals from Westwater Canyon (backwaters) and Black Rocks (along the walls) into captivity.
- Collect fin clips from adult humpback chub in other populations (Cataract Canyon, Desolation/Grey Canyons, Yampa Canyon, or wherever else they may be encountered). >Tom Czapla will give researchers direction on fin clips.

The Committee discussed whether we should analyze fin clips from Yampa Canyon (there are some in an ultracold freezer) and agreed that we should.

- f. FWS Vernal and Grand Junction offices de-complexed – Dale Ryden said the Vernal CRFP and Ouray NFH-Randlett now are supervised by Dave Schnoor with Tildon under Dave as the supervisory biologist for the Vernal CRFP. Dale supervises the Grand Junction CRFP and hatchery unit. Dave will be the technical liaison for the hatcheries and Dale for the CRFP’s. Dale will be the Service’s Biology Committee representative for the near future, with Tildon as his alternate for now.
- g. Basinwide nonnative fish management strategy – Pat Martinez said that the Nonnative Fish Subcommittee met 11/8/11 to discuss revisions; recommendations included drafting a separate Information/Education section by I&E Committee and inclusion of information from Projects 161 and C-18/19 final reports, which are pending. The strategy may also incorporate background, guidance and discussion regarding proposed reclamation (rotenone) of reservoirs to remove problematic nonnative fishes, including pre- and post-PR/I&E, O&M and replacement sport fisheries. Pat said Randy Hampton let him know that a subgroup of the I&E Committee is drafting this section and will send that to the larger I&E Committee. Pat informed Randy that he would review the I&E input and then submit it to the NNF Subcommittee.
7. Bonytail rearing protocol – Dave Schnoor gave an update on razorback production at Ouray, noting they have been able to increase fish size, double-crop in some cases, and also had success fertilizing a pond. Dave called the Committee’s attention to the poster abstract from the researchers meeting about bonytail thermal requirements:

THERMAL REQUIREMENTS OF BONYTAIL (GILA ELEGANS): APPLICATION TO CONSERVATION PROPAGATION AND THERMAL REGIME MANAGEMENT OF RIVERS OF THE COLORADO RIVER BASIN. Kevin M. Kappenman*, Elijah S. Cureton, Jason Ilgen, Matt Toner, William C. Fraser, and Greg A. Kindschi. U.S. Fish and Wildlife Service, Bozeman Fish Technology Center, 4050 Bridger Canyon Road, Bozeman, MT 59715; *kevin_kappenman@fws.gov

We performed laboratory temperature trials on hatchery reared juvenile bonytail *Gila elegans* using the acclimated chronic exposure method. Bonytail were exposed to temperatures from 8–30°C for 112 d to determine the effect of temperature on growth, condition, body composition, and survival. Survival was = 98% for all treatments. The predicted temperature for maximum weight gain was 25.9°C, and the predicted temperature for zero weight gain was 14.2°C. Temperatures below 14°C depressed growth, temperatures from 14–20°C provided incremental growth, and temperatures from 22–26°C allowed accelerated growth. We hypothesize that propagation temperatures and/or seasonal river temperatures from 22–26°C would maximize growth of juvenile bonytail and might promote higher survival because bonytail would be less vulnerable to predation, have greater energy reserves, and increased metabolic efficiency. The threshold and optimal temperature we determined for bonytail were similar (within $\pm 2.2^\circ\text{C}$) to threshold and optimal temperatures predicted for three other “big-river” Colorado Basin species: the humpback chub *Gila cypha*, Colorado pikeminnow *Ptychocheilus lucius*, and razorback sucker *Xyrauchen texanus*. Our research supports a hypothesis that a “big-river species thermal regime” exists for these coevolved large-bodied fish species. Our study might have value as a model for these four endangered species. Conservation propagation practitioners and river management operators might find this information beneficial in aiding the recovery of these species. This information might help identify and protect critical thermal habitat and could provide guidelines for the development of thermal control devices designed to restore more natural thermal regimes to river reaches of the Colorado River Basin.

Dave said they’ve raised bonytail for ~10 years at Mumma. With regard to the statement (above) that juvenile bonytail didn’t grow below 14C, Dave thinks we should be considering temperature at which we stock in the fall, because he’s seen problems with stocking fish at too-low temperatures. Dave thinks that 14C might be a threshold for stocking these fish in the fall (below this, Dave thinks temperatures are too low for the fish to heal from handling and stocking stress). Bonytail spawn at 17 or 18C and for fall stocking, and Dave thinks that this may be a good minimum to consider for fall stocking. Dale said he and Dave have discussed this and recommend that we consider this as we discuss changes in our bonytail stocking protocol. >Dave will write up his thoughts on this. Dale said he thinks we are stocking later in the fall after field season when temperatures are colder. >The Mumma and Wahweap hatcheries will compile their records of stocking temperatures and provide that to Tom Czapla for consideration as part of the integrated stocking plan.

8. Review previous meeting assignments (deferred, see Attachment 1). Angela updated the list based on the foregoing discussion.
9. Review reports due list – Angela Kantola e-mailed the Committee an updated list prior to the meeting and will send another updated version. Tom Czapla said Kevin Bestgen told him he hopes to have the razorback sucker monitoring plan out in a couple of weeks.
10. Schedule next meeting – The next meeting will be a webinar on Friday, February 24 from 8-noon and 1-3. Agenda items may include:
 - Review of draft RIPRAP revisions & assessment
 - Review of revised C-6/RZ RECR, “Razorback sucker survival and emigration from the Stirrup floodplain, middle Green River, Utah, 2007-2010 by T. Hedrick, A. Breton, and S. Keddy;
 - Price River report
 - White River report
 - Larval trigger study plan
 - Flaming Gorge Flow request letter
 - Approval of January 12, 2012 Biology Committee conference call summary and today’s meeting summary (consent items)
11. Consent items: Review and approve: a) revised September 30 webinar summary (sent to BC by Angela Kantola on 12/8/11); b) November 22 webinar summary (posted to fws-colorriver listserver by Melissa Trammell on 12/2/11).

ADJOURN 4:05 p.m.

Attachment 1: Assignments

Note: the order of some assignments has been changed to group similar items together.
For earlier history of items preceded by an ampersand "&", please see [previous meeting summaries](#).

1. & 5/2/11: **CDOW** will still be looking for funding for other items on their nonnative fish management site "bucket list."
 - 11/22/11: **Harry Crockett** will ask Steamboat if they are willing to proceed with the Walton Creek proposal on the basis discussed by the BC. The **Program Director's office and CPW** will try to work out some of the details of the proposal to the Recovery Program and get back to the Biology (and Management) committees (and provide something by the Dec. 7 nonnative fish workshop).
 - 1/26/12: As discussed on the 1/12/12 conference call, the Committee decided not to participate in the Steamboat Spring's Walton Creek proposal and the Program Director will send a letter to Steamboat to this effect. This assignment is now complete, though the Program will continue to consider future opportunities to suppress sources/spawning areas of nonnative fishes.
2. *& The **Service and Program Director's office** will provide the Committee a draft addendum to the White River report that will present the measured flow requirements in a historical hydrologic perspective. The Program Director's office also will research where we left Schmidt and Orchard's draft report on peak (channel maintenance) flows and recommend whether to have it reviewed by the geomorphology panel.
 - 5/6/10: The Program Director's office will complete the addendum to the White River report and provide a status update and recommendation on the draft Schmidt and Orchard report on peak (channel maintenance) flows for Biology Committee review by July 1, 2011.
 - Sent to BC July 1, 2011. 9/30/11: conflicting comments have been received, Tom Pitts has asked Jana for an extension on the comment deadline (extended to Nov. 2). See also agenda item #3c.
 - 11/22/11 Progress on revising report delayed due to Price River report and Basin Study priorities; **Jana Mohrman** will provide a revised report to BC and WAC as soon as possible.
 - 1/26/12 **Jana** will send the Biology Committee a packet of all the comments received to date.
 3. *& **Program Director's office (Jana Mohrman and Tom Chart)** expect to provide a draft of the Price River report by the end of August 2009. 7/13/09: *Dave Speas* said the goal for the Narrows EIS is to get it out for public review in the fall, so the above schedule should work. The PD's office will keep the Service's SLC-ES shop in the loop on Price River.
 - 12/12/10 Program Director's office will use the information currently available to >develop a position paper on Price River flow recommendations for Committee review. The Program Director's office will revise the draft Price River position paper and get it to the Biology Committee within the next week, with comments due a month later.
 - Price River position paper sent 12/30/10 with comments due Jan. 31/ 11. UDWR may submit a Price River PIT tag proposal for "activities to avoid jeopardy" funding.
 - 3/11/11: **Tom Chart** will respond to comments and revise the report (in consultation with the Service) and bring it back to the Committee by July 1, 2011.
 - 6/21/11: Sent to Biology Committee; on 7/12/11 agenda (7/12/11: review/approval deferred to 9/30/11 at Tom Pitts' request); 9/29/11 Pitts' comments submitted; 9/30/11: See agenda item 3a: >**Tom Chart and Jana Mohrman will meet with Tom Pitts** very quickly to try to work out technical issues, and get recommended revisions back to the Committee as quickly as possible. The Committee tentatively approved the report pending Committee e-mail (or potential conference call) approval of changes to be provided via the listserver from Tom Chart subsequent to he and Jana meeting with Tom Pitts. Tom Chart anticipates clarifying hydrologic analyses, but not overall report recommendations. Tom Pitts will still file a report on the non-technical issues. These issues were discussed at the [Management Committee on October 12](#). Potential technical revisions pending.
 - 1/26/12 **Tom Chart** circulated Tom Pitts' recent draft technical and programmatic/policy comments and he and **Jana Mohrman** convened a small group (Tom, Jana, Tom Pitts, Krissy Wilson, and FWS-ES Utah

(Amy DeFreese or other) to review the comments. Tom will prepare responses to Pitts concerns and potentially a revision to the position paper for Biology Committee review in the very near future.

4. &The **Program Director's office** will prepare a list of issues to be resolved regarding Tusher Wash screening (e.g., levels of mortality acceptable for what size classes, potential O&M costs, etc.) to help move this decision forward (and provide that to the Biology Committee and the Service). *Done.*
 - *5/6/10: A small group (Melissa, Kevin McAbee, Dave Speas, Tom Pitts, and Tom Czapl) will work with Kevin Bestgen to review/build on the risk assessment, focusing on understanding existing impacts and what could be gained by various screening options. Tentatively, it would seem the best choice would be fish friendly runners with a screen on the irrigation ditch (contingent on further analysis). BC to submit proposal to MC by 12/31/10.*
 - *12/13/10 BC discussion: The Biology Committee recommended >starting with a literature review (there may be good information from low-head structures in the eastern U.S.); working on outlining what would be needed in a mortality study (including engineering considerations); and further investigating whether the owners would consider full or partial decommissioning.*
 - *3/1/11 As Kevin McAbee gets engineering info from the irrigators, he will share it with the ad hoc group. Kevin also will inquire more about the purpose of the 9" (at riverbank) – 20" (at center) concrete cap, to determine whether it is to benefit the existing diversion, or both the existing diversion and the proposed diversion on river left.*
 - *5/13/11: Dave provided a list of questions from Juddson Sechrist; the Tusher ad hoc group reviewed and discussed these on April 4 (summary sent to BC 4/20/11), agreed to have another meeting (site visit) this summer, and re-iterated the need for an initial literature search/review focusing on fish mortality at other sites with small hydro-electric facilities and smaller hydraulic head differentials. Krissy Wilson would like to participate in the site visit. >Tom Czapl will schedule the site visit (and talk to Kevin McAbee to see if he can arrange for the group to tour the inside of the facility). The Program Director's office and Reclamation will discuss how to get the mortality study done after we determine the information needs and timeframe.*
 - *9/30/11: The Program Director's office will ask if Brent Uilenberg and Bob Norman can provide description/specifications of the hardware at Tusher to help us understand if it can be retrofitted (11/8/11: awaiting reply). Tom Czapl will send a Doodle request to reconvene the ad hoc group to discuss who should do the literature review.*
 - *1/26/12: Tom Czapl, Dave Speas and Kevin McAbee will draft a Tusher Wash mortality study and literature review RFP (or similar).*
5. & Tasks related to stocking and genetics have been gathered here under revising the Integrated Stocking Plan. **Tom Czapl** is convening a group to revise the plan, address humpback chub genetic issues, and develop a humpback chub action plan; he will send out a draft revised stocking plan in early October 2011 and convene a conference call of the ad hoc group to review it in October or early November.
 - *5/13/11: Cost-benefit analyses should be included in the revised stocking plan; Tom Chart said he thinks the Program Director's office can initiate this analysis. Results of the health condition profile meeting held at Dexter in March should be incorporated into the revised stocking plan. Discussion of humpback chub and back up pikeminnow broodstock were prominent in this meeting. Horsethief pond water may be whirling disease positive, but Krissy said that Utah can apply for a variance from their Fish Health Board since the fish will be stocked where whirling disease is present and razorback are not known to carry WD.*
 - *6/2/11: Core ad hoc group identified: Harry Crockett, CDOW; Krissy Wilson, UDWR; and Pete Cavalli, WFG; Dale Ryden and/or Dave Schnoor, Travis Francis, USFWS; Dave Campbell and Scott Durst, San Juan Recovery Program; and input from hatchery managers as needed (particularly as it pertains to space at facilities).*
 - *11/22/11: Conference call to discuss humpback genetics and potential refugia/propagation held 11/2/11; draft action plan materials sent to group from Tom Czapl.*
 - *1/26/12 Tom Czapl will remind the ad hoc group to submit comments.*

Humpback Chub

The **Program Director's office** will communicate with Gary White to determine how many and which of the questions from the HBC workshop to focus on. *Pending.* **Derek Elverud** will provide the database for Westwater for Gary White to combine with Black Rocks, which will require a separate SOW.

- 5/13/11: *Black Rocks and Westwater data have been transferred to Gary White; **Program Director's office** will check to make sure we've got this analysis covered.*

After the ad hoc group meets, Melissa Trammell will draft an Environmental Assessment of the impacts of the humpback chub captivity management plan (also addresses how to deal with captured roundtail chub); **Krissy Wilson** will work with **Melissa** on the EA. **Tom Czapl**a will send out the briefing paper he received with the humpback chub genetic data to the Biology Committee (*done*). **Melissa Trammell** will review *Dexter's new plan to see if it may impact this (also will talk to Tom Czapl*a).

- 3/11/11: **Melissa** will talk to the Park about what they want to do with the chubs in captivity at Ouray and Mumma (likely return them to the river after acclimation) if the Program does not want to keep them. *Melissa suggested assessing morphology now that the fish have matured somewhat (Travis said he's seen the fish and they don't look like humpback to him). The Committee agreed to keep the fish in captivity for now.*
- 5/13/11: >**Harry Crockett** will check with CDOW to be sure the putative humpbacks at Mumma get moved to Ouray NFH – Randlett (requires an import permit from Utah Dept. of Agriculture). (*Krissy noted that all states now require imports to have AIS certification (Krissy sent the criteria to the Committee on 7/7/11, as well as disease certification.)*) >**Dale Ryden** will also talk to Dave Schnoor.
- 1/26/12: **Tom Czapl**a will provide researchers direction on collecting fin clips from adult humpback in Westwater and Black Rocks and other populations, i.e., Cataract Canyon, Desolation/Grey Canyons, Yampa Canyon, or wherever else they may be encountered.

*As identified in the sufficient progress assessment and requested by the Management Committee, the **Program** will develop an action plan for establishing refugia for humpback chub (avoiding getting bogged down in genetic analysis). Mike Roberts has recommended building in limiting factor/life history studies to better understand what's going on in the system that's affecting humpback chub populations.

Razorback Sucker

& **Dale Ryden** and **Dave Schnoor** will write up the Ouray hatchery needs (water source for Randlett and generator for Grand Valley) and submit this to the Program via Tom Czapl. **Dale** also will seek Service funding for these needs. The report will include a discussion the relative risks of power outages at Grand Valley. Melissa suggested that for the long-term, we need a feasibility study for alternative water sources for Randlett.

- 5/13/11: *Dale said Reclamation says alternative water sources would have a \$10M price tag. The Service has been discussing the manganese problem and will convene a group to discuss (Program Director's office, hatchery folks, Reclamation, etc.). Dave Schnoor has explored the idea of a generator for the Grand Valley unit. The Service should have a more comprehensive idea about these things in a few months.*
- 7/6/11: *Dale e-mailed write-up (discussed briefly at 7/10-11 BC meeting).*
- 8/24/11: Service purchased Grand Valley Unit generator. *Service/Reclamation met to discuss manganese; proposal to hire contractor and install additional filters pending.*
- 9/30/11: *Proposal for contractor review of alternatives for remediating the manganese problem approved by Management Committee.*

Bonytail

- **Dave Schnoor** will write up his thoughts on bonytail stocking and temperature. The **Mumma and Wahweap hatcheries** will compile their records of stocking temperatures and provide that to **Tom Czapl**a for consideration as part of the integrated stocking plan.
6. The **Biology Committee** will work on prioritizing their list of potential additional capital projects at a future meeting. *Ongoing.* By September 22, 2010, **Committee members and others** who suggested

capital project ideas will provide short explanatory/descriptive text (preferably just a paragraph), and then the **Committee** will decide when to take the next steps (individual ranking, group discussion of combined ranking, etc.). *UDWR comments submitted; next BC discussion on hold.*

7. The **Program Director's office** will follow up on establishing a process to track percentages of hybrid suckers using standardized protocol for identification of hybridization at fish ladders and in monitoring reaches. *Pending. Reclamation approved a CU study (through "other activities to avoid jeopardy") to crossbreed suckers and test fitness. 1/11/12: Discussed on 1/5/12 NNFSC call.*
8. Northern pike synthesis – 5/13/11 **Harry Crockett** will let **Billy Atkinson** know it will be helpful to compare the recruitment information to Billy's tag records from above Hayden (Harry will ask Billy to make his data available to Kevin Bestgen and Koreen Zelasko).
9. **Biology Committee members** will review the Research Framework recommendations in advance of reviewing the FY 12-13 work plan in July. *Not done; suggest review for FY 14-15 Program Guidance.* The **Program Director's office** will revise the Research Framework report on the web include a "last updated on" statement and a caveat that clarifies that this was incomplete and was a "point in time" database and direct users to the Program's laserfiche library and Program website. They also will correct the wording at the bottom of the second page of the report that suggests it is a "review draft." *Pending.*
 - 9/30/11: **Committee members** will send comments via e-mail (to the entire Committee) by October 31 as to whether they see items in those recommendations that should be captured in our current list of contingency projects or the next round of Program Guidance. 11/7/11: No comments received to date.
10. Spring Flows 2011 – aerial photography - 7/10/11: *See Attachment 2 for reaches flown.* The **Program Director's office** will look into potential partners to help fund stitching and georeferencing. 8/24/11: *In progress. 9/30/11: CWCB's floodplain mapping unit has offered to assist. COE may help, but hasn't found funds yet. WAPA also may be interested. 1/26/12: Program contingency funds added to cover stitching; also georeferencing and habitat delineation for the 13 floodplain sites.*
11. **Krissy Wilson** will forward the Committee UDWR's plan for larval light trapping in Flaming Gorge Reservoir (looking for burbot) when she gets it. 9/30/11: *this survey for larval burbot couldn't be completed as the likely window was missed this year; willing to consider in next year's work plan. This will be discussed at the nonnative fish workshop. 1/11/12: Gardunio said burbot are attracted to light during larval stage, but such trapping in winter could be difficult.*
12. The **Program Director's office** will make a recommendation regarding whether or not to password protect the PIT tag GIS site. *Pending.*
13. **The PDO** will notify all potentially affected field personnel in the event of future Elkhead releases.
14. **Trina Hedrick** will revise the Stirrup report based on the comments received on 11/22/11 along with any other comments received by December 6, 2011. Trina will provide the revised draft by January 12, 2011 (so that the Biology Committee can review it on January 26). **Dale Ryden** will provide Trina with razorback sucker survival data from the San Juan Program (*done*). 1/12/12: *PI is working to address Dave Speas' comments; reviewed deferred to next BC meeting/call.*
15. **Tom Chart and Jana Mohrman and Kirk LaGory** will convene a group fish biologists involved in developing the flow recommendations as well as geomorphologists (e.g., John Pitlick and Cory Williams) to identify logical next-steps (e.g., is MD-SWMS modeling the best way to proceed) to evaluate flow recommendations, particularly on (but not limited to) the Gunnison where sediment transport is so important. *Pending.*
16. New 2012 SOWs and revisions (and request for ETS units) are due from >**principal investigators** directly to the Biology Committee e-mail list by February 2. **PI's** are requested to attach their revised/new scopes

of work and briefly describe the changes in their cover e-mail. >**Biology Committee members** have until February 9 to provide any comments or questions (all this will be done via e-mail).

- **Jana Mohrman** will work with Reclamation on the aerial photography SOW.
 - **Jana Mohrman, Tom Chart and Kirk LaGory** will work on a SOW to assemble a team to interpret the findings of Project 85f.
 - **Tom Chart and Jerry Wilhite** will work with **Argonne** on a SOW for the C-6 Hydro work to assist with physical aspects of larval trigger study plan.
 - **UDWR & FWS** will modify their larval trigger SOWs to purchase Hydrolabs (\$7-10K each) for water quality monitoring.
 - **NPS** may submit a water quality SOW for emerging contaminants in Dinosaur.
 - **CPW** will modify SOW 98a (adding a \$10K contingency to account for additional field time if hydrology is average or drier).
 - **PIs** will review now-available funds to determine if/how much additional funds would be needed to begin converting to ETS units this year. **Pat Martinez** will call ETS to discuss the “bulk” purchase and our need for a large number of units.
 - 98c Upper Yampa pike removal above buffer zone and review of pike sources - >**Harry Crockett and Tildon Jones** will prepare a SOW (to be reviewed by Committee via e-mail, as discussed above), if this can be accomplished logistically this year.
 - 126b **Harry Crockett** will see what’s needed to allow reconnaissance of potential nonnative fish sources and discuss with **Dale Ryden** and the **Program Director’s** office.
 - White River nonnative fish removal - **Colorado and the PD’s office** will schedule a public information meeting in Rangely. **Colorado, the Service, and the PD’s office** will work to make necessary landowner contacts before the public meeting announcement.
 - **LFL (Kevin Bestgen)** will prepare a revised SOW for #161.
 - 22f larval sampling in White R. discussion (sampling and analysis). **Kevin Bestgen** will prepare revised SOW for sampling and analysis. This may not be classic light-trapping (e.g., could be dip-netting, which is more involved).
 - **Kevin Bestgen and Dale Ryden** will revise SOW #131 to add additional analysis (from Gary White) with some recommendations for how it would be used in future reporting (from Kevin), that is, how to look at the data in the long-term).
 - In addition to the other specific SOWs mentioned in this list, **PIs** will revise SOWs for projects: 110, 123a, 123b, 125, 126a, 126b, 158, and 15. Please see dark green notes in FY2012 comments column (N) of FY12-13 budget table.
17. **Angela Kantola** will add a place for Reclamation agreement numbers to the final report format on the web.
18. The **Nonnative Fish Subcommittee** will put together a list of reservoirs where we have concerns about escapement and try to begin prioritizing those for treatment.
19. **Kevin McAbee** will ask BioMark about battery packs for the solar arrays (which are said to only last ~5 years, with replacements at \$7-11K) and determine if replacements need to be worked into the negotiation with Questar.
20. **Tom Chart** will send a copy of the Thunder Ranch agreement letter and Reclamation’s SOW to the Biology and Management committees. At some point, Krissy would like to know what the easement agreement called for (with a new landowner, it may be a good time to discuss those purposes again).

Attachment 2

Annual reporting requirements for agencies receiving financial assistance from the Bureau of Reclamation.

1-20-12

Effective immediately, agencies receiving funding from the Bureau of Reclamation must provide the following information on their annual progress reports, including participants in the Upper Colorado River Endangered Fish Recovery Program:

- 1) **Principle investigators MUST identify their Federal assistance agreement number(s) on the title page of their annual reports.** These numbers appear in the subject line of the agreement cover letter (see attachment A) and also at the top of the assistance agreement itself (Attachment B). Please contact your fiscal coordinator to obtain these numbers; sometimes there are two of them, one beginning with a capital “R” and an older format which usually appears in parentheses. The latter is usually formatted this way: 08-FC-40-XXXX. (Note: Assistance agreements consist of grants or cooperative agreements and are sometimes referred to as “acquisitions” at the top of the assistance agreement. Please make sure these are the **FEDERAL** numbers, not project numbers assigned by your agency).
- 2) **Regarding (1) above, if there are multiple agencies on the same project (ie, see project 128, pikeminnow survey in the Green River for a good example), all agreement numbers need to be present on the title page of the annual report.** That means that the principle investigators need to report their cooperative agreement numbers to whoever is putting together the report, and that person needs to post all agency agreement numbers on the title page of the report. For example, if look at project 128, Fish and Wildlife’s agreement on this project is R10PG40082, CSU’s is 09-FG-40-2861, and UDWR’s is 09-FG-40-2849. The Recovery Program will add a line for USBR agreement numbers to the FY12 annual report format (projects which do not receive USBR funding will leave this line blank).
- 3) **Principle investigators should also indicate “period of performance”, which is the Federal fiscal year.** Most of Recovery Program annual reports already have the designation “FY” before the year being covered in the title line (i.e., FY 2012), but please double check to make sure this is the case.
- 4) Typically, the Recovery Program requests that annual reports be submitted to the Program Office sometime in mid-November for posting on the Program website. **This deadline should be strictly adhered to in order to facilitate timely funding from BOR.**

Failure to complete 1-4 above may constitute delays in funding for the individual agencies until they are fixed; BOR cannot approve funding if these requirements aren’t fulfilled.

Thank you for your cooperation.

Attachment A—Sample



United States Department of the Interior

IN REPLY REFER TO:

BUREAU OF RECLAMATION
Upper Colorado Regional Office
125 South State Street, Room 6107
Salt Lake City, Utah 84138-1147
November 30, 2011

UC-826
ADM-13.00

Sent via-email

Mr. So N. So
State of Colorado
Division of Parks and Wildlife
66 Anyplace Lane
Denver CO 45678

Subject: Proposed Grant Agreement No. R12AP400XX for Project 44, Recovery of endangered fish in Colorado

Dear Ms. So,

Please print four copies of the subject proposed Agreement. If you agree with the Agreement, please complete, sign and return the following:

- three copies of form 7-2279, "Assistance Agreement" (with attachments),
- Standard Form 424, "Application for Federal Assistance,"
- Standard Form 424B, "Assurances - Non-Construction Programs,"
- SF-3881 "ACH Vendor/Miscellaneous Payment Enrollment Form"

The fourth copy of the proposed agreement is for your records. A signed original will be sent to you upon execution by this office.

If you have any questions, please contact me at 801-524-3727.

Sincerely,

Melynda Roberts

Melynda Roberts
Grants Officer

ATTACHMENT B—SAMPLE

**UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
ASSISTANCE AGREEMENT**

1A. AGREEMENT/ACQUISITION NUMBER R12AP400XX <i>(Note: this number may appear on the top right of some forms)</i>		1B. MOD NUMBER	2. TYPE OF AGREEMENT <input checked="" type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT		3. CLASS OF RECIPIENT State
4. ISSUING OFFICE Bureau of Reclamation 125 South State Street Salt Lake City UT 84138-1147			5. RECIPIENT Colorado Division of Parks and Wildlife 66 Anywhere Lane Denver CO 45678		
			EIN #:	XXXXXXXXXX	County:
			DUNS #:	XXXXXXXXXX	Congress. Dist:
6. ADMINISTRATIVE POINT OF CONTACT Melynda Roberts Bureau of Reclamation Upper Colorado Region 125 South State Street Salt Lake City UT 84138-1147 801-524-3727 mroberts@usbr.gov			7. RECIPIENT PROJECT MANAGER Mr. So N. So Colorado Division of Parks and Wildlife 66 Anywhere Lane Denver CO 45678 Phone: 970-XXX-XXX		
8. GRANTS OFFICER TECHNICAL REPRESENTATIVE Mr. Dave Speas Bureau of Reclamation 125 South State Street Salt Lake City UT 84138 (801) 524-3863 dspeas@usbr.gov			9A. INITIAL AGREEMENT EFFECTIVE DATE: See block 17a		9B. MODIFICATION EFFECTIVE DATE:
			10. COMPLETION DATE 9/30/2016		
11A. PROGRAM STATUTORY AUTHORITY PL 106-392 Upper Colorado and San Juan River Basins Endangered Fish Recovery Programs					11B. CFDA Number XXXXXX
12. FUNDING INFORMATION	<u>RECIPIENT/OTHER</u>	<u>RECLAMATION</u>	13. REQUISITION NUMBER XXXXXXXXXXXXXXXXXX		
Total Estimated Amount of Agreement		40,000.00	14A. ACCOUNTING AND APPROPRIATION DATA XXX XXXX XXXX X X		
This Obligation		20,000.00			
Previous Obligation		0.00			
Total Obligation		20,000.00	14B. TREASURY ACCOUNT FUNDING SYMBOL YYYYYY		
Cost-Share %	0	0			
15. PROJECT TITLE AND BRIEF SUMMARY OF PURPOSE AND OBJECTIVES OF PROJECT Project 44, Recovery of endangered fish in Colorado					
16a. Acceptance of this Assistance Agreement in accordance with the terms and conditions contained herein is hereby made on behalf of the above-named recipient BY: _____ DATE: _____			17a. Award of this Assistance Agreement in accordance with the terms and conditions contained herein is hereby made on behalf of the United States of America, Department of the Interior, Bureau of Reclamation BY: _____ DATE: _____		
16b. NAME, TITLE, AND TELEPHONE NUMBER OF SIGNER Additional signatures are attached			17b. NAME OF GRANTS OFFICER Melynda Roberts		

