

Biology Committee Meeting Summary
July 18, 2006, Grand Junction, Colorado

Biology Committee: Tom Chart, Tom Pitts, Gary Burton, Melissa Trammell, Tom Nesler, Kevin Gelwicks, Krissy Wilson, Dave Speas, John Hawkins and Bill Davis.

Other participants: Dave Irving, Pat Nelson, Tim Modde, Tom Czapla, Chuck McAda, Angela Kantola, George Smith, Trina Hedrick, Mike Montagne, Sam Finney, Travis Francis, Tyler Abbott and Lori Martin.

Assignments are indicated by “>” and at the end of the document.

CONVENE 8:00 a.m.

1. Review/modify agenda – The agenda was modified as it appears below.
2. Elect new Committee vice-chair – The Committee discussed the idea of a stipend to support partners that don’t have the financial resources to serve as a chair (but this would require Management Committee approval). Tom Chart (FWS) was elected as the new vice-chair for the Committee (and Krissy Wilson was suggested as next year’s nominee). The Committee may wish to continue this process of tentatively identifying vice-chairs two years out.
3. Approve [April 6-7, 2006, meeting summary](#) – The summary was approved as written.
4. Review assignments from 4/6-7/06 meeting – The Committee reviewed assignments from previous meetings (as were listed in the meeting agenda). Assignments still pending can be found in the assignment list in Attachment 1.
5. Hydrology update - George Smith provided an update on current reservoir and river conditions (see Attachment 2). John Hawkins asked if/when a “final call” is made to classify the hydrology for the year on the Green River, but it’s really a moving target as the water year develops.
6. Propagation issues - Tom Chart said the Service met last year to discuss propagation concerns raised by Tim Modde, then asked the hatcheries to provide a summary of development of the razorback sucker broodstock at the Ouray National Fish Hatchery and the Grand Valley hatchery facility. From this, there are three basic questions for the Biology Committee:
 - a. Is the BC willing to expand the diversity of the Green River RBS brood stock (used to produce fish for release in the Green River) by incorporating fish of non-Green River origin (including fish from the lower basin)? *Service personnel directly involved in the Program support the basic approach of broodstock development identified in the Genetics Management Plan. Every effort should and has been made to develop sub-basin broodstocks with locally adapted fish first and then nearest neighbors. The majority of Service participants support the idea of maintaining (potentially expanding) the genetic*

base of Upper Basin brood through the continued incorporation of Lower Basin genetics, in the future and as needed.

Tim Modde added that the genetics management plan was developed with outside expert review; if we're going to change it, the Committee needs to do so consciously. Chuck McAda said the Colorado River broodstock started from a very small number of fish; thus they would like to expand the genetic pool for fish stocked in the Colorado River (so they have incorporated Green River fish and plan to incorporate lower basin fish in their broodstock). Tim said the question is whether we should take this same approach on the Green River even though we have enough Green River fish available. Tom Nesler noted that the Green River matrix was never completed. Chuck said the source of fish stocked into the Green River currently are 75% from Green River broodstock and 25% from blended broodstock (composed primarily of nearest neighbors) (this is what is specified in the integrated stocking plan). It would be difficult for Grand Valley (the source of the 25% blended broodstock) to hold Green River-only fish due to facility constraints. Currently, Ouray has not been able to produce all of the fish for Green River stocking, but they may be able to do so in the future. Bill Davis suggested we also need to consider whether our stocking goals (numbers of fish) are still appropriate, since this may affect how we use the broodstock. We do know that the fish are mixing in the wild. Melissa Trammell said she has no objection to a portion of the razorback stocked in the Green River coming from blended broodstock (especially considering that it might be to our advantage to increase the genetic diversity of the fish we're stocking in the Green River); Tom Chart agreed, as did Gary Burton. Krissy Wilson said that they found a few family lots of June suckers with more genetic diversity than others (this required only fin clips and 5-6 months to get results); and we might want to do a similar study with our razorback. Tom Nesler said we've done this, but we might now want to look at genetic diversity in the river population. John Hawkins said he believes we want to stock in-basin broodstock where possible, but when we have facility and other constraints, we will accept using mixed broodstock while still working toward the goal of stocking in-basin fish (as Ouray is able to produce more fish and/or as we are able to use more growout ponds). Chuck said it's been very difficult for Grand Valley and Ouray to meet stocking goals using strictly growout ponds, thus both facilities have increased their use of intensive culture. Tom Nesler clarified that there is no lower Green broodstock; we're only working to preserve the middle Green broodstock to the extent possible. The Committee agreed that they are willing to expand the diversity of the Green River RBS broodstock (used to produce fish for release in the Green River) by incorporating fish of non-Green River origin (including fish from the lower basin).

b. What is the BC's position on the appropriate course of action if annual RBS production is lost (or partially lost) at one facility: a) miss the stocking goal for that year, or b) use potential excess production from the other Upper Basin facility to meet the goal (a form of the "nearest neighbor" policy)? *Progeny of both Green and Colorado River sub-basin and to a lesser extent Lower Basin razorback sucker brood have been stocked in the lower Green River. Razorback sucker stocked in the Green River sub-basin have been recaptured in the Colorado River sub-basin and vice versa. Service personnel directly involved in the Program support adherence to the procedures put forth in the Integrated Stocking Plan, but also recommend that failure to meet stocking objectives at one facility be offset with "excess production," if available from the other.*

Bill Davis said he had thought our first priority was the production goals (versus genetic source). Chuck agreed and said that several years ago, Grand Junction fish were brought into the Ouray hatchery to meet production goals for that year. Tom Nesler suggested that over time we will ultimately end up with somewhat blended broodstocks, anyway. (Mike Montagne said Ouray will soon have to add F2's or wild fish to their broodstock; Chuck said Grand Valley is already using F2's and will soon have to go to F3's.) The Committee agreed that if and when needed, we do want to use potential excess production from the other facility to meet the production goals.

c. Is the BC interested in evaluating the genetic diversity of our current brood stock?
The real question here is whether we are interested in evaluating the stocking program from a genetics perspective, i.e. are we maintaining the level of genetic diversity found in our broodstocks in our stocked fish populations. Based on present hatchery practices (the need to group lots in growout ponds prior to individual marking) this evaluation would be limited in approach and may be of limited value. Service personnel from the GVH recently attended a workshop where the direction was to focus effort on maintaining broodstock genetic diversity.

Tom Nesler said he believes we should examine the genetic diversity of the wild fish to compare that with our original broodstock. Chuck said the main recommendation from the workshop his staff recently attended was that if you're satisfied with the genetic diversity of your broodstock, then paired matings aren't required. Chuck noted that Tom Dowling (who was not on the genetics panel) disagreed with the panel and suggested that the most important thing is to maximize the broodstock genetic diversity.

7. Discussion of the draft evaluation of stocked fish stocking/recapture summary – Chuck McAda said they're still working on this report, but wanted to bring this information to the Committee for an initial review. Much of the information comes from fish stocked prior to implementation of the integrated stocking plan, but every year we're capturing more stocked fish. A fair number of stocked fish were captured during sampling for Colorado pikeminnow population estimates. Tom Nesler suggested Chuck change the title of the report since no estimate of survival is provided at this point. Chuck said that they've talked with Kevin Bestgen about further analysis that might be done using the current data. Chuck said he thinks we can *begin* to estimate survival with these data, but it will be several years before we can get more reliable numbers, since this represents only 2 years of the integrated stocking plan. Chuck said the Program Director's office has asked Kevin Bestgen to draft a scope of work that would look at the existing and 2005-2006 data, which would provide almost 4 years of information from the integrated stocking plan. Kevin has suggested that existing sampling for Colorado pikeminnow estimates, nonnative fish, etc, should provide adequate data for an open estimate for razorback sucker numbers. Tom Nesler suggested we may want to solicit other proposals, as well (Dave Speas and Tom Pitts agreed). Chuck noted that anyone submitting proposals for this would need to review the database so they know what they would have to work with. Chuck said that with only 2 years of data, he doesn't recommend any changes to our stocking numbers, sizes, locations, etc. at this point. Melissa Trammell asked Chuck to add a conclusions and recommendations section to the report. Dave Speas said he'd like to keep three questions on the radar screen as we

evaluate (and accumulate) these data: are any recapture rates higher than others with respect to lot, stocking location, or season stocked. Tim Modde asked that size at stocking also be reviewed. Travis is working on this and said it is easier to track on the Colorado than on the Green River. The Committee agreed this report provides very valuable information that we need to continue to compile as new data are collected. Chuck welcomed additional comments, mark-ups, etc. Chuck said he would like to keep this as a working document and continue building on it over the next couple of years. Chuck said two razorbacks were caught on the first sampling pass in the Gunnison River this year (although the water was very high); the second pass is in process right now (but water is muddy from recent rains).

8. Update on information needs to determine if reservoir operations provide opportunity for nonnative fish escapement - George Smith distributed a copy of the table previously sent to the Committee via e-mail. George said he's looking for input and feedback. He also needs to meet with Sherm Hebein and/or Tom Nesler to fill in the blanks on fish composition in Colorado reservoirs. Pat asked if there may be reservoirs missing from this list, and if so, how do we determine that? Tom Pitts suggested that the state engineers' offices should have a comprehensive list of reservoirs over a certain size. Pat said he'd like to see a map of the location of all these reservoirs and their proximity to critical habitat, etc. (Note: this would be a good use of a GIS). Pat said the isotope study should help us, but there's no guarantee that every impoundment will have a unique isotope signature that would allow us to trace wild fish to that impoundment. Pat said that Pat Martinez' study and this list just look at reservoirs with lake management plans or stocking plans. Tom Nesler said >he will also provide information on the relative abundance of the species in Colorado reservoirs and whether those species have been detected in downstream sampling (this may take awhile, however). John Hawkins agreed we need to determine where escapement poses the greatest risk to the endangered fish and also identify responsible management agencies so we can develop relationships with them to best prevent potential catastrophic events. Melissa added that we also want to talk with these management entities so we know if there are scheduled maintenance activities, drawdowns, repairs, etc. planned that could result in a spill of nonnative fish. >George will continue developing this list. >Committee members will provide any additional information they have (including assessment of threat) to George (by August 31, if possible).
9. Review of humpback chub population estimates - Tom Czapla noted that there's considerable variability in these estimates and we probably are not achieving the criteria originally outlined in the population estimate workshops. Tom said he and Bob Muth have considered scheduling a hands-on data review workshop with the principal investigators to help better understand the existing estimates. Tom Nesler suggested that we need to determine the data we have to base decisions on sooner rather than later, so we can move ahead with management actions if the fish are declining. Tom Pitts and others recommended we begin developing a humpback chub contingency plan now. Bill Davis noted that humpback chub have been difficult to raise in captivity, so we may need to begin working on this problem now. >Tom Czapla will begin working on a contingency plan and provide an update to the Committee at the next meeting. Tom said GCMRC got a preliminary draft of the Douglas' genetics report. GCDAMP will be funding development of a humpback genetics management plan by Connie Keeler-Foster

(which will include the upper basin), and this plan will include the potential for bringing fish into captivity, developing broodstock, and producing fish for stocking. Tom Pitts pointed out that this is an area where we need to be sure we are erring on the side of the species and be appropriately proactive and conservative. John Hawkins and others agreed.

10. Review/approval of Yampa Canyon humpback chub population estimate final report – Sam Finney said this report is the two-year estimate for the Yampa Canyon population wherein they caught only 12 adult fish. With regard to recommendation #4, Bill Davis asked if there’s any question whether the genetic makeup of the Yampa Canyon population is deemed important enough. Melissa suggested that the report should recognize other related studies that are underway. John Hawkins pointed out that we also need to look at what’s causing the decline (e.g., smallmouth bass expansion) and put more effort into removing that threat (John believes this is as appropriate for a recommendation as bringing broodstock into captivity). Perhaps a statement could be added to the conclusions that the Program will continue to address the threats (e.g., smallmouth bass). Gary Burton suggested that the fourth recommendation could be prefaced by “In concert with other Program activities (e.g., removal of nonnative fish), fish should be removed...” Tom Chart pointed out the severe drought and very low baseflows in the Canyon the year before sampling and suggested this context needs to be recognized in the report. Tom Nesler agreed. Tom Nesler suggested including catch rates, level of effort by gear type, how data were adapted, etc., to provide the context needed to complete the comparison to Haines and Modde (2002) and Karp and Tyus (1998). Tom Nesler noted that the John Hawkins personal communication reference on page 10 should cite his Recovery Program report. (John Hawkins will provide details on this to Sam.) John Hawkins suggested the recommendation #3 should include the Little Snake as well as Cross Mountain. Bill Davis suggested that the last sentence of the conclusion to suspend population estimate should also be a recommendation. Gary Burton agreed, as this also will address suspension of lethal juvenile sampling. Melissa suggested that some level of monitoring this population should be maintained, however (e.g., make sure that researchers electrofishing for nonnative fish are carefully watching for humpback chub). Melissa suggested clarifying whether 6 of the 12 fish captured were scanned or PIT-tagged and who caught them (volunteers by angling, etc.). Tom Nesler asked if the Committee is comfortable with Sam’s characterization of the population as near extirpation? Tom Czaplá pointed out that this has always been a small population. Melissa said the recovery goals suggest there are 600 adult humpback chub in this population; it’s clear that there’s no way this is the case today. Kevin Gelwicks suggested that recommendation #4 needs to be clarified that we want to safeguard these fish (we don’t yet know if we need to produce the fish in hatcheries). Tom Czaplá agreed, and added that we also don’t want to presume that the broodstock would be comprised only of fish from Yampa Canyon. Tom Pitts suggested deleting “I feel” from second sentence of the conclusions and recommendations. >Sam Finney will incorporate the recommended revisions, post the revised report to the listserv, and if no comments are received within 2 weeks, the report will be considered approved.
11. Review/approval of [Cataract Canyon humpback chub population estimate annual report](#) – Krissy said Paul Badame and Patrick Goddard have agreed they’ll follow the format to provide a full report (and will include Rich Valdez); Krissy distributed a scope of work

for ~\$9K (apparently already available in a current contract that just needs to be modified to add this task) to provide that full report, which will be ready for review by January 2007. Tom Czapla pointed out that we seem to now be asking for full-blown population estimate reports for every set of estimates, rather than just for the first set of estimates on each population, so PI's will need to add this to their scopes of work (>Tom will work with PI's on this). The Committee approved the scope of work in concept; Committee members may submit specific comments on the scope and/or the annual report to Paul, Patrick, and Krissy. Tom Czapla noted the scope needs to have due dates added.

12. Review reports due list – Angela Kantola distributed copies of the list previously posted to the listserver. Pat Nelson said the Martinez isotope report is being pulled for further revision before peer/BC review. Krissy said the Price River report is on track. Angela Kantola will add the Cataract report to the list (due to coordinator by January 15). The Program Director's office will add sampling years to the population estimate reports and check due dates. The Program Director's office also will add the larval razorback/bead study report to the list. >Angela will distribute a revised list.
13. Habitat restoration and floodplain research update - Pat Nelson previously distributed an update on the larval/bead entrainment study on the Green River and habitat evaluation in the Colorado River subbasin. Entrainment data will be available in the annual reports. The draft final report is due to Pat March 15, 2007. Trina distributed charts showing bead captures by net set. Pat said the Colorado River subbasin floodplain habitat data have not yet been analyzed, but will be included in the annual reports.
14. Outline and schedule for developing Green River Study Plan; discussion of base flows and TWG update – Dave Speas referenced the study plan outline distributed previously and Angela Kantola displayed a matrix of hypotheses and studies that will allow the group to identify information gaps which will require additional data collection. The group will be meeting to draft the actual study plan during the last week in July in Vernal. Bill Davis mentioned the Argonne floodplain white paper and Melissa mentioned the Heitmeyer and Fredrickson (2005) report as additional references. Tom Pitts said he liked the format for this and would like to see it for every reach where we have flow recommendations. Bill Davis and others suggested that the Program needs to consider a much broader set of possible flows in developing its study recommendations. (It's so difficult to predict weather and flows, that we need to be prepared for a broad range of possible flow conditions each year.) Dave Speas gave an update on Green River flows (inflow has dropped to ~64% of normal, which put them into the moderately dry category) (see also the hydrology summary in Attachment 2). Based on this hydrology, the TWG recommended a target for Reach 2 (July-November) of 1230 cfs. Also, Argonne is looking at nursery habitats near Jensen and Ouray in early August which could further inform the target flow.
15. Update on nonnative fish management activities and outreach - Pat Nelson referred to the update he distributed previously, noting that Sam Finney's northern pike estimate for the Hayden to Craig reach is half of last year's, so that's encouraging. Tom Nesler asked if any data can be provided in advance of the annual reports. Sam Finney said he'll send his data out as soon as he's finished working it up. >Pat Nelson will contact all the PI's and ask them to distribute their results as soon as possible. Pat said there was some

escapement from Loudy-Simpson this year, so we may need to consider improving the barrier there. Pat invited the Committee to the public meeting on nonnative fish management in Craig, Colorado (Holiday Inn) on August 7 at 7 p.m. Updates will be given by the Yampa Basin Partnership, Pat Nelson, Larry Gamble (FWS Management Committee representative), Tom Iseman, Dan Birch, Tom Blickensderfer, and Sherm Hebein. Tom Nesler said Sherm is attempting to summarize information on both the Yampa and Colorado rivers for the Wildlife Commission meeting on the 10th (Bob Muth has been invited to participate in the Q&A portion). John Hawkins suggested emphasizing the positive messages (for example, we're re-building the fishery in Elkhead and we might even want to get the press to cover them as they put fish into the reservoir). John also suggested coordinating the presentations to the extent possible. Bill Davis asked about the status of a pheromone study and looking at other nonnative fish control methods. Pat said he's been too busy to make much progress on either of these, but he is tracking what's being done in Australia, and assured this remains on his radar screen. Kevin Gelwicks suggested that the pheromone study would make an excellent master's degree study. Bill also suggested that the one grass carp captured this year could, in fact, be a very major problem.

16. Nonnative fish sampling in the middle Yampa River as it relates to State Parks – John Hawkins said they're on State Park properties fairly consistently. His crew camps at one remote site near Maybell throughout the year; and tries to impact the public as little as possible by working mostly on weekdays, not on major holidays, etc. However, State Parks people are on the ground in these areas and it would be good to develop a stronger relationship with them and include them more in what we're doing (I&E and otherwise). Tom Nesler suggested meeting with Parks folks at the beginning of the field season, also. Pat said he and Steve Yamashita met with area CDOW managers; they could do the same for Parks folks. >John Hawkins will give Pat an idea of what sort of update is needed.
17. Discussion of draft removal criteria for Yampa River northern pike and smallmouth bass - Tom Chart discussed the proposed criteria sent to the Biology Committee on June 30 (>comments are due by Friday, July 28). The Committee agreed these will definitely be interim criteria which we'll need to revisit as the fish composition changes. The second criteria under smallmouth bass probably should be deleted. With regard to discussion point 5.a, Tom Nesler suggested we should have some criteria for Yampa Canyon.
18. Update on ad hoc group work to develop a white paper on options for changes to bonytail stocking plan - Tom Czapl provided the ad hoc group (Qwent, Dave Schnoor, Paul Badame, Tim Modde, Tom Chart, Valdez and Tom Burke and himself) with background material that raised this issue (Bestgen report, Cataract annual report, etc.) The group had a conference call on July 6, from which Tom will share notes when he receives comments from those who participated in the call. Tom said they are considering recommendations such as initial release in off-channel habitats; study to compare floodplain-acclimated bonytail with those released directly; and comparison of size, season, location of stocking. Bonytail tend to be less susceptible to capture via electroshocking than other fish and are better caught with trammel nets, but trammel nets could negatively impact pikeminnow and razorback. Nevertheless, Tom noted that Paul Badame's pikeminnow estimate crew reported catching 5 bonytail on their 3rd pass in lower Green River. One of those fish was only 160mm (too small to PIT tag); which

could imply this fish was produced in the wild (the floodplain-release studies were done two years ago, so it's not likely this fish originated from that release). Tom said he believes this emphasizes that we're just now beginning to pick up fish that have been stocked as part of the integrated stocking plan. Bill Davis asked if Gordon Mueller was part of the ad hoc group; Tom Czaplá replied that he wanted to keep the group to a manageable size, but has considered asking Gordon to be a reviewer of a white paper later on.

19. Review of GIS scope of work - George Smith outlined the scope of work he e-mailed to the Committee last week (per their request when he asked for funds to work on a GIS). Bill Davis asked about access restrictions and George said the fish capture data would be password-protected to prevent improper use. >George will make that clear in the scope of work. Dave Speas asked if metadata such as which lot a stocked fish came from could be served as part of this; George said he thought it could, and this is the sort of thing he wants to discuss with biologists and researchers in Task 3. George says he thinks this can eventually be a way to access some of the data we've previously had to request from Chuck McAda. John Hawkins said he does have some concerns that the conditions, etc. that surround collection of these data may not be reflected in a GIS and could thus be misleading. Melissa agreed, and said that for this reason she sees a GIS as more of a presentation/education tool than a data analysis tool. Tom Nesler asked how the similar effort is working out in the San Juan. >George Smith will talk to Dave Campbell about this. Tom Pitts noted that we are collecting a long-term dataset and this seems like a reasonable way to store, maintain, and access the data. Dave Speas said he thinks it would be worth our investment to test a GIS out at this level. The Committee agreed this initial scope of work should be funded (it may be resubmitted as an FY 07 scope, however, as it's rather late in the fiscal year to transfer funds). Tom Nesler noted that full GIS implementation will be much more complex (and expensive), in light of the need to maintain the data, provide quality assurance, etc. Tom Chart said he'd like the folks working on this GIS to get a good idea of the data available and what it would take to incorporate these data to do the kinds of things this scope of work suggests are possible.
20. Update on sampling/handling protocol – John Hawkins provided standard operating procedures and did receive a few comments. John said they're also working on procedures to reduce mortality, etc. Tom Czaplá asked John to provide him with a recommendation on the oxygenators they tested this year (and their proper use). The Committee suggested referencing these protocol in collecting permits. Angela Kantola recommended posting the protocol on the Program website. John Hawkins suggested holding training sessions at the annual researchers meeting. >John Hawkins and Tom Czaplá will develop specific recommendations for the use of these protocol for review at the next meeting.
21. Update on progress to [standardize electrofishing fleet](#) – deferred to next meeting.
22. Next meeting: date, agenda items, times and location – The Committee scheduled a conference call for Friday, August 18 at 9:00 a.m. to review the Green River Study Plan. The next meeting will be held on October 3 from 8 a.m. to 4 p.m. at the Holiday Inn in Grand Junction (Nesler and Davis cannot attend). Agenda items will include review of Pitlick's Colorado River channel monitoring report (the Water Acquisition Committee

would join the Biology Committee for this portion of the meeting via phone); review of Modde et al. NPS report on fish composition changes and smallmouth bass characteristics in Yampa Canyon; discussion of Utah's 3-species plan; update on a humpback chub contingency plan, recommendations on the fish handling protocol, review of the nonnative fish removal criteria, update on stocking evaluation, update on reservoir management to prevent nonnative fish escapement, update on progress to standardize the electrofishing fleet, and possibly use of pheromones in nonnative fish control and other innovative nonnative fish control methods, and a report on progress to provide an update on population status and trends. When developing the agenda, Angela will try to better identify decision versus informational items.

ADJOURN 4:00 p.m.

Attachment 1: Assignments

Carry over from previous meetings:

1. The Service and Program Director's office will prepare description of the intended process, time frame, and lower basin involvement for the 2007 recovery goal review (perhaps a scope of work). *Pending (Service R6 & R2 discussing).*
2. The Committee needs to make a decision regarding stocking or translocating and monitoring pikeminnow before Price-Stubb passage is complete. *Deferred to future meeting*
3. Tom Pitts will ask the WAC to adopt a report review procedure similar to the Biology Committee's. *Pending.*

New Assignments

1. Tom Nesler will provide George Smith information on the relative abundance of the species in Colorado reservoirs and whether those species have been detected in downstream sampling (this may take awhile, however).
2. Committee members will provide any additional reservoir/escapement information they have (including assessment of threat) to George (by August 31, if possible).
3. Tom Czapla will begin working on a humpback chub contingency plan and provide an update to the Committee at the next meeting.
4. Sam Finney will incorporate recommended revisions into his Yampa Canyon humpback chub population estimate report, post the revised report to the listserver, and if no comments are received within 2 weeks, the report will be considered approved.
5. Tom Czapla will work with PI's to incorporate full-blown population estimate reports for every set of estimates into their scopes of work.
6. Angela will distribute a revised reports due list.
7. Pat Nelson will contact all the nonnative fish management PI's and ask them to distribute their results as soon as possible this year.
8. John Hawkins will give Pat an idea of what sort of update is needed.
9. Comments on the draft removal criteria for Yampa River northern pike and smallmouth bass are due to Tom Chart by Friday, July 28.
10. George will make that clear in the GIS scope of work that fish capture data would be password-protected to prevent improper use. George also will talk to Dave Campbell how the similar GIS effort is working out in the San Juan program..

11. John Hawkins and Tom Czapla will develop specific recommendations for the use of the fish handling protocol for review at the next meeting.

Attachment 2

HYDROLOGY UPDATE for the July 18 Biology Committee Meeting

CURRENT RESERVOIR CONDITIONS as of July 17, 2006

| RESERVOIR | STATUS | CURRENT RELEASES cfs |
|-------------------|---------------------------------|----------------------|
| Dillon | Full and spilling | 384 |
| Green Mountain | Full and spilling | 390 |
| Williams Fork | Full | 96 |
| Wolford Reservoir | Full | 26 |
| Ruedi Reservoir | Very close to filling | 110 |
| Flaming Gorge* | Dill did not fill* | 827 |
| Aspinall Unit** | Filled and is now be drawn down | 1,700 |

| <u>CURRENT RIVER CONDITIONS</u> as of | 7/14/06 cfs | Mean cfs |
|--|-----------------|----------|
| Colorado at Cameo | 3120 | 5040 |
| Colorado River at Palisade | 1630 | 3220 |
| Gunnison River at Grand Junction | 1890 | 4041 |
| Colorado Utah Stateline | 4340 | 6530 |
| Yampa River at Maybell | 461 | 1050 |
| Yampa River at Deerlodge Park | 564 | 1050 |
| Green River at Flaming Gorge Dam | 827 | 2460 |
| Green River at Jensen | 1560 | 3320 |
| 15-Mile Reach flow target | 1,240 cfs | |
| Yampa flow target at Maybell | 96 cfs | |
| Green River Flow target at Jensen | 1,100-1,500 cfs | |

Weather Outlook for July

Periods of warm temperatures' intermixed with monsoon conditions

Source - Brian Avery National Weather Service July 12, 2006 HUP call

FYI Here is a link to Klaus's webpage...

<http://www.cdc.noaa.gov/people/klaus.wolter/SWcasts/index.html>

* **FLAMING GORGE** – Releases from Flaming Gorge Dam were reduced to 800 cfs on average per day on July 11, 2006. This was in reaction to lower than expected inflows in June as well as a reduced forecast for the April through July period. It now appears that under the Flaming Gorge Record of Decision, this year will be classified as moderately dry year rather than average as was projected earlier in the year.

The elevation of Flaming Gorge Reservoir is currently (7/11/2006) 6024.27 feet above sea level which is 15.73 feet from the top of the spillway gates. One year ago, the elevation was 6026.49 feet above sea level. Unregulated Apr-Jul inflows to Flaming Gorge this year will likely be about 64% of normal as compared to last year when inflows were about 92% of normal. For

Flaming Gorge, inflows during the spring have been significantly below normal in 6 of the last 7 years.

The next Flaming Gorge Working Group meeting is scheduled for Tuesday August 22, 2006 at 10:00 a.m. in Vernal, Utah. The location of this meeting will be at the Western Park Convention Center located at 302 East 200 South in Vernal

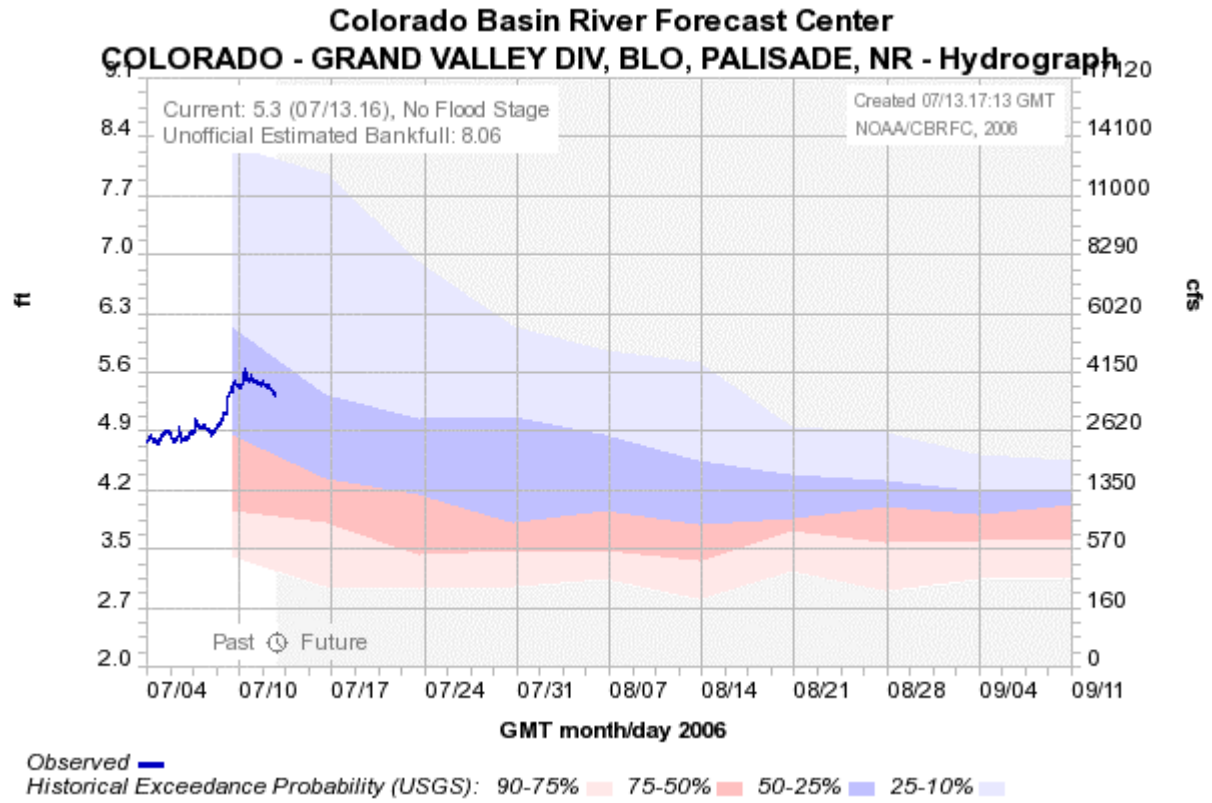
**** ASPINALL** – June unregulated inflow into Blue Mesa Reservoir was 155,000 acre-feet or 54 percent of average. Hydrologic conditions in the basin have been drying out during the last couple of months, with precipitation during May and June at 40 and 50 percent of average respectively. The basin snowpack has for the most part has melted out. The current inflow rate into Blue Mesa Reservoir is about 1,800 cfs while reservoir releases are averaging about 2,100 cfs. For the past few days, reservoir inflows have been on the increase in response to local thunderstorm activity; however these will start moving out of the area soon. Blue Mesa's present elevation is 7516.17 feet, which corresponds to a storage content of about 800,500 acre-feet.

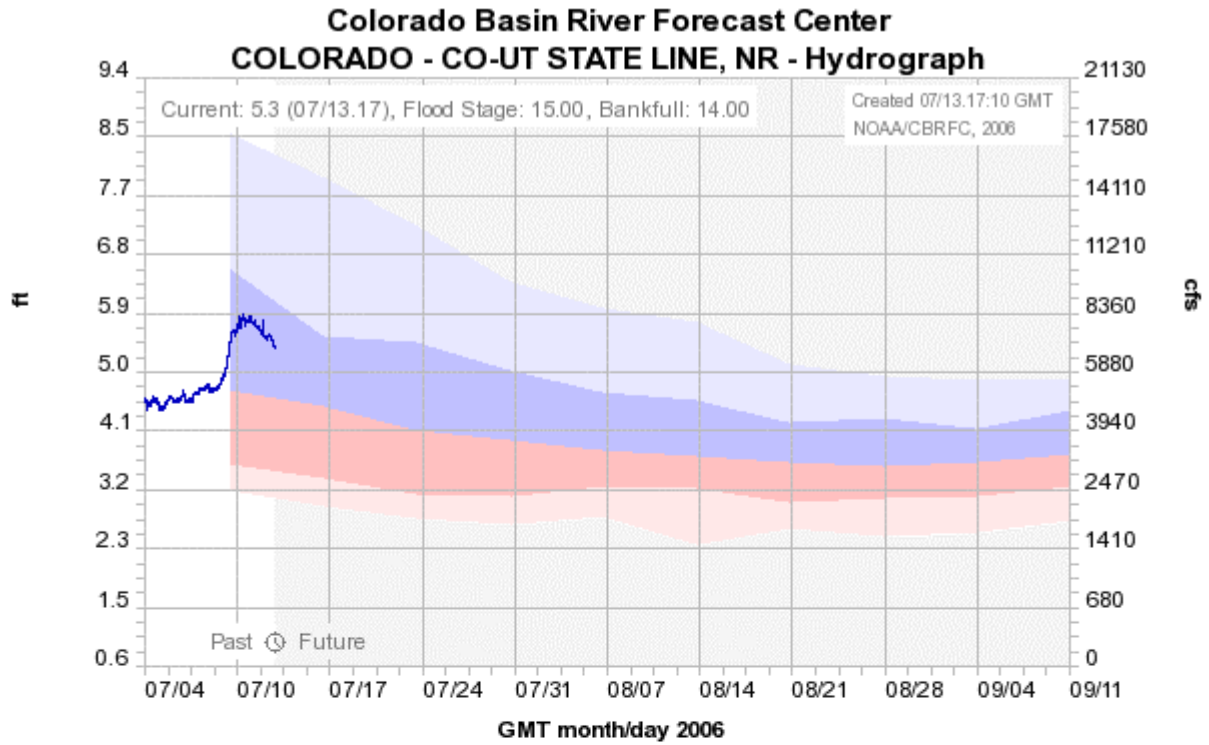
On July 5, 2006, the NWS River Forecast Center issued an updated April through July runoff forecast. The forecast is for 525,000 acre-feet, or 73 percent of normal inflow into Blue Mesa Reservoir. The reservoir has essentially already filled this season when it reached a elevation of 7517.71 feet on June 17, 2006, which is 1.7 feet below full. The reason for such a high elevation fill this year with respect to the inflow volume was the conservative reservoir operation practices employed over the winter months.

Releases from Crystal are currently set at 2100 cfs. The Gunnison Diversion Tunnel started taking water for the new season on March 27, 2006. The current diversion rate in the tunnel is about 800 cfs, which results in a river flow below the diversion tunnel of approximately 1400 cfs. There is a 100 cfs discrepancy between gage readings. These rates may change as conditions warrant, primarily as we respond to changes in the river inflows. However, we expect the high release rate of 2100 cfs to continue throughout most of the summer and into the fall months as we target Blue Mesa's icing elevation for the end of December.

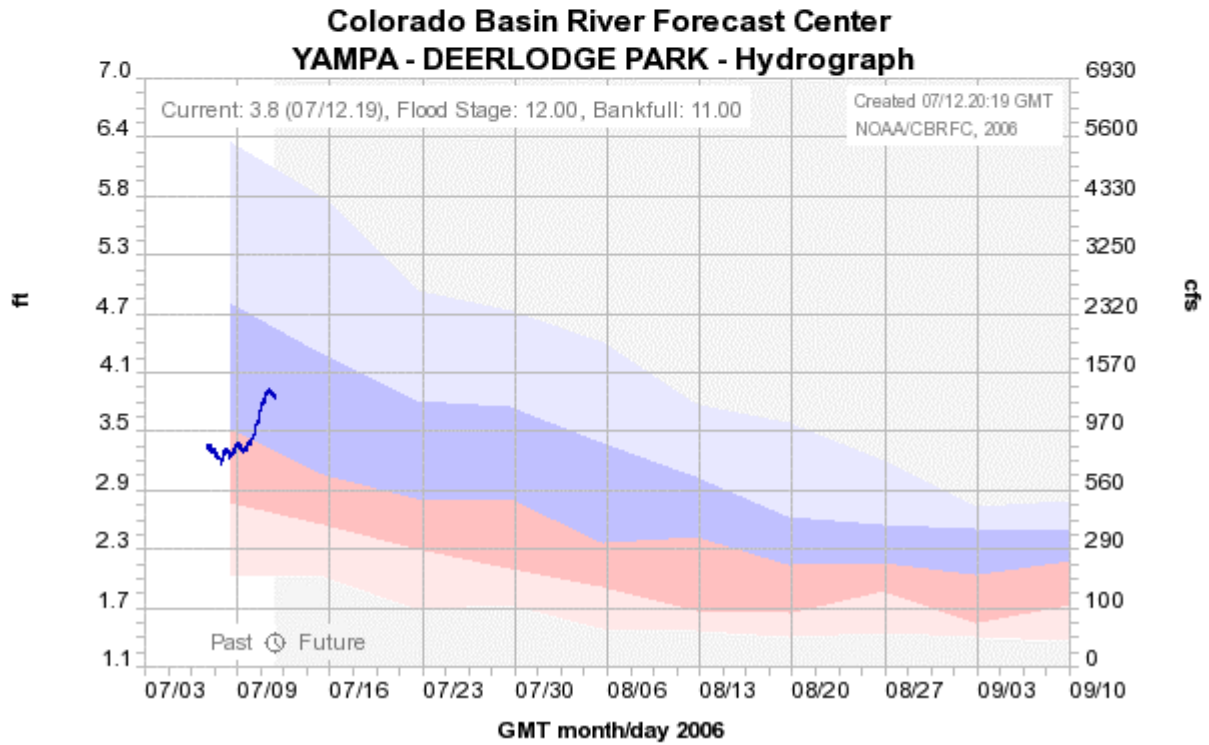
The next meeting of the "Aspinall Unit Working Group" will be held on Thursday August 24th in the Elk Creek Visitors Center at Blue Mesa Reservoir. Spring and summer operations will be reviewed and future operations discussed

Colorado River Forecast Center outlook for the next 60 days at the 15-Mile Reach, Stateline, Deerlodge Park and Jensen.





Observed —
 Historical Exceedance Probability (USGS): 90-75% ■ 75-50% ■ 50-25% ■ 25-10% ■



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